

Language, Style and Format drivers for **Listings**

by Carsten Heinz and individual authors:

Knut Lickert	Stefan Pinnow	Andreas Matthias	
Torsten Neuer	Michael Franke	Andrew Zabolotny	
Dr. Christoph Giess	Robert Frank		
José Romildo Malaquias	Jens T. Berger	Thielemann	
Michael Fiedler	Michael Piefel	Michael Piefel	
Detlev Dröge	Jörg Viermann	Martin Brodbeck	
Patrick Cousot	Stephan Hennig	Martin Heller	
Kai Below	Riccardo Murri	Scott Pakin	
Christian Gudrian	Daniel Gazard	Detlef Reimers	
Heiko Oberdiek	Mark van Eijk	Ignacio Díaz-Empananza	
Peter Bartke	Matthias Bethke	Jürgen Heim	
Jonathan Sauer	Robert Wenner	Martine Gautier	
Bastian Germann	Jeffrey Ratcliffe	Mark Schade	
Stefan Lagotzki	Scott Pakin	Stephan Hennig	
Stephan Hennig	Rolf Niepraschk	Markus Pahlow	
Michael Wiese	Oliver Ruebenkoenig	Dominique de Waleffe	
Ralph Becket	Uwe Siart	Brooks Moses	Peter Bartke
Adam Grabowski	Torben Hoffmann	Christopher Creutzig	
Achim D. Brucker	Ulrich G. Wortmann		
Sebastian Schubert	Andres Becerra Sandoval		
Luca Balzerani	Alessio Pace	Christophe Jorssen	
Berthold Höllmann	William Thimbleby	Herbert Voss	
Michael Weber	Stephen Kelly	Alexis Dimitriadis	
Patrick TJ McPhee	Geraint Paul Bevan	Brian Christensen	
Christian Kaiser	Xavier Noria	Jean-Philippe Grivet	
Aidan Philip Heerdegen	Christoph Kiefer	Christian Haul	
Neil Conway	Gerd Neugebauer	Winfried Theis	
Robert Denham	Sonja Weidmann	Cameron H. G. Wright	
Kai Wollenweber	Steffen Klupsch	Oliver Baum	
	Bernhard Walle		

Abstract

This article describes the implementation of the language drivers for the listings package.

Contents

1	Installation and configuration	3	2.30 HTML	38
2	Language drivers	5	2.31 IDL	39
2.1	Abap	5	2.32 Inform	40
2.2	ACM	6	2.33 Java and other JVM based languages	42
2.3	ACSL	8	2.33.1 Scala	43
2.4	Ada	8	2.34 ksh	44
2.5	Algol	9	2.35 Lingo	44
2.6	Assembler	10	2.36 Lisp, AutoLisp	48
2.7	Awk	11	2.37 LLVM	51
2.8	Basic	12	2.38 Logo	53
2.9	Clean	15	2.39 Lua	54
2.10	Corba IDL	15	2.40 Make	60
2.11	C, C++, et al	16	2.41 Matlab	60
2.12	Caml and Objective Caml	18	2.42 Mathematica	62
2.13	Common Intermediate Lan- guage	18	2.43 Mercury	72
2.14	Cobol	19	2.44 MetaPost	72
2.15	Comal 80	21	2.45 Miranda	74
2.16	COMMAND.COM Batch Files	21	2.46 Mizar	74
2.17	Comsol Multiphysics	22	2.47 ML	75
2.18	bash, csh, and sh	24	2.48 Modula-2	75
2.19	Delphi	26	2.49 MuPAD	76
2.20	Eiffel	27	2.50 NASTRAN	76
2.21	Elan	28	2.51 Oberon-2	77
2.22	Erlang	28	2.52 OCL	77
2.23	Euphoria	29	2.53 Octave	78
2.24	Fortran	29	2.54 Oz	80
2.25	GAP—Groups, Algorithms, Programming	33	2.55 Pascal	80
2.26	Guarded Command Lan- guage (GCL)	33	2.56 Perl	82
2.27	Gnuplot	34	2.57 PHP	82
2.28	Hansl/Gretl	35	2.58 Plasm	94
2.29	Haskell	37	2.59 PL/I	96
			2.60 PostScript	97
			2.61 POV-Ray	98

2.62 Prolog	99	2.73 SPARQL	114
2.63 Promela	100	2.74 SQL	114
2.64 PSTricks	100	2.75 Tcl/Tk	115
2.65 Python	103	2.76 Statistical languages	118
2.66 Rexx	105	2.77 T _E X	120
2.67 Reduce	105	2.78 VBScript	125
2.68 RSL	107	2.79 Verilog	126
2.69 Ruby	109	2.80 VHDL	127
2.70 Scilab	110	2.81 VRML	127
2.71 SHELXL	113	2.82 XML et al	128
2.72 Simula	113		

1 Installation and configuration

```

1 %% The listings package is copyright 1996--2004 Carsten Heinz, and
2 %% continued maintenance on the package is copyright 2006--2007 Brooks
3 %% Moses. From 2013 on the maintenance is done by Jobst Hoffmann.
4 %% The drivers are copyright 1997/1998/1999/2000/2001/2002/2003/2004/2006/
5 %% 2007/2013 any individual author listed in this file.
6 %%
7 %% This file is distributed under the terms of the LaTeX Project Public
8 %% License from CTAN archives in directory macros/latex/base/lppl.txt.
9 %% Either version 1.3 or, at your option, any later version.
10 %%
11 %% This file is completely free and comes without any warranty.
12 %%
13 %% Send comments and ideas on the package, error reports and additional
14 %% programming languages to Jobst Hoffmann at <j.hoffmann@fh-aachen.de>.
15 %%
16 <*install>
17 \input docstrip
18 \preamble
19 \endpreamble
20
21 \ifToplevel{
22 \usedir{tex/latex/listings}
23 \keepsilent
24 \askonceonly
25 }
26
27
28 \generate{
29   \file{lstlang1.sty}{\from{lstdrvrs.dtx}{lang1}}
30   \file{lstlang2.sty}{\from{lstdrvrs.dtx}{lang2}}
31   \file{lstlang3.sty}{\from{lstdrvrs.dtx}{lang3}}
32 }
33
34 \generate{

```

```

35 \file{listings-acm.prf}{\from{lstdrvrs.dtx}{acm-prf}}
36 \file{listings-bash.prf}{\from{lstdrvrs.dtx}{bash-prf}}
37 \file{listings-fortran.prf}{\from{lstdrvrs.dtx}{fortran-prf}}
38 \file{listings-lua.prf}{\from{lstdrvrs.dtx}{lua-prf}}
39 \file{listings-python.prf}{\from{lstdrvrs.dtx}{python-prf}}
40 }
41
42
43 \ifToplevel{
44 \Msg{*}
45 \Msg{* You probably need to move all created '.sty' and '.cfg'}
46 \Msg{* files into a directory searched by TeX.}
47 \Msg{*}
48 \Msg{* Run 'lstdrvrs.dtx' through LaTeX2e to get the documentation.}
49 \Msg{*}
50 }
51
52 \endbatchfile
53 </install>
54 <*config>

```

We mainly define default dialects.

```

55 \ProvidesFile{listings.cfg}[2015/06/04 1.6 listings configuration]
56 \def\lstlanguagefiles
57   {lstlang0.sty,lstlang1.sty,lstlang2.sty,lstlang3.sty}
58 \lstset{defaultdialect=[R/3 6.10]ABAP,
59         defaultdialect=[2005]Ada,
60         defaultdialect=[68]Algol,
61         defaultdialect=[gnu]Awk,
62         defaultdialect=[ANSI]C,
63         defaultdialect=[light]Caml,
64         defaultdialect=[1985]Cobol,
65         defaultdialect=[WinXP]command.com,
66         defaultdialect=[ISO]C++,
67         defaultdialect=[95]Fortran,
68         defaultdialect=[5.2]Mathematica,
69         defaultdialect=[OMG]OCL,
70         defaultdialect=[Standard]Pascal,
71         defaultdialect=[67]Simula,
72         defaultdialect=[plain]TeX,
73         defaultdialect=[97]VRML}
74 \lstalias[]{\TclTk}{tk}{tcl}

```

And now some shortcuts for the ABAP versions (provided by Knut Lickert). I (Knut) think the leading R/2, R/3 is not necessary (The support for R/2 is finished). The version number with letter is important for the runtime-system, but the programming language should be the same for each version.

```

75 \lstalias[6.1]{ABAP}[R/3 6.10]{ABAP}
76 \lstalias[3.1]{ABAP}[R/3 3.1C]{ABAP}
77 \lstalias[4.6]{ABAP}[R/3 4.6C]{ABAP}

```

```

78 </config>
79 <+lang1>\ProvidesFile{lstlang1.sty}
80 <+lang2>\ProvidesFile{lstlang2.sty}
81 <+lang3>\ProvidesFile{lstlang3.sty}
82 <+acm-prf>\ProvidesFile{listings-acm.prf}
83 <+bash-prf>\ProvidesFile{listings-bash.prf}
84 <+fortran-prf>\ProvidesFile{listings-fortran.prf}
85 <+lua-prf>\ProvidesFile{listings-lua.prf}
86 <+python-prf>\ProvidesFile{listings-python.prf}
87 <-config> [2015/06/04 1.6 listings language file]

```

2 Language drivers

2.1 Abap

Knut Lickert added support for Abap.¹

```

88 <*lang2>
89 %%
90 %% Abap definition by Knut Lickert
91 %%

```

There are some other new commands in release 6.10. They will follow later, but up to now I don't work with 6.10.

```

92 \lst@definlanguage[R/3 6.10]{ABAP}[R/3 4.6C]{ABAP}%
93 {morekeywords={try,endtry},%
94 }[keywords,comments,strings]
95 \lst@definlanguage[R/3 4.6C]{ABAP}[R/3 3.1]{ABAP}%
96 {morekeywords={method,ref,class,create,object,%
97     methods,endmethod,private,protected,public,section,%
98     catch,system-exceptions,endcatch,%
99     },%
100 moreprocnamekeys={class},%
101 literate={->}{\rightarrow}1{=>}{\Rrightarrow}1,%
102 }[keywords,comments,strings,procnames]

```

Yes there are also some more releases in R/3 (2.1...), but I know them not really. So let's start with R/3 3.1.

```

103 \lst@definlanguage[R/3 3.1]{ABAP}[R/2 5.0]{ABAP}{}%

```

As I remember all this commands exists in R/2. Many commands are new in R/2 5.0 (compared with R/2 4.3). But as I am not using R/2 4.3 any more, I start with R/2 5.0.

```

104 \lst@definlanguage[R/2 5.0]{ABAP}%
105 {sensitive=f,%
106 procnamekeys={report,program,form,function,module},%
107 morekeywords={*,add,after,alias,analyzer,and,append,appending,area,assign,at,%

```

¹In this section 'I' is Knut Lickert.

```

108     authority-check,before,binary,blank,break-point,calendar,call,%
109     case,change,changing,check,clear,cnt,co,collect,commit,common,%
110     component,compute,condense,corresponding,cos,cp,cs,currency-conversion,%
111     cursor,data,database,dataset,decimals,define,delete,deleting,dequeue,%
112     describe,detail,dialog,directory,div,divide,do,documentation,%
113     during,dynpro,else,end-of-page,end-of-selection,endat,endcase,%
114     enddo,endfor,endform,endif,endloop,endmodule,endselect,%
115     endwhile,enqueue,exceptions,exit,exp,export,exporting,extract,%
116     field,fields,field-groups,field-symbols,find,for,form,format,free,%
117     from,function,generating,get,giving,hide,id,if,import,%
118     importing,in,incl,include,initial,initialization,input,insert,%
119     interrupt,into,is,language,leave,leading,left-justified,like,line,lines,line-count,
120     line-selection,list-processing,load,local,log,logfile,loop,%
121     margin,mark,mask,memory,menue,message,mod,modify,module,move,%
122     move-text,multiply,na,new,new-line,new-page,no-gaps,np,ns,%
123     number,obligatory,occurs,of,on,or,others,output,parameter,%
124     parameters,parts,perform,pf-status,places,position,process,%
125     raise,raising,ranges,read,refresh,refresh-dynpro,reject,remote,%
126     replace,report,reserve,reset,restart,right-justified,run,screen,scroll,search,%
127     segments,select,select-options,selection-screen,set,shift,sin,%
128     single,sqrt,start-of-selection,statement,structure,submit,%
129     subtract,summary,summing,suppress,system,table,tables,task,%
130     text,time,to,top-of-page,trace,transaction,transfer,%
131     transfer-dynpro,translate,type,unpack,update,user-command,%
132     using,value,when,where,while>window,with,workfile,write,},%
133     morecomment=[l]" ,%
134     morecomment=[f][commentstyle][0]*,%
135     morestring=[d]'%
136 }[keywords,comments,strings,procnames]

```

This section for R/2 4.3 is not really maintained. It is just what I remember of the past.

```

137 \lst@definelanguage[R/2 4.3]{ABAP}[R/2 5.0]{ABAP}%
138 {deletekeywords={function,importing,exporting,changing,exceptions,%
139     raise,raising}}%
140 }[keywords,comments,strings]
141 </lang2>

```

2.2 ACM

ACM is the language of the Aspen Custom Modeler (<http://www.aspentech.com/products/aspen-custom-modeler.aspx>), the language definition was provided by Stefan Pinnow. It is intended for writing models. Maximilian Dammann pointed out the missing keyword “Description”.

```

142 <*lang2>
143 %%
144 %% ACM and ACMscript definition
145 %% (c) 2013 Stefan Pinnow

```

```

146 %%
147 \lst@definelanguage{ACM}{
148   morekeywords={
149     abs,After,acos,And,As,asin,atan,At,Call,Compatibility,Connect,cos,cosh,%
150     Create,Delay,Description,Difference,Do,Else,ElseIf,End,EndFor,EndIf,%
151     EndParallel,EndState,EndSwitch,EndText,EndWith,exp,External,Fixed,For,%
152     ForEach,Free,Global,Hidden,If,Implementation,In,Initial,Input,InterSection,%
153     IntegerSet,Invoke,Is,Language,Library,Link,Log10,LogE,Max,Min,Model,Of,%
154     Once,Options,Output,Parallel,Parameter,Pause,Port,Print,Private,%
155     Procedure,Product,Ramp,Repeat,Restart,Return,Round,Runs,Sigma,sin,sinh,%
156     Size,Snapshot,sqr,sqrt,SRamp,State,Stream,StringSet,Structure,Switch,%
157     SubRoutine,SymDiff,tan,tanh,Task,Text,Time,Then,Truncate,Union,Until,%
158     Uses,Variable,Wait,When,With,WithIn,Workspace%
159   },%
160   sensitive=false,%
161   morecomment=[l]{//},%
162   morecomment=[s]{/*}{*/},%
163   string=[b]{"},%
164 }[keywords,comments,strings]%
165 </lang2>

```

In addition to writing models there is a language ACMscript, which is similar to VBScript. According to Stefan Pinnow this language is used for writing scripts for the models.

```

166 <*lang2>
167 \lst@definelanguage{ACMscript}[]{}{VBScript}{%
168   morekeywords={%
169     ElseIf,False,In,Resume,True%
170   },%
171   deletekeywords={%
172     Abs,Array,Clear,CreateObject,CStr,Err,ForReading,ForWriting,%
173     OpenTextFile,Replace,WriteLine%
174   }%
175 }[keywords,comments,strings]%
176 </lang2>

```

Stefan Pinnow also supplied a definition of a style for printing ACM code:

```

177 <*acm-prf>
178 \usepackage[rgb, x11names]{xcolor}
179
180 \definecolor{Comments}{rgb}{0.00,0.50,0.00}
181 \definecolor{KeyWords}{rgb}{0.00,0.00,0.63}
182 \definecolor{Strings}{rgb}{0.84,0.00,0.00}
183
184 \lstdefinestyle{ACM}{%
185   basicstyle=\scriptsize\ttfamily,%
186   keywordstyle=\color{KeyWords},%
187   showstringspaces=false,%

```

```

188 identifierstyle=\color{black},%
189 commentstyle=\color{Comments},%
190 stringstyle=\color{Strings},%
191 frame=shadowbox,%           % for ACM-Code scrartcl commented out
192 %   frame=1,%               % line on the left side
193 rulesepcolor=\color{black},%
194 numbers=left,%             % left
195 firstnumber=1,%
196 stepnumber=5,%
197 columns=fixed,%           % to prevent inserting spaces
198 fontadjust=true,%
199 basewidth=0.5em,%
200 captionpos=t,%
201 abovecaptionskip=\smallskipamount,% same amount as default
202 belowcaptionskip=\smallskipamount,% in caption package
203 }%

```

This code is provided in the file `listings-acm.prf`, see section 2.4.1 (Preferences) of the `listings` documentation.

```
204 </acm-prf>
```

2.3 ACSL

This language was provided by Andreas Matthias. I'm sorry for forgetting to add this language for a long time.

```

205 <*lang1>
206 %%
207 %% ACSL definition (c) 2000 by Andreas Matthias
208 %%
209 \lst@definlanguage{ACSL}[90]{Fortran}%
210   {morekeywords={algorithm,cinterval,constant,derivative,discrete,%
211     dynamic,errtag,initial,interval,maxterval,mininterval,%
212     merror,xerror,nsteps,procedural,save,schedule,sort,%
213     table,terminal,termt,variable},%
214     sensitive=false,%
215     morecomment=[1]!%
216   }[keywords, comments]%
217 </lang1>

```

2.4 Ada

Data come from

- BARNES, JOHN GILBERT PRESSLIE: **Programming in Ada plus language reference manual**; © 1991 Addison-Wesley Publishing Company, Inc.; ISBN 0-201-56539-0.

Torsten Neuer added support for Ada 95. I changed the definition to reduce the required string memory.

```

218 ⟨*lang1⟩
219 %%
220 %% Ada 95 definition (c) Torsten Neuer
221 %%
222 %% Ada 2005 definition (c) 2006 Santiago Urue\~{n}a Pascual
223 %% <Santiago.Uruena@upm.es>
224 %%
225 \lst@definlanguage[2005]{Ada}[95]{Ada}%
226 {morekeywords={interface,overriding,synchronized}}%
227 \lst@definlanguage[95]{Ada}[83]{Ada}%
228 {morekeywords={abstract,aliased,protected,requeue,tagged,until}}%
229 \lst@definlanguage[83]{Ada}%
230 {morekeywords={abort,abs,accept,access,all,and,array,at,begin,body,%
231 case,constant,declare,delay,delta,digits,do,else,elsif,end,entry,%
232 exception,exit,for,function,generic,goto,if,in,is,limited,loop,%
233 mod,new,not,null,of,or,others,out,package,pragma,private,%
234 procedure,raise,range,record,rem,renames,return,reverse,select,%
235 separate,subtype,task,terminate,then,type,use,when,while,with,%
236 xor},%
237 sensitive=f,%
238 morecomment=[1]--, %
239 morestring=[m]" ,% percent not defined as stringizer so far
240 morestring=[m]' %
241 }[keywords,comments,strings]%
242 ⟨/lang1⟩

```

2.5 Algol

Data come from

- UWE PAPE: **Programmieren in ALGOL 60**; © 1973 Carl Hanser Verlag München; ISBN 3-446-11605-2
- FRANK G. PAGAN: **A practical guide to ALGOL 68**; © 1976 by John Wiley & Sohn Ltd.; ISBN 0-471-65746-8 (Cloth); ISBN 0-471-65747-6 (Pbk).

The definition of Algol 68 doesn't support comments enclosed by ϕ .

```

243 ⟨*lang3⟩
244 \lst@definlanguage[68]{Algol}%
245 % ??? should 'i' be a keyword
246 {morekeywords={abs,and,arg,begin,bin,bits,bool,by,bytes,case,channel,%
247 char,co,comment,compl,conj,divab,do,down,elem,elif,else,empty,%
248 end,entier,eq,esac,exit,false,fi,file,flex,for,format,from,ge,%
249 goto,gt,heap,if,im,in,int,is,isnt,le,leng,level,loc,long,lt,lwb,%
250 minusab,mod,modab,mode,ne,nil,not,od,odd,of,op,or,ouse,out,over,%
251 overab,par,plusab,plusto,pr,pragmat,prio,proc,re,real,ref,repr,%
252 round,sema,shl,short,shorten,shr,sign,skip,string,struct,then,%
253 timesab,to,true,union,up,upb,void,while},%

```

```

254     sensitive=f,% ???
255     morecomment=[s]{\#}{\#},%
256     keywordcomment={co,comment}%
257   }[keywords,comments,keywordcomments]%

258 \lst@definlanguage[60]{Algol}%
259   {morekeywords={array,begin,Boolean,code,comment,div,do,else,end,%
260     false,for,goto,if,integer,label,own,power,procedure,real,step,%
261     string,switch,then,true,until,value,while},%
262   sensitive=f,% ???
263   keywordcommentsemicolon={end}{else,end}{comment}%
264   }[keywords,keywordcomments]%
265 </lang3>

```

2.6 Assembler

Credits go to Michael Franke.

```

266 <*lang3>
267 %%
268 %% Motorola 68K definition (c) 2006 Michael Franke
269 %%
270 \lst@definlanguage[Motorola68k]{Assembler}%
271 {morekeywords={ABCD,ADD,%
272 ADDA,ADDI,ADDQ,ADDX,AND,ANDI,ASL,ASR,BCC,BLS,BCS,BLT,BEQ,BMI,BF,BNE,BGE,BPL,%
273 BGT,BT,BHI,BVC,BLE,BVS,BCHG,BCLR,BRA,BSET,BSR,BTST,CHK,CLR,CMP,CPMA,CMPI,CMPM,%
274 DBCC,DBLS,DBCS,DBLT,DBEQ,DBMI,DBF,DBNE,DBGE,DBPL,DBGT,DBT,DBHI,DBVC,DBLE,DBVS,DIVS,%
275 DIVU,EOR,EORI,EXG,EXT,ILLEGAL,JMP,JSR,LEA,LINK,LSL,LSR,MOVE,MOVEA,MOVEM,MOVEP,MOVEQ,%
276 MULS,MULU,NBCD,NEG,NEGX,NOP,NOT,OR,ORI,PEA,RESET,ROL,ROR,ROXL,ROXR,RTE,RTR,RTS,SBQ,%
277 SCC,SLS,SCS,SLT,SEQ,SMI,SF,SNE,SGE,SPL,SGT,ST,SHI,SVC,SLE,SVS,STOP,SUB,SUBA,SUBI,SUBQ,%
278 SUBX,SWAP,TAS,TRAP,TRAPV,TST,UNLK},%
279   sensitive=false,%
280   morecomment=[1]*,%
281   morecomment=[1];%
282   }[keywords,comments,strings]
283 </lang3>

```

Credits go to Andrew Zabolotny.

```

284 <*lang3>
285 %%
286 %% x86masm definition (c) 2002 Andrew Zabolotny
287 %%
288 \lst@definlanguage[x86masm]{Assembler}%
289 {morekeywords={al,ah,ax,eax,bl,bh,bx,ebx,cl,ch,cx,ecx,dl,dh,dx,edx,%
290   si,esi,di,edi,bp,ebp,sp,esp,cs,ds,es,ss,fs,gs,cr0,cr1,cr2,cr3,%
291   db0,db1,db2,db3,db4,db5,db6,db7,tr0,tr1,tr2,tr3,tr4,tr5,tr6,tr7,%
292   st,aaa,aad,aam,aas,adc,add,and,arpl,bound,bsf,bsr,bswap,bt,btc,%
293   btr,bts,call,cbw,cdq,clc,cld,cli,clts,cmc,cmp,cmps,cmpsb,cmpsw,%
294   cmpsd,cpxchg,cwd,cwde,daa,das,dec,div,enter,hlt,idiv,imul,in,%
295   inc,ins,int,into,invd,invlpg,iret,ja,jae,jb,jbe,jc,jcxz,jecxz,%
296   je,jg,jge,jl,jle,jna,jnae,jnb,jnbe,jnc,jne,jng,jnge,jnl,jnle,%

```

```

297     jno,jnp,jns,jnz,jo,jp,jpe,jpo,js,jz,jmp,lahf,lar,lea,leave,lgdt,%
298     lidt,lldt,lmsw,lock,lods,lodsb,lodsw,lodsd,loop,loopz,loopnz,%
299     loope,loopne,lds,les,lfs,lgs,lss,lsl,ltr,mov,movs,movsb,movsw,%
300     movsd,movsx,movzx,mul,neg,nop,not,or,out,outs,pop,popa,popad,%
301     popf,popfd,push,pusha,pushad,pushf,pushfd,rcl,rcr,rep,repe,%
302     repne,repz,repnz,ret,retf,rol,ror,sahf,sal,sar,sbb,scas,seta,%
303     setae,setb,setbe,setc,sete,setg,setge,setl,setle,setna,setnae,%
304     setnb,setnbe,setnc,setne,setng,setnge,setnl,setnle,setno,setnp,%
305     setns,setnz,seto,setp,setpe,setpo,sets,sets,sgdt,shl,shld,shr,%
306     shrd,sidt,sldt,smsw,stc,std,sti,stos,stosb,stosw,stosd,str,sub,%
307     test,verr,verw,wait,wbinvd,xadd,xchg,xlatb,xor,fabs,fadd,fbld,%
308     fbstp,fchs,fclex,fcom,fcos,fdecstp,fdiv,fdivr,ffree,fiadd,fiacom,%
309     fidiv,fidivr,fild,fimul,fincstp,finit,fist,fisub,fisubr,fld,fld1,%
310     fldl2e,fldl2t,fldlg2,fldln2,fldpi,fldz,fldcw,fldenv,fmul,fnop,%
311     fpatan,fprem,fprem1,fptan,frndint,frstor,fsave,fscale,fsetpm,%
312     fsin,fsincos,fsqrt,fst,fstcw,fstenv,fstsw,fsub,fsubr,ftst,fucom,%
313     fwait,fxam,fxch,fxtract,fyl2x,fyl2xp1,f2xm1},%
314     morekeywords=[2]{.align,.alpha,assume,byte,code,comm,comment,.const,%
315     .cref,.data,.data?,db,dd,df,dosseg,dq,dt,dw,dword,else,end,endif,%
316     endm,endp,ends,eq,equ,.err,.err1,.err2,.errb,.errdef,.errdif,%
317     .erre,.erridn,.errnb,.errndef,.errnz,event,exitm,extrn,far,%
318     .fardata,.fardata?,fword,ge,group,gt,high,if,if1,if2,ifb,ifdef,%
319     ifdif,ife,ifidn,ifnb,ifndef,include,includelib,irp,irpc,label,%
320     .lall,le,length,.lfcond,.list,local,low,lt,macro,mask,mod,.model,%
321     name,ne,near,offset,org,out,page,proc,ptr,public,purge,qword,.%
322     radix,record,rept,.sall,seg,segment,.seq,.sfcond,short,size,%
323     .stack,struc,subttl,tbyte,.tfcond,this,title,type,.type,width,%
324     word,.xall,.xcref,.xlist},%
325     alsoletter=.,alsodigit=?,%
326     sensitive=f,%
327     morestring=[b]" ,%
328     morestring=[b]' ,%
329     morecomment=[1];%
330     }[keywords,comments,strings]
331 </lang3>

```

2.7 Awk

Thanks to Dr. Christoph Giess for providing these definitions.

```

332 < *lang1 >
333 %%
334 %% awk definitions (c) Christoph Giess
335 %%
336 \lst@definlanguage[gnu]{Awk}[POSIX]{Awk}%
337 {morekeywords={and,asort,bindtextdomain,compl,dcgettext,gensub,%
338     lshift,mktime,or,rshift,strftime,strtonum,systemtime,xor,extension}%
339 }%
340 \lst@definlanguage[POSIX]{Awk}%
341 {keywords={BEGIN,END,close,getline,next,nextfile,print,printf,%

```

```

342     system, fflush, atan2, cos, exp, int, log, rand, sin, sqrt, srand, gsub, %
343     index, length, match, split, sprintf, strtonum, sub, substr, tolower, %
344     toupper, if, while, do, for, break, continue, delete, exit, function, %
345     return}, %
346     sensitive, %
347     morecomment=[l]\#, %
348     morecomment=[l]//, %
349     morecomment=[s]{/*}{*/}, %
350     morestring=[b]"%
351 }[keywords, comments, strings]%
352 </lang1>

```

2.8 Basic

Credits go to Robert Frank.

```

353 <*lang1>
354 %%
355 %% Visual Basic definition (c) 2002 Robert Frank
356 %%
357 \lst@definlanguage[Visual]{Basic}
358 {morekeywords={Abs, Array, Asc, AscB, AscW, Atn, Avg, CBool, CByte, CCur, %
359     CDate, CDb1, Cdec, Choose, Chr, ChrB, ChrW, CInt, CLng, Command, Cos, %
360     Count, CreateObject, CSng, CStr, CurDir, CVar, CVDate, CVer, Date, %
361     DateAdd, DateDiff, DatePart, DateSerial, DateValue, Day, DDB, Dir, %
362     DoEvents, Environ, EOF, Error, Exp, FileAttr, FileDateTime, FileLen, %
363     Fix, Format, FreeFile, FV, GetAllStrings, GetAttr, %
364     GetAutoServerSettings, GetObject, GetSetting, Hex, Hour, IIf, %
365     IMEStatus, Input, InputB, InputBox, InStr, InstB, Int, Integer, IPmt, %
366     IsArray, IsDate, IsEmpty, IsError, IsMissing, IsNull, IsNumeric, %
367     IsObject, LBound, LCase, Left, LeftB, Len, LenB, LoadPicture, Loc, LOF, %
368     Log, Ltrim, Max, Mid, MidB, Min, Minute, MIRR, Month, MsgBox, Now, NPer, %
369     NPV, Oct, iPartition, Pmt, PPmt, PV, QBColor, Rate, RGB, Right, RightB, Rnd, %
370     Rtrim, Second, Seek, Sgn, Shell, Sin, SLN, Space, Spc, Sqr, StDev, StDevP, %
371     Str, StrComp, StrConv, String, Switch, Sum, SYD, Tab, Tan, Time, Timer, %
372     TimeSerial, TimeValue, Trim, TypeName, UBound, Ucase, Val, Var, VarP, %
373     VarType, Weekday, Year}, % functions
374 morekeywords=[2]{Accept, Activate, Add, AddCustom, AddFile, AddFromFile, %
375     AddFromTemplate, AddItem, AddNew, AddToAddInToolbar, %
376     AddToolboxProgID, Append, AppendChunk, Arrange, Assert, AsyncRead, %
377     BatchUpdate, BeginTrans, Bind, Cancel, CancelAsyncRead, CancelBatch, %
378     CancelUpdate, CanPropertyChange, CaptureImage, CellText, CellValue, %
379     Circle, Clear, ClearFields, ClearSel, ClearSelCols, Clone, Close, Cls, %
380     ColContaining, ColumnSize, CommitTrans, CompactDatabase, Compose, %
381     Connect, Copy, CopyQueryDef, CreateDatabase, CreateDragImage, %
382     CreateEmbed, CreateField, CreateGroup, CreateIndex, CreateLink, %
383     CreatePreparedStatement, CreateProperty, CreateQuery, %
384     CreateQueryDef, CreateRelation, CreateTableDef, CreateUser, %
385     CreateWorkspace, Customize, Delete, DeleteColumnLabels, %
386     DeleteColumns, DeleteRowLabels, DeleteRows, DoVerb, Drag, Draw, Edit, %

```

```

387     EditCopy,EditPaste,EndDoc,EnsureVisible,EstablishConnection,%
388     Execute,ExtractIcon,Fetch,FetchVerbs,Files,FillCache,Find,%
389     FindFirst,FindItem,FindLast,FindNext,FindPrevious,Forward,%
390     GetBookmark,GetChunk,GetClipString,GetData,GetFirstVisible,%
391     GetFormat,GetHeader,GetLineFromChar,GetNumTicks,GetRows,%
392     GetSelectedPart,GetText,GetVisibleCount,GoBack,GoForward,Hide,%
393     HitTest,HoldFields,Idle,InitializeLabels,InsertColumnLabels,%
394     InsertColumns,InsertObjDlg,InsertRowLabels,InsertRows,Item,%
395     KillDoc,Layout,Line,LinkExecute,LinkPoke,LinkRequest,LinkSend,%
396     Listen,LoadFile,LoadResData,LoadResPicture,LoadResString,%
397     LogEvent,MakeCompileFile,MakeReplica,MoreResults,Move,MoveData,%
398     MoveFirst,MoveLast,MoveNext,MovePrevious,NavigateTo,NewPage,%
399     NewPassword,NextRecordset,OLEDrag,OnAddinsUpdate,OnConnection,%
400     OnDisconnection,OnStartupComplete,Open,OpenConnection,%
401     OpenDatabase,OpenQueryDef,OpenRecordset,OpenResultset,OpenURL,%
402     Overlay,PaintPicture,Paste,PastSpecialDlg,PeekData,Play,Point,%
403     PopulatePartial,PopupMenu,Print,PrintForm,PropertyChanged,Pset,%
404     Quit,Raise,RandomDataFill,RandomFillColumns,RandomFillRows,%
405     rdoCreateEnvironment,rdoRegisterDataSource,ReadFromFile,%
406     ReadProperty,Rebind,ReFill,Refresh,RefreshLink,RegisterDatabase,%
407     Reload,Remove,RemoveAddInFromToolbar,RemoveItem,Render,%
408     RepairDatabase,Reply,ReplyAll,Requery,ResetCustom,%
409     ResetCustomLabel,ResolveName,RestoreToolbar,Resync,Rollback,%
410     RollbackTrans,RowBookmark,RowContaining,RowTop,Save,SaveAs,%
411     SaveFile,SaveToFile,SaveToolbar,SaveToOle1File,Scale,ScaleX,%
412     ScaleY,Scroll,Select,SelectAll,SelectPart,SelPrint,Send,%
413     SendData,Set,SetAutoServerSettings,SetData,SetFocus,SetOption,%
414     SetSize,SetText,SetViewport,Show,ShowColor,ShowFont,ShowHelp,%
415     ShowOpen,ShowPrinter,ShowSave,ShowWhatsThis,SignOff,SignOn,Size,%
416     Span,SplitContaining,StartLabelEdit,StartLogging,Stop,%
417     Synchronize,TextHeight,TextWidth,ToDefaults,TwipsToChartPart,%
418     TypeByChartType,Update,UpdateControls,UpdateRecord,UpdateRow,%
419     Upto,WhatsThisMode,WriteProperty,ZOrder},% methods
420     morekeywords=[3]{AccessKeyPress,AfterAddFile,AfterChangeFileName,%
421     AfterCloseFile,AfterColEdit,AfterColUpdate,AfterDelete,%
422     AfterInsert,AfterLabelEdit,AfterRemoveFile,AfterUpdate,%
423     AfterWriteFile,AmbienChanged,ApplyChanges,Associate,%
424     AsyncReadComplete,AxisActivated,AxisLabelActivated,%
425     AxisLabelSelected,AxisLabelUpdated,AxisSelected,%
426     AxisTitleActivated,AxisTitleSelected,AxisTitleUpdated,%
427     AxisUpdated,BeforeClick,BeforeColEdit,BeforeColUpdate,%
428     BeforeConnect,BeforeDelete,BeforeInsert,BeforeLabelEdit,%
429     BeforeLoadFile,BeforeUpdate,ButtonClick,ButtonCompleted,%
430     ButtonGotFocus,ButtonLostFocus,Change,ChartActivated,%
431     ChartSelected,ChartUpdated,Click,ColEdit,Collapse,ColResize,%
432     ColumnClick,Compare,ConfigChageCancelled,ConfigChanged,%
433     ConnectionRequest,DataArrival,DataChanged,DataUpdated,Db1Click,%
434     Deactivate,DeviceArrival,DeviceOtherEvent,DeviceQueryRemove,%
435     DeviceQueryRemoveFailed,DeviceRemoveComplete,DeviceRemovePending,%
436     DevModeChange,Disconnect,DisplayChanged,Dissociate,%

```

```

437 DoGetNewFileName,Done,DonePainting,DownClick,DragDrop,DragOver,%
438 DropDown,EditProperty,EnterCell,EnterFocus,Event,ExitFocus,%
439 Expand,FootnoteActivated,FootnoteSelected,FootnoteUpdated,%
440 GotFocus,HeadClick,InfoMessage,Initialize,IniProperties,%
441 ItemActivated,ItemAdded,ItemCheck,ItemClick,ItemReloaded,%
442 ItemRemoved,ItemRenamed,ItemSeletedected,KeyDown,KeyPress,KeyUp,%
443 LeaveCell,LegendActivated,LegendSelected,LegendUpdated,%
444 LinkClose,LinkError,LinkNotify,LinkOpen,Load,LostFocus,%
445 MouseDown,MouseMove,MouseUp,NodeClick,ObjectMove,%
446 OLECompleteDrag,OLEDragDrop,OLEDragOver,OLEGiveFeedback,%
447 OLESetData,OLEStartDrag,OnAddNew,OnComm,Paint,PanelClick,%
448 PanelDbClick,PathChange,PatternChange,PlotActivated,%
449 PlotSelected,PlotUpdated,PointActivated,PointLabelActivated,%
450 PointLabelSelected,PointLabelUpdated,PointSelected,%
451 PointUpdated,PowerQuerySuspend,PowerResume,PowerStatusChanged,%
452 PowerSuspend,QueryChangeConfig,QueryComplete,QueryCompleted,%
453 QueryTimeout,QueryUnload,ReadProperties,Reposition,%
454 RequestChangeFileName,RequestWriteFile,Resize,ResultsChanged,%
455 RowColChange,RowCurrencyChange,RowResize,RowStatusChanged,%
456 SelChange,SelectionChanged,SendComplete,SendProgress,%
457 SeriesActivated,SeriesSelected,SeriesUpdated,SettingChanged,%
458 SplitChange,StateChanged,StatusUpdate,SysColorsChanged,%
459 Terminate,TimeChanged,TitleActivated,TitleSelected,%
460 TitleActivated,UnboundAddData,UnboundDeleteRow,%
461 UnboundGetRelativeBookmark,UnboundReadData,UnboundWriteData,%
462 Unload,UpClick,Updated,Validate,ValidationError,WillAssociate,%
463 WillChangeData,WillDissociate,WillExecute,WillUpdateRows,%
464 WithEvents,WriteProperties},% VB-events
465 morekeywords=[4]{AppActivate,Base,Beep,Call,Case,ChDir,ChDrive,%
466 Const,Declare,DefBool,DefByte,DefCur,DefDate,DefDbf,DefDec,%
467 DefInt,DefLng,DefObj,DefSng,DefStr,Deftype,DefVar,DeleteSetting,%
468 Dim,Do,Else,ElseIf,End,Enum,Erase,Event,Exit,Explicit,FileCopy,%
469 For,ForEach,Friend,Function,Get,GoSub,GoTo,If,Implements,Kill,%
470 Let,LineInput,Lock,Lset,MkDir,Name,Next,OnError,On,Option,%
471 Private,Property,Public,Put,RaiseEvent,Randomize,ReDim,Rem,%
472 Reset,Resume,Return,Rmdir,Rset,SavePicture,SaveSetting,%
473 SendKeys,SetAttr,Static,Sub,Then,Type,Unlock,Wend,While,Width,%
474 With,Write},% statements
475 sensitive=false,%
476 keywordcomment=rem,%
477 MoreSelectCharTable=\def\lst@BeginKC@{% chmod
478 \lst@ResetToken
479 \lst@BeginComment\lst@GPmode{{\lst@commentstyle}%
480 \lst@Lmodetrue\lst@modetrue}\@empty},%
481 morecomment=[1]{'},%
482 morecomment=[s]{/*}{*/},%
483 morestring=[b]" ,%
484 }[keywords,comments,strings,keywordcomments]
485 </lang1>

```

Thanks to Jonathan de Halleux for reporting a missing comma after `MoreSelectCharTable`, which was the cause of a problem reported by Robert Frank. Martina Hansel also found the bug and the fix.

2.9 Clean

Thanks to José Romildo Malaquias. Markus Pahlow found a missing comma

```

486 <*lang3>
487 %%
488 %% Clean definition (c) 1999 Jos'e Romildo Malaquias
489 %%
490 %% Clean 1.3 : some standard functional language: pure, lazy,
491 %%             polymorphic type system, modules, type classes,
492 %%             garbage collection, functions as first class citizens
493 %%
494 \lst@definlanguage{Clean}%
495 {otherkeywords={:,:=:,::=,::=,::=>,->,<-,<-:,\{,\},\{|,|\},\#\,\\#,|,\&,%
496     [,],!,.,\\,\\,;,_,}%
497 morekeywords={from,definition,implementation,import,module,system,%
498     case,code,if,in,let,let!,of,where,with,infix,infixl,infixr},%
499 morendkeywords={True,False,Start,Int,Real,Char,Bool,String,World,%
500     File,ProcId},%
501 sensitive,%
502 morecomment=[l]//,% missing comma: Markus Pahlow
503 morecomment=[n]{/*}{*/},%
504 morestring=[b]"%
505 }[keywords,comments,strings]%
506 </lang3>

```

2.10 Corba IDL

This language definition is due to Jens T. Berger Thielemann.

```

507 <*lang2>
508 %%
509 %% Corba IDL definition (c) 1999 Jens T. Berger Thielemann
510 %%
511 \lst@definlanguage[CORBA]{IDL}%
512 {morekeywords={any,attribute,boolean,case,char,const,context,default,%
513     double,enum,exception,fixed,float,in,inout,interface,long,module,%
514     native,Object,octet,oneway,out,raises,readonly,sequence,short,%
515     string,struct,switch,typedef,union,unsigned,void,wchar,wstring,%
516     FALSE,TRUE},%
517 sensitive,%
518 moredirectives={define,elif,else,endif,error,if,ifdef,ifndef,line,%
519     include,pragma,undef,warning},%
520 moredelim=*[directive]\#,%
521 morecomment=[l]//,%
522 morecomment=[s]{/*}{*/},%
523 morestring=[b]"%

```

```

524 }[keywords,comments,strings,directives]%
525 </lang2>

```

2.11 C, C++, et al

```
526 <*lang1>
```

Michael Fiedler provided the following list of new introduced keywords for C++11.

```

527 \lst@definelanguage[11]{C++}[ISO]{C++}%
528 {morekeywords={alignas,alignof,char16_t,char32_t,constexpr,%
529 decltype,noexcept,nullptr,static_assert,thread_local},%
530 }%

```

Michael Piefel suggested some more changes and added GNU C++. For compatibility the ‘ANSI’ language is defined in terms of ISO.

```
531 \lst@definelanguage[ANSI]{C++}[ISO]{C++}{C}%
```

Michael Piefel suggested some more changes and added GNU C++.

```

532 \lst@definelanguage[GNU]{C++}[ISO]{C++}%
533 {morekeywords={__attribute__,__extension__,__restrict__,__restrict__,%
534 typeof,__typeof__},%
535 }%

```

```

536 \lst@definelanguage[Visual]{C++}[ISO]{C++}%
537 {morekeywords={__asm,__based,__cdecl,__declspec,dlllexport,%
538 dllimport,__except,__fastcall,__finally,__inline,__int8,__int16,%
539 __int32,__int64,naked,__stdcall,thread,__try,__leave},%
540 }%

```

```

541 \lst@definelanguage[ISO]{C++}[ANSI]{C}%
542 {morekeywords={and,and_eq,asm,bad_cast,bad_typeid,bitand,bitor,bool,%
543 catch,class,compl,const_cast,delete,dynamic_cast,explicit,export,%
544 false,friend,inline,mutable,namespace,new,not,not_eq,operator,or,%
545 or_eq,private,protected,public,reinterpret_cast,static_cast,%
546 template,this,throw,true,try,typeid,type_info,typename,using,%
547 virtual,wchar_t,xor,xor_eq},%
548 }%

```

```
549 </lang1>
```

Objective-C is due to Detlev Dröge.

```
550 <*lang1>
```

```

551 %%
552 %% Objective-C definition (c) 1997 Detlev Droege
553 %%
554 \lst@definelanguage[Objective]{C}[ANSI]{C}
555 {morekeywords={bycopy,id,in,inout,oneway,out,self,super,%
556 @class,@defs,@encode,@end,@implementation,@interface,@private,%
557 @protected,@protocol,@public,@selector},%
558 moredirectives={import}}%
559 }%
560 </lang1>

```

Jörg Viermann provided the keywords for Handel-C.

```
561 <*lang1>
562 %%
563 %% Handel-C definition, refer http://www.celoxica.com
564 %%
565 \lst@definlanguage[Handel]{C}[ANSI]{C}
566 {morekeywords={assert,chan,chanin,chanout,clock,delay,expr,external,%
567     external_divide,family,ifselect,in,inline,interface,internal,%
568     internal_divid,intwidth,let,macro,mpram,par,part,prialt,proc,ram,%
569     releasesema,reset,rom,select,sema,set,seq,shared,signal,try,%
570     reset,trysema,typeof,undefined,width,with,wom},%
571 }%
572 </lang1>
573 <*lang1>
574 \lst@definlanguage[ANSI]{C}%
575 {morekeywords={auto,break,case,char,const,continue,default,do,double,%
576     else,enum,extern,float,for,goto,if,int,long,register,return,%
577     short,signed,sizeof,static,struct,switch,typedef,union,unsigned,%
578     void,volatile,while},%
579 sensitive,%
580 morecomment=[s]{/*}{*/},%
581 morecomment=[l]//,% nonstandard
582 morestring=[b]" ,%
583 morestring=[b]' ,%
584 moredelim=[directive]\#,%
585 moredirectives={define,elif,else,endif,error,if,ifdef,ifndef,line,%
586     include,pragma,undef,warning}%
587 }[keywords,comments,strings,directives]%
588 </lang1>
589 <*lang1>
    Thanks go to Martin Brodbeck.
590 %%
591 %% C-Sharp definition (c) 2002 Martin Brodbeck
592 %%
593 \lst@definlanguage[Sharp]{C}%
594 {morekeywords={abstract,base,bool,break,byte,case,catch,char,checked,%
595     class,const,continue,decimal,default,delegate,do,double,else,%
596     enum,event,explicit,extern,false,finally,fixed,float,for,foreach,%
597     goto,if,implicit,in,int,interface,internal,is,lock,long,%
598     namespace,new,null,object,operator,out,override,params,private,%
599     protected,public,readonly,ref,return,sbyte,sealed,short,sizeof,%
600     static,string,struct,switch,this,throw,true,try,typeof,uint,%
601     ulong,unchecked,unsafe,ushort,using,virtual,void,while,%
602     as,volatile,stackalloc},% Kai K\"ohne
603 sensitive,%
604 morecomment=[s]{/*}{*/},%
```

```

605   morecomment=[l]//,%
606   morestring=[b]"
607   }[keywords,comments,strings]%
608 </lang1>

```

2.12 Caml and Objective Caml

Patrick Cousot mailed me the definition. Tom Hirschowitz added two keywords.

```

609 <*lang2>
610 %%
611 %% (Objective) Caml definition (c) 1999 Patrick Cousot
612 %%
613 %% Objective CAML and Caml light are freely available, together with a
614 %% reference manual, at URL ftp.inria.fr/lang/caml-light for the Unix,
615 %% Windows and Macintosh OS operating systems.
616 %%
617 \lst@definlanguage[Objective]{Caml}[light]{Caml}
618   {deletekeywords={not,prefix,value,where},%
619     morekeywords={assert,asr,class,closed,constraint,external,false,%
620       functor,include,inherit,land,lazy,lor,lsl,lsr,lxor,method,mod,%
621       module,new,open,parser,private,sig,struct,true,val,virtual,when,%
622       object,ref},% TH
623   }%
624 \lst@definlanguage[light]{Caml}
625   {morekeywords={and,as,begin,do,done,downto,else,end,exception,for,%
626     fun,function,if,in,let,match,mutable,not,of,or,prefix,rec,then,%
627     to,try,type,value,where,while,with},%
628     sensitive,%
629     morecomment=[n]{(*){*}},%
630     morestring=[b]" ,%
631     moredelim=[directive]\#,%
632     moredirectives={open,close,include}%
633   }[keywords,comments,strings,directives]%
634 </lang2>

```

2.13 Common Intermediate Language

This language definition for CIL (Common Intermediate Language, part of Microsoft's .NET interface) was provided by Olaf Conradi Akim Demaille pointed out that the support for Algol was broken, but that came from a long missing '@' in the following `lst@definlanguage`.

```

635 <*lang3>
636 \lst@definlanguage{CIL}%
637   {morekeywords=[i]{assembly,beforefieldinit,class,default,cdecl,cil,corflags,%
638     culture,custom,data,entrypoint,fastcall,field,file,%
639     hidebysig,hash,il,imagebase,locals,managed,marshall,%

```

```

640         maxstack,mresource,method,module,namespace,publickey,%
641         stdcall,subsystem,thiscall,unmanaged,vararg,ver,vtfixup,%
642     % types
643         bool,char,float32,float64,int,int8,int16,int32,%
644         int64,method,native,object,string,modopt,modreq,pinned,%
645         typedref,valuetype,unsigned,void,%
646     % defining types
647         abstract,ansi,auto,autochar,beforefieldinit,boxed,class,%
648         explicit,extends,implements,interface,famandassem,family,%
649         famorassem,inherits,nested,override,pack,private,property,%
650         public,rtspecialname,sealed,sequential,serializable,size,%
651         specialname,static,unicode,%
652     % postfix
653         algorithm,alignment,extern,init,from,nometadata,with},%
654     morekeywords=[2]{add,and,arglist,beq,bge,bgt,ble,blt,bne,br,break,brfalse,%
655         brtrue,call,calli,ceq,cgt,ckfinite,clt,conv,cpblk,div,%
656         dup,endfilter,endfinally,initblk,jmp,ldarg,ldarga,ldc,%
657         ldftn,ldind,ldloc,ldloca,ldnull,leave,localloc,mul,neg,%
658         nop,not,or,pop,rem,ret,shl,shr,starg,stind,stloc,sub,%
659         switch,xor,%
660     % prefix
661         tail,unaligned,volatile,%
662     % postfix
663         un,s,ovf,%
664     % object
665         box,callvirt,castclass,cpobj,ctor,ctor,initobj,isinst,%
666         ldelem,ldelema,ldfld,ldflda,ldlen,llobj,ldsfld,ldsflda,%
667         ldstr,ldtoken,ldvirtftn,mkrefany,newarr,newobj,refanytype,%
668         refanyval,rethrow,sizeof,stelem,stfld,stobj,stsfld,throw,%
669         unbox},%
670     sensitive=true,%
671     morecomment=[1]{//},%
672     morestring=[b]"%
673 }[keywords,comments,strings]%
674 </lang3>

```

2.14 Cobol

Keywords are not marked if their names are broken by EOL, for example DEBUG-CONTENTS. Sometimes portions of a string are not printed as a string. This happens if the double quote is not doubled to insert a quote, e.g. `"bad" cobol` won't be printed correctly.

```

675 <*lang2>
676 \lst@definelanguage[ibm]{Cobol}[1985]{Cobol}%
677     {morekeywords={ADDRESS,BEGINNING,COMP-3,COMP-4,COMPUTATIONAL,%
678         COMPUTATIONAL-3,COMPUTATIONAL-4,DISPLAY-1,EGCS,EJECT,ENDING,%
679         ENTRY,GOBACK,ID,MORE-LABELS,NULL,NULLS,PASSWORD,RECORDING,%
680         RETURN-CODE,SERVICE,SKIP1,SKIP2,SKIP3,SORT-CONTROL,SORT-RETURN,%

```

```

681     SUPPRESS, TITLE, WHEN-COMPILED}, %
682 }%

683 \lst@definlanguage[1985]{Cobol}[1974]{Cobol}%
684 {morekeywords={ALPHABET, ALPHABETIC-LOWER, ALPHABETIC-UPPER, %
685     ALPHANUMERIC, ALPHANUMERIC-EDITED, ANY, CLASS, COMMON, CONTENT, %
686     CONTINUE, DAY-OF-WEEK, END-ADD, END-CALL, END-COMPUTE, END-DELETE, %
687     END-DIVIDE, END-EVALUATE, END-IF, END-MULTIPLY, END-PERFORM, END-READ, %
688     END-RECEIVE, END-RETURN, END-REWRITE, END-SEARCH, END-START, %
689     END-STRING, END-SUBTRACT, END-UNSTRING, END-WRITE, EVALUATE, EXTERNAL, %
690     FALSE, GLOBAL, INITIALIZE, NUMERIC-EDITED, ORDER, OTHER, %
691     PACKED-DECIMAL, PADDING, PURGE, REFERENCE, RELOAD, REPLACE, STANDARD-1, %
692     STANDARD-2, TEST, THEN, TRUE}, %
693 }%

694 \lst@definlanguage[1974]{Cobol}%
695 {morekeywords={ACCEPT, ACCESS, ADD, ADVANCING, AFTER, ALL, ALPHABETIC, ALSO, %
696     ALTER, ALTERNATE, AND, ARE, AREA, AREAS, ASCENDING, ASSIGN, AT, AUTHOR, %
697     BEFORE, BINARY, BLANK, BLOCK, BOTTOM, BY, CALL, CANCEL, CD, CF, CH, %
698     CHARACTER, CHARACTERS, CLOCK-UNITS, CLOSE, COBOL, CODE, CODE-SET, %
699     COLLATING, COLUMN, COMMA, COMMUNICATION, COMP, COMPUTE, CONFIGURATION, %
700     CONTAINS, CONTROL, CONTROLS, CONVERTING, COPY, CORR, CORRESPONDING, %
701     COUNT, CURRENCY, DATA, DATE, DATE-COMPILED, DATE-WRITTEN, DAY, DE, %
702     DEBUG-CONTENTS, DEBUB-ITEM, DEBUG-LINE, DEBUG-NAME, DEBUG-SUB1, %
703     DEBUG-SUB2, DEBUG-SUB3, DEBUGGING, DECIMAL-POINT, DECLARATIVES, %
704     DELETE, DELIMITED, DELIMITER, DEPENDING, DESCENDING, DESTINATION, %
705     DETAIL, DISABLE, DISPLAY, DIVIDE, DIVISION, DOWN, DUPLICATION, DYNAMIC, %
706     EGI, ELSE, EMI, ENABLE, END, END-OF-PAGE, ENTER, ENVIRONMENT, EOP, EQUAL, %
707     ERROR, ESI, EVERY, EXCEPTION, EXIT, EXTEND, FD, FILE, FILE-CONTROL, %
708     FILLER, FINAL, FIRST, FOOTING, FOR, FROM, GENERATE, GIVING, GO, GREATER, %
709     GROUP, HEADING, HIGH-VALUE, HIGH-VALUES, I-O, I-O-CONTROL, %
710     IDENTIFICATION, IF, IN, INDEX, INDEXED, INDICATE, INITIAL, INITIATE, %
711     INPUT, INPUT-OUTPUT, INSPECT, INSTALLATION, INTO, INVALID, IS, JUST, %
712     JUSTIFIED, KEY, LABEL, LAST, LEADING, LEFT, LENGTH, LESS, LIMIT, LIMITS, %
713     LINAGE, LINAGE-COUNTER, LINE, LINE-COUNTER, LINES, LINKAGE, LOCK, %
714     LOW-VALUE, LOW-VALUES, MEMORY, MERGE, MESSAGE, MODE, MODULES, MOVE, %
715     MULTIPLE, MULTIPLY, NATIVE, NEGATIVE, NEXT, NO, NOT, NUMBER, NUMERIC, %
716     OBJECT-COMPUTER, OCCURS, OF, OFF, OMITTED, ON, OPEN, OPTIONAL, OR, %
717     ORGANIZATION, OUTPUT, OVERFLOW, PAGE, PAGE-COUNTER, PERFORM, PF, PH, PIC, %
718     PICTURE, PLUS, POINTER, POSITION, PRINTING, POSITIVE, PRINTING, %
719     PROCEDURE, PROCEDURES, PROCEED, PROGRAM, PROGRAM-ID, QUEUE, QUOTE, %
720     QUOTES, RANDOM, RD, READ, RECEIVE, RECORD, RECORDING, RECORDS, REDEFINES, %
721     REEL, REFERENCES, RELATIVE, RELEASE, REMAINDER, REMOVAL, RENAMES, %
722     REPLACING, REPORT, REPORTING, REPORTS, RERUN, RESERVE, RESET, RETURN, %
723     REVERSED, REWIND, REWRITE, RF, RH, RIGHT, ROUNDED, RUN, SAME, SD, SEARCH, %
724     SECTION, SECURITY, SEGMENT, SEGMENT-LIMIT, SELECT, SEND, SENTENCE, %
725     SEPARATE, SEQUENCE, SEQUENTIAL, SET, SIGN, SIZE, SORT, SORT-MERGE, %
726     SOURCE, SOURCE-COMPUTER, SPACE, SPACES, SPECIAL-NAMES, STANDARD, START, %
727     STATUS, STOP, STRING, SUB-QUEUE-1, SUB-QUEUE-2, SUB-QUEUE-3, SUBTRACT, %
728     SUM, SYMBOLIC, SYNC, SYNCHRONIZED, TABLE, TALLYING, TAPE, TERMINAL, %
729     TERMINATE, TEXT, THAN, THROUGH, THRU, TIME, TIMES, TO, TOP, TRAILING, TYPE, %

```

```

730     UNIT,UNSTRING,UNTIL,UP,UPON,USAGE,USE,USING,VALUE,VALUES,VARYING,%
731     WHEN,WITH,WORDS,WORKING-STORAGE,WRITE,ZERO,ZEROES,ZEROS},%
732     alsodigit=-,%
733     sensitive=f,% ???
734     morecomment=[f] [commentstyle] [6]*,%
735     morestring=[d] "% ??? doubled
736     }[keywords,comments,strings]%

```

commentstyle (not the surrounding brackets) have been added after a bug report by Stephen Reindl.

```
737 </lang2>
```

2.15 Comal 80

The data is from

- BORGE R. CHRISTENSEN: **Strukturierte Programmierung mit COMAL 80** [aus dem Dänischen übertragen und bearbeitet von Margarete Kragh]; 2., verb. Auflage – München; Wien: Oldenburg, 1985; ISBN 3-486-26902-X.

```

738 <*lang3>
739 \lst@definlanguage{Comal 80}%
740 {morekeywords={AND,AUTO,CASE,DATA,DEL,DIM,DIV,DO,ELSE,ENDCASE,ENDIF,%
741     ENDPROC,ENDWHILE,EOD,EXEC,FALSE,FOR,GOTO,IF,INPUT,INT,LIST,LOAD,%
742     MOD,NEW,NEXT,NOT,OF,OR,PRINT,PROC,RANDOM,RENUM,REPEAT,RND,RUN,%
743     SAVE,SELECT,STOP,TAB,THEN,TRUE,UNTIL,WHILE,ZONE},%
744     sensitive=f,% ???
745     morecomment=[l]//,%
746     morestring=[d] "%
747     }[keywords,comments,strings]%
748 </lang3>

```

2.16 COMMAND.COM Batch Files

This definition for DOS and Windows batch files is from Stephan Hennig.

```

749 <*lang3>
750 \lst@definlanguage[WinXP]{command.com}%
751 {morekeywords={assoc,at,attrib,bootcfg,break,caccls,call,cd,chcp,chdir,%
752     chkdsk,chkntfs,cls,cmd,cmdextversion,color,comp,compact,convert,copy,%
753     date,defined,del,dir,diskcomp,diskcopy,do,doskey,echo,else,endlocal,%
754     erase,errorlevel,exist,exit,fc,find,findstr,for,format,ftype,goto,%
755     graftabl,help,if,in,label,md,mkdir,mode,more,move,not,off,path,%
756     pause,popd,print,prompt,pushd,rd,recover,ren,rename,replace,rmdir,%
757     set,setlocal,shift,sort,start,subst,time,title,tree,type,ver,%
758     verify,vol,xcopy},%
759     sensitive=false,%
760     alsoother={@},%

```

```

761  alsoletter={\%~:-/},%
762  morecomment=[1]{rem},%
763  morecomment=[1]{reM},%
764  morecomment=[1]{rEm},%
765  morecomment=[1]{rEM},%
766  morecomment=[1]{Rem},%
767  morecomment=[1]{ReM},%
768  morecomment=[1]{REm},%
769  morecomment=[1]{REM},%
770  morestring=[d]"%
771 }[keywords,comments,strings]%
772 </lang3>

```

2.17 Comsol Multiphysics

Comsol Multiphysics (Prior to version 3.2 known as Femlab) can be used standalone or as an extension to MatLab. This definition is due to Martin Heller.

Unfortunately, there is a conflict in that Comsol is case-insensitive, whereas Matlab is case-sensitive; listings does not currently support different case-sensitivities in the same listing.

```

773 <*lang3>
774 \lst@definlanguage{Comsol}%
775  {morekeywords={%
776    adaptio,n,arc1,arc2,arrayr,assemble,assemnit,beziercurve2,block2,%
777    block3,bsplinecurve2,bsplinecurve3,bsplinesurf3,bypassplot,cardg,%
778    ccoeffgroup,chamfer,checkgeom,circ1,circ2,coeff2cell,comsol,%
779    cone2,cone3,Contents,createhexes,createprisms,createquads,csgbl2,%
780    csgbl3,csgcmpbz,csgimplbz,csginitaux,csginitnr,csgpropoutil,%
781    csgrbconv,csgunique3,csguniquep,csgversion,csgvvovl,curve2,%
782    curve3,cylinder2,cylinder3,dat2str,defastget,display,drawgetobj,%
783    drawreobj,drawsetobj,dst,duplicate,dxflayers,dxfread,dxfwrite,%
784    econe2,econe3,eigloop,elconstr,elcplbnd,elcplextr,elcplproj,%
785    elcplscalar,elempty,elemreobj,eleqc,eleqw,elevate,elgeom,ellip1,%
786    ellip2,ellipsoid2,ellipsoid3,ellipsoidgen_fl23,elmat,elovar,%
787    elpconstr,elshape,elvar,elvarm,embed,extrude,face3,faceprim3,%
788    fastsetop,fem2jxfem,femblocksu,femdiff,femeig,femexport,femgui,%
789    femimport,femiter,femlab,femlin,femmesh,femmeshexp,femnlin,%
790    femplot,femfun,femsim,femsimlowlevel,femsimserver,femsol,%
791    femsolver,femstate,femstruct,femtime,femwave,festyle,fieldnames,%
792    fillet,fl1d,fl2d,fl3d,flaction,flafun,flappconvert,flappobj,%
793    flaxisequal,flbase,flbinary,flc1hs,flc2hs,flcanpnt,flcell2draw,%
794    flclear,flcolorbar,flcompact,flconeplot,flcontour2mesh,%
795    flcontour2meshaux,flconvreact,flconvreact1d,flconvreact2d,%
796    flconvreact3d,flcyl,fldc1hs,fldc2hs,fldegree,fldegreer3,%
797    fldegreet3,fldimvarset,fldisp,fldraw2cell,fldrawnow,fldsmhs,%
798    fldsmhsign,flvalmat,flexch,flexchprop,flfastgeom,flform,flgc,%
799    flgco,flgdconv,flgeom2cellstr,flgeomadj,flgeomarcize,flgeomec,%
800    flgeomed,flgeomepol,flgeomex,flgeomfc,flgeomfd,flgeomfdp,%

```

```

801 flgeomff1,flgeomff2,flgeomfn,flgeomfs,flgeomgetlocalsys,%
802 flgeominit,flgeominitprop,flgeomittransform,flgeomloft,flgeommesh,%
803 flgeomnbs,flgeomnes,flgeomnmr,flgeomnv,flgeompsinv,flgeomrmsing,%
804 flgeomrotp,flgeomsd,flgeomsdim,flgeomse,flgeomsf2,flgeomspm,%
805 flgeomtransform,flgeomud,flgeomvtx,flgetdraw,flheat,flheat1d,%
806 flheat2d,flheat3d,flhelmholtz,flhelmholtz1d,flhelmholtz2d,%
807 flhelmholtz3d,flim2curve,flinterp1,fliscont,flismember,%
808 flisnumeric,fljaction,fllaplace,fllaplace1d,fllaplace2d,%
809 fllaplace3d,flload,flloadfl,flloadmatfile,flloadmfile,%
810 fllobj2cellstr,flmakeevalstr,flmapsoljac,flmat2str,flmatch,%
811 flmesh2spline,flmesh2splineaux,flml65setup,flngdof,flnull,%
812 flnullorth,flpde,flpdeac,flpdec,flpdec1d,flpdec2d,flpdec3d,%
813 flpdedc,flpdedc2d,flpdedc3d,flpdedf,flpdedf1d,flpdedf2d,%
814 flpdedf3d,flpdees,flpdees2d,flpdees3d,flpdeg,flpdeg1d,flpdeg2d,%
815 flpdeg3d,flpdeht,flpdeht1d,flpdeht2d,flpdeht3d,flpdems,flpdems2d,%
816 flpdems3d,flpdens,flpdens2d,flpdens3d,flpdepn,flpdeps,flpdesm3d,%
817 flpdew,flpdew1d,flpdew2d,flpdew3d,flpdewb,flpdewb1d,flpdewb2d,%
818 flpdewb3d,flpdewc,flpdewc1d,flpdewc2d,flpdewc3d,flpdewe,%
819 flpdewe3d,flpdewp,flpdewp2d,flpdewp3d,flplot,flpoisson,%
820 flpoisson1d,flpoisson2d,flpoisson3d,flpric2,flpric3,flreobj,%
821 flreport,flresolvepath,flsave,flschrodinger,flschrodinger1d,%
822 flschrodinger2d,flschrodinger3d,flsde,flsdp,flsdt,flsetalpha,%
823 flsetdraw,flsmhs,flsmsign,flspnull,fltherm_cond1,fltrg,flversion,%
824 flversions,flverver,flwave,flwave1d,flwave2d,flwave3d,%
825 flwriteghist,formstr,gdsread,gencyl2,gencyl3,genextrude,%
826 genextrudeaux,geom,geom0,geom0get,geom1,geom1get,geom2,geom2get,%
827 geom3,geom3get,geom3j2m,geom3m2j,geomaddlblmargin,geomanalyze,%
828 geomarrayr,geomassign,geomcoerce,geomcomp,geomconnect,geomcopy,%
829 geomcsg,geomdel,geomedit,geomexport,geomfile,geomget,%
830 geomgetlabels,geomgetwrkpln,geomimport,geominfo,geominfoaux,%
831 geomlblplot,geomload,geomnumparse,geomobject,geomparse,geomplot,%
832 geomplot1,geomplot2,geomplot3,geomposition,geomproputil,%
833 geomreconstruct,geomreobj,geomserver,geomspline,geomsurf,%
834 geomupdate,get,getfemgeom,getisocurve,getjptr,getmesh,getsdim,%
835 getvmatrixexch,handlesolnumstr,helix1,helix2,helix3,hexahedron2,%
836 hexahedron3,histfrommat,idst,igesread,importplotdata,isempty,%
837 isfield,isfunc,isscript,javaclass,jproputil,jptr2geom,jptrgeom1,%
838 jptrgeom1_fl23,jptrgeom2,jptrgeom2_fl23,jptrgeom3,jptrgeom3_fl23,%
839 keiter,line1,line2,loadobj,loft,matlabinterpdata,mesh2geom,%
840 meshassign,meshcaseadd,meshcasedel,meshcaseutil,meshcheck,%
841 meshembed,meshenrich,meshenrich1,meshenrich2,meshenrich3,%
842 meshexport,meshextend,meshextrude,meshget,meshimport,meshinit,%
843 meshintegrate,meshmap,meshoptim,meshparse,meshplot,meshplot1,%
844 meshplot2,meshplot3,meshplotproputil,meshpoi,meshproputil,%
845 meshptplot,meshqual,meshrefine,meshrevolve,meshsmooth,%
846 meshsmooth2,meshsweep,meshvolume,minus,mirror,mkreflparams,%
847 mmsolve,modetype,move,moveglobalfields,mphproputil,mtimes,%
848 multiphysics,mypostinterp,notscript,onlyyelsconstr,outassign,%
849 paramgeom,pde2draw,pde2equ,pde2fem,pde2geom,pdeblxpd,plus,point1,%
850 point2,point3,poisson,poly1,poly2,postanim,postapplysettings,%

```

```

851     postarrow,postarrowbnd,postcolorbar,postcont,postcontdomind,%
852     postcoord,postcopyprop,postcrossplot,postdistrprops,posteval,%
853     postflow,postfnd,postgeomplot,postgetfem,postgetstylecolor,%
854     postglobaleval,postglobalplot,postgp,postinit,postint,postinterp,%
855     postiso,postlin,postmakecontcol,postmax,postmaxmin,postmin,%
856     postmkcontbar,postmknormexpr,postmovie,postnewplot,%
857     postoldmaxminprops,postpd2pm,postplot,postplotconstants,%
858     postpm2pd,postprinc,postprincbnd,postprogui,postpropoutil,%
859     postslice,postsurf,posttet,posttitle,print2file,pyramid2,%
860     pyramid3,rect1,rect2,restorefields,revolve,rmfield,rotate,%
861     rotmatrix,scale,serialize,set,setmesh,sh2str,sharg_2_5,shbub,%
862     shdisc,shdiv,shherm,shlag,shvec,simplecoerce,simreobj,slblocks,%
863     solassign,solid0,solid1,solid2,solid3,solidprim3,solpropoutil,%
864     solsize,solveraddcases,sphere2,sphere3,spiceimport,splineaux,%
865     split,splittoprim,square1,square2,stlread,submode,submodes,%
866     subsasgn,subsref,tangent,taucs,tetrahedron2,tetrahedron3,%
867     tobsplines,torus2,torus3,transform,update,updateassoc,%
868     updateassocinfo,updatefem,updateguistruct,updateobj,vrmlread,%
869     xmeshinfo,xmeshinit},%
870     sensitive=false,%
871     morecomment=[1]\%,%
872     morestring=[m]'%
873 }[keywords,comments,strings]%
874  $\langle$ /lang3

```

2.18 bash, csh, and sh

csh is from Kai Below, but he pointed out that some keywords are probably missing.

```

875  $\langle$ *lang1
876 %%
877 %% csh definition (c) 1998 Kai Below
878 %%
879 \lst@definlanguage{csh}
880 {morekeywords={alias,awk,cat,echo,else,end,endif,endsw,exec,exit,%
881     foreach,glob,goto,history,if,logout,nice,nohup,onintr,repeat,sed,%
882     set,setenv,shift,source,switch,then,time,while,umask,unalias,%
883     unset,wait,while,@,env,argv,child,home,ignoreeof,noclobber,%
884     noglob,nomatch,path,prompt,shell,status,verbose,print,printf,%
885     sqrt,BEGIN,END},%
886     morecomment=[1]\#,%
887     morestring=[d]"%
888 }[keywords,comments,strings]%

```

Thanks to Riccardo Murri for the following two definitions. Scott Pakin pointed out some missing keywords (`elif`, `in` for `sh`, `caller`, `compopt`, `coproc`, `dirs`, `help`, `mapfile`, `readarray` for `bash`) to the current maintainer. The `sh` list of keywords was checked against the “Manual of the Bourne Shell on Version 7”, found

at <http://www.in-ulm.de/~mascheck/bourne/v7/>, last visited on 2014/09/06.

```
889 %%
890 %% bash,sh definition (c) 2003 Riccardo Murri <riccardo.murri@gmx.it>
891 %%
892 \lst@definlanguage{bash}[] {sh}%
893 {morekeywords={alias,bg,bind,builtin,caller,command,compgen,compopt,%
894     complete,coproc,declare,disown,dirs,enable,fc,fg,help,history,%
895     jobs,let,local,logout,mapfile,printf,pushd,popd,readarray,select,%
896     set,suspend,shopt,source,times,type,typeset,ulimit,unalias,wait},%
897 }%
898 \lst@definlanguage{sh}%
899 {morekeywords={awk,break,case,cat,cd,continue,do,done,echo,elif,else,%
900     env,esac,eval,exec,exit,export,expr,false,fi,for,function,getopts,%
901     hash,history,if,in,kill,login,newgrp,nice,nohup,ps,pwd,read,%
902     readonly,return,set,sed,shift,test,then,times,trap,true,type,%
903     ulimit,umask,unset,until,wait,while},%
904     morecomment=[l]\#,%
905     morestring=[d]"%
906 }[keywords,comments,strings]%
907 </lang1
```

Jobst Hoffmann copied the definition of a style for printing Fortran code to a style for printing shell programs:

```
908 <*bash-prf>
909 \usepackage[rgb, x11names]{xcolor}
910
911 % common settings
912 \lstset{%
913     frame=tlb,%           the frame is open on the right side
914     resetmargins=false,%
915     rulesepcolor=\color{black},%
916     numbers=left,%       % left
917     numberstyle=\tiny,%
918     numbersep=5pt,%
919     firstnumber=1,%
920     stepnumber=5,%
921     columns=fixed,%     % to prevent inserting spaces
922     fontadjust=true,%
923     keepspaces=true,%
924     basewidth=0.5em,%
925     captionpos=t,%
926     abovecaptionskip=\smallskipamount,% same amount as default
927     belowcaptionskip=\smallskipamount,% in caption package
928 }
929 % settings for colored printing
930 \lstdefinestyle{bash}{%
931     backgroundcolor=\color{yellow!10},%
932     basicstyle=\small\ttfamily,%
933     identifierstyle=\color{black},%
```

```

934 keywordstyle=\color{blue},%
935 keywordstyle={[2]\color{cyan}},%
936 keywordstyle={[3]\color{olive}},%
937 stringstyle=\color{teal},%
938 commentstyle=\itshape\color{orange},%
939 }%
940 % settings for back and white printing
941 \lstdefinestyle{bashbw}{%
942   backgroundcolor={},%
943   basicstyle=\small\ttfamily,%
944   identifierstyle={},%
945   keywordstyle=\bfseries,%
946   stringstyle=\itshape,%
947   commentstyle=\slshape,%
948   rulesepcolor=\color{black},%
949 }%

```

This code is provided in the file `listings-bash.prf`, see section 2.4.1 (Preferences) of the listings documentation.

```

950 </bash-prf>

```

2.19 Delphi

I took the data from Delphi 1.0 (?) online help. Christian Gudrian provided the ‘double slash’ comment.

```

951 <*lang2>
952 \lst@definelanguage{Delphi}%
953 {morekeywords={and,as,asm,array,begin,case,class,const,constructor,%
954   destructor,div,do,downto,else,end,except,exports,file,finally,%
955   for,function,goto,if,implementation,in,inherited,inline,%
956   initialization,interface,is,label,library,mod,nil,not,object,of,%
957   or,packed,procedure,program,property,raise,record,repeat,set,%
958   shl,shr,string,then,to,try,type,unit,until,uses,var,while,with,%
959   xor,%
960   absolute,abstract,assembler,at,cdecl,default,dynamic,export,%
961   external,far,forward,index,name,near,nodefult,on,override,%
962   private,protected,public,published,read,resident,storedDir,%
963   virtual,write},%
964 moreendkeywords={Abs,AddExitProc,Addr,AllocMem,AnsiCompareStr,%
965   AnsiCompareText,AnsiLowerCase,AnsiUpperCase,Append,AppendStr,%
966   ArcTan,AssignCrt,Assigned,AssignFile,BlockRead,BlockWrite,Break,%
967   ChangeFileExt,ChDir,Chr,CloseFile,ClrEol,ClrScr,Concat,Continue,%
968   Copy,Cos,CSeg,CursorTo,Date,DateTimeToFileDate,DateTimeToStr,%
969   DateTimeToString,DateToStr,DayOfWeek,Dec,DecodeDate,DecodeTime,%
970   Delete,DeleteFile,DiskFree,DiskSize,Dispose,DisposeStr,%
971   DoneWinCrt,DSeg,EncodeDate,EncodeTime,Eof,Eoln,Erase,Exclude,%
972   Exit,Exp,ExpandFileName,ExtractFileExt,ExtractFileName,%
973   ExtractFilePath,FileAge,FileClose,FileDateToDateTime,FileExists,%
974   FileGetAttr,FileGetDate,FileOpen,FilePos,FileRead,FileSearch,%

```

```

975     FileSeek,FileSetAttr,FileSetDate,FileSize,FillChar,FindClose,%
976     FindFirst,FindNext,FloatToDecimal,FloatToStrF,FloatToStr,%
977     FloatToText,FloatToTextFmt,Flush,FmtLoadStr,FmtStr,Format,%
978     FormatBuf,FormatDateTime,FormatFloat,Frac,Free,FreeMem,GetDir,%
979     GetMem,GotoXY,Halt,Hi,High,Inc,Include,InitWinCrt,Insert,Int,%
980     IntToHex,IntToStr,IOResult,IsValidIdent,KeyPressed,Length,Ln,Lo,%
981     LoadStr,Low,LowerCase,MaxAvail,MemAvail,MkDir,Move,New,NewStr,%
982     Now,Odd,Ofs,Ord,ParamCount,ParamStr,Pi,Pos,Pred,Ptr,Random,%
983     Randomize,Read,ReadBuf,ReadKey,ReadLn,ReAllocMem,Rename,%
984     RenameFile,Reset,Rewrite,Rmdir,Round,RunError,ScrollTo,Seek,%
985     SeekEof,SeekEoln,Seg,SetTextBuf,Sin,SizeOf,SPtr,Sqr,Sqrt,SSeg,%
986     Str,StrCat,StrComp,StrCopy,StrDispose,StrECopy,StrEnd,StrFmt,%
987     StrLCat,StrLComp,StrLComp,StrLCopy,StrLen,StrLFmt,StrLComp,%
988     StrLower,StrMove,StrNew,StrPas,StrPCopy,StrPos,StrScan,StrRScan,%
989     StrToDate,StrToDateTime,StrToFloat,StrToInt,StrToIntDef,%
990     StrToTime,StrUpper,Succ,Swap,TextToFloat,Time,TimeToStr,%
991     TrackCursor,Trunc,Truncate,TypeOf,UpCase,UpperCase,Val,WhereX,%
992     WhereY,Write,WriteBuf,WriteChar,Writeln},%
993     sensitive=f,%
994     morecomment=[s]{(*){*)},%
995     morecomment=[s]{\}{\},%
996     morecomment=[l]{//},% 2001 Christian Gudrian
997     morestring=[d]'%
998 }[keywords,comments,strings]%
999 </lang2>

```

2.20 Eiffel

Data is from

- BERTRAND MEYER: **Eiffel: the language**; Prentice Hall International (UK) Ltd, 1992; ISBN 0-13-247925-7.

```

1000 <*lang2>
1001 \lst@definelanguage{Eiffel}%
1002 {morekeywords={alias,all,and,as,BIT,BOOLEAN,CHARACTER,check,class,%
1003     creation,Current,debug,deferred,do,DOUBLE,else,elseif,end,%
1004     ensure,expanded,export,external,false,feature,from,frozen,if,%
1005     implies,indexing,infix,inherit,inspect,INTEGER,invariant,is,%
1006     like,local,loop,NONE,not,obsolete,old,once,or,POINTER,prefix,%
1007     REAL,redefine,rename,require,rescue,Result,retry,select,%
1008     separate,STRING,strip,then,true,undefine,unique,until,variant,%
1009     when,xor},%
1010     sensitive,%
1011     morecomment=[l]--,%
1012     morestring=[d]" ,%
1013 }[keywords,comments,strings]%

```

The key=value stringtest=false has been removed after a bug report from Xavier Crégut.

1014 \langle /lang2 \rangle

2.21 Elan

The data come from

- LEO H. KLINGEN, JOCHEN LIEDTKE: **Programmieren mit ELAN**; B.G. Teubner, Stuttgart 1983; ISBN 3-519-02507-8.

1015 \langle *lang3 \rangle

```
1016 \lst@definlanguage{Elan}%
1017 {morekeywords={ABS,AND,BOOL,CAND,CASE,CAT,COLUMNS,CONCR,CONJ,CONST,%
1018     COR,DECR,DEFINES,DET,DIV,DOWNTO,ELIF,ELSE,END,ENDIF,ENDOP,%
1019     ENDPACKET,ENDPROC,ENDREP,ENDSELECT,FALSE,FI,FILE,FOR,FROM,IF,%
1020     INCR,INT,INV,LEAVE,LENGTH,LET,MOD,NOT,OF,OP,OR,OTHERWISE,PACKET,%
1021     PROC,REAL,REP,REPEAT,ROW,ROWS,SELECT,SIGN,STRUCT,SUB,TEXT,THEN,%
1022     TRANSP,TRUE,TYPE,UNTIL,UPTO,VAR,WHILE,WITH,XOR,%
1023     maxint,sign,abs,min,max,random,initializerandom,subtext,code,%
1024     replace,text,laenge,pos,compress,change,maxreal,smallreal,floor,%
1025     pi,e,ln,log2,log10,sqrt,exp,tan,tand,sin,sind,cos,cosd,arctan,%
1026     arctand,int,real,lastconversionok,put,putline,line,page,get,%
1027     getline,input,output,sequentialfile,maxlinelaenge,reset,eof,%
1028     close,complexzero,complexone,complexi,complex,realpart,imagpart,%
1029     dphi,phi,vector,norm,replace,matrix,idn,row,column,sub,%
1030     replacerow,replacecolumn,replaceelement,transp,errorsstop,stop},%
1031     sensitive,%
1032     morestring=[d]"%
1033 }[keywords,strings]%
1034  $\langle$ /lang3 $\rangle$ 
```

2.22 Erlang

Thanks to Daniel Gazard.

1035 \langle *lang3 \rangle

```
1036 %%
1037 %% Erlang definition (c) 2003 Daniel Gazard
1038 %%
1039 \lst@definlanguage{erlang}%
1040 {morekeywords={abs,after,and,apply,atom,atom_to_list,band,binary,%
1041     binary_to_list,binary_to_term,bor,bsl,bsr,bxor,case,catch,%
1042     date,div,element,erase,end,exit,export,float,float_to_list,%
1043     get,halt,hash,hd,if,info,import,integer,integer_to_list,%
1044     length,link,list,list_to_atom,list_to_float,list_to_integer,%
1045     list_to_tuple,module,node,nodes,now,of,or,pid,port,ports,%
1046     processes,put,receive,reference,register,registered,rem,%
1047     round,self,setelement,size,spawn,throw,time,tl,trace,trunc,%
1048     tuple,tuple_to_list,unlink,unregister,whereis,error,false,%
1049     infinity,nil,ok,true,undefined,when},%
```

```

1050   otherkeywords={->,!,[,],\{,\}},%
1051   morecomment=[l]\%,%
1052   morestring=[b]" ,%
1053   morestring=[b]' %
1054   }[keywords,comments,strings]%
1055 </lang3>

```

2.23 Euphoria

Detlef Reimers sent me the language definition.

```

1056 <*lang2>
1057 %%
1058 %% Euphoria definition (c) 1998 Detlef Reimers
1059 %%
1060 \lst@definlanguage{Euphoria}%
1061 % for Euphoria 2.0, Rapid Deployment Software, Kanada
1062 {morekeywords={abort,and,and_bits,append,arctan,atom,by,call,%
1063   call_proc,call_func,c_proc,c_func,clear_screen,close,%
1064   command_line,compare,constant,cos,do,date,else,elsif,end,exit,%
1065   find,floor,for,function,getc,getenv,get_key,gets,global,%
1066   get_pixel,if,include,integer,length,log,match,machine_func,%
1067   machine_proc,mem_copy,mem_set,not,not_bits,or,object,open,%
1068   or_bits,procedure,puts,position,prepend,print,printf,power,peek,%
1069   poke,pixel,poke4,peek4s,peek4u,return,rand,repeat,remainder,%
1070   routine_id,sequence,sqrt,sin,system,sprintf,then,type,to,time,%
1071   trace,tan,while,with,without,xor,xor_bits},%
1072   sensitive,%
1073   morecomment=[l]--,%,
1074   morestring=[d]' ,%,
1075   morestring=[d]" %
1076   }[keywords,comments,strings]%
1077 </lang2>

```

2.24 Fortran

Took things from

- KARL HANS MÜLLER: **Fortran 77: Programmierungsanleitung**; 3., völlig neu bearb. Aufl. – Mannheim; Wien; Zürich: Bibliographisches Institut, 1984; ISBN 3-411-05804-8
- THOMAS MICHEL: **Fortran 90: Lehr- und Handbuch**; Mannheim; Leipzig; Wien; Zürich: BI-Wiss.-Verlag, 1994; ISBN 3-411-16861-7.

Another source for Fortran keywords is <http://fortranwiki.org/fortran/show/Keywords> where the keywords for Fortran 2003 and 2008 are taken from.

```

1078 <*lang1>

```

The current version of Fortran (Fortran 2008) is defined by ISO/IEC 1539-1:2010. It contains nine new keywords, four of them consisting of two words: ERROR STOP, SYNC ALL, SYNC IMAGES, SYNC MEMORY, so the list of keywords contains the single parts ALL, ERROR, IMAGES, MEMORY, and SYNC.

```
1079 \lst@definelanguage[08]{Fortran}[03]{Fortran}{%
1080   morekeywords={ALL, BLOCK, CODIMENSION, CONCURRENT, CONTIGUOUS, CRITICAL,%
1081     ERROR, LOCK, SUBMODULE, SYNC, UNLOCK},%
```

New procedures in Fortran 2008:

```
1082   morekeywords=[3]{ACOSH, ASINH, ATANH, ATOMIC_DEFINE, ATOMIC_REF, BESSEL_J0,%
1083     BESSEL_J1, BESSEL_JN, BESSEL_Y0, BESSEL_Y1, BESSEL_YN, BGE, BGT, BLE, BLT,%
1084     C_SIZEOF, COMPILER_OPTIONS, COMPILER_VERSION, DSHIFTL, DSHIFTR, ERF, ERFC,%
1085     ERFC_SCALED, EXECUTE_COMMAND_LINE, GAMMA, HYPOT, IALL, IANY, IMAGE_INDEX,%
1086     IPARITY, LCOBOUND, LEADZ, LOG_GAMMA, MASKL, MASKR, MERGE_BITS, NORM2,%
1087     NUM_IMAGES, PARITY, POPCNT, POPPAR, SHIFTA, SHIFTL, SHIFTR, STORAGE_SIZE,%
1088     THIS_IMAGE, TRAILZ, UCBOUND}%
1089 }%
```

Fortran 2003 introduces the following keywords:

```
1090 \lst@definelanguage[03]{Fortran}[95]{Fortran}{%
1091   morekeywords={ABSTRACT, ASSOCIATE, ASYNCHRONOUS, BIND, CLASS, DEFERRED,%
1092     ENUM, ENUMERATOR, EXTENDS, FINAL, FLUSH, GENERIC, IMPORT,%
1093     NON_OVERRIDABLE, NOPASS, PASS, PROTECTED, VALUE, VOLATILE, WAIT},%
```

These are new options/specifiers:

```
1094   morekeywords=[2]{DECIMAL, ENCODING, IOMSG, ROUND},% corrected NML from NMT
```

And also some new procedures:

```
1095   morekeywords=[3]{C_ASSOCIATED, C_F_POINTER, C_F_PROCPONTER, C_FUNLOC,%
1096     C_LOC, COMMAND_ARGUMENT_COUNT, EXTENDS_TYPE_OF, GET_COMMAND, GET_COMMAND_ARGUMENT,%
1097     GET_ENVIRONMENT_VARIABLE, IS_IOSTAT_END, MOVE_ALLOC, NEW_LINE, SAME_TYPE_AS,%
1098     SELECTED_CHAR_KIND}%
1099 }%
```

Denis Girou proposed to have Fortran 95 and Fortran 90 to be equivalent.

```
1100 \lst@definelanguage[90]{Fortran}[95]{Fortran}{}
```

There is no `morecomment=[f]` in Fortran 90 since otherwise `CONTAINS` could start a comment. This problem was reported by Magne Rudshaug. Moreover the keyword `INCLUDE` is due to him.

```
1101 \lst@definelanguage[95]{Fortran}[77]{Fortran}%
1102   {deletekeywords=SAVE,%
1103     morekeywords={ALLOCATABLE, ALLOCATE, ASSIGNMENT, CASE,%
1104       CONTAINS, CYCLE, DEALLOCATE, DEFAULT, EXIT, INCLUDE, IN, NONE,%
1105       OUT, INTENT, INTERFACE, MODULE, NAMELIST,%
1106       NULLIFY, ONLY, OPERATOR, OPTIONAL, OUT, POINTER, PRIVATE,%
1107       PUBLIC, RECURSIVE, RESULT, SELECT, SEQUENCE,%
1108       TARGET, USE, WHERE, WHILE, BLOCKDATA, DOUBLEPRECISION,%
1109       ENDBLOCKDATA, ENDFILE, ENDFUNCTION, ENDINTERFACE,%
1110       ENDMODULE, ENDPROGRAM, ENDSELECT, ENDSUBROUTINE, ENDTYPE, ENDWHERE,%
1111       INOUT, SELECTCASE,%
```

Theses keys were missing from the 1.4 version of listings:

```
1112     ELEMENTAL, ELSEWHERE, FORALL, PURE},%
```

The list of option keywords/specifiers new in Fortran 90 and 95:

```
1113     morekeywords=[2]{ACTION,ADVANCE,DELIM,IOLENGTH,LEN,NAME,%  
1114     NML,PAD,POSITION,READWRITE,SIZE,STAT},% corrected NML from NMT
```

and the list of intrinsic procedures new in Fortran 90 and 95:

```
1115     morekeywords=[3]{ADJUSTL,ADJUSTR,ALL,ALLOCATED,ANY,ASSOCIATED,BIT_SIZE,%  
1116     BTEST,CEILING,COUNT,CPU_TIME,CSHIFT,DATE_AND_TIME,DIGITS,DOT_PRODUCT,%  
1117     EOSHIFT,EPSILON,EXPONENT,FLOOR,FRACTION,HUGE,IACHAR,IAND,IBCLR,  
1118     IBITS,IBSET,ICHAR,IEOR,IOR,ISHFT,ISHFTC,KIND,LBOUND,LEN_TRIM,% left out LOGICAL  
1119     MATMUL,MAXEXPONENT,MAXLOC,MAXVAL,MERGE,MINEXPONENT,MINLOC,MINVAL,%  
1120     MODULO,MVBITS,NEAREST,NOT,NULL,PACK,PRECISION,PRESENT,PRODUCT,%  
1121     RADIX,RANDOM_NUMBER,RANDOM_SEED,RANGE,RANK,REPEAT,RESHAPE,RRSPACING,%  
1122     SCALE,SCAN,SELECTED_INT_KIND,SELECTED_REAL_KIND,SET_EXPONENT,SHAPE,%  
1123     SINH,SIZE,SPACING,SPREAD,SUM,SYSTEM_CLOCK,TINY,TRANSFER,TRANSPOSE,%  
1124     TRIM,UBOUND,UNPACK,VERIFY},%  
1125     deletacomment=[f],% no fixed comment line: 1998 Magne Rudshaug  
1126     morecomment=[1]!%  
1127 }%
```

As proposed by Jörn Wilms keywords are *not* case sensitive. Also, note that Fortran 77 (and fixed-format source in later versions) allows space in keywords; thus, this list contains some of the more common variants (e.g., ‘GO TO’ and ‘GOTO’).

```
1128 \lst@definlanguage[77]{Fortran}%
```

Jobst Hoffmann divided the list of keywords into two lists. The first list contains the statement keywords, the second list contains the option keywords/specifiers and values. This makes the different meanings of the keywords distinguishable.

```
1129 {morekeywords={ASSIGN,BACKSPACE,CALL,CHARACTER,%  
1130     CLOSE,COMMON,COMPLEX,CONTINUE,DATA,DIMENSION,DO,DOUBLE,%  
1131     ELSE,ELSEIF,END,ENDIF,ENDDO,ENTRY,EQUIVALENCE,EXTERNAL,%  
1132     FILE,FORMAT,FUNCTION,GO,TO,GOTO,IF,IMPLICIT,%  
1133     INQUIRE,INTEGER,INTRINSIC,LOGICAL,%  
1134     OPEN,PARAMETER,PAUSE,PRECISION,PRINT,PROGRAM,READ,REAL,%  
1135     RETURN,REWIND,STOP,SUBROUTINE,THEN,%  
1136     WRITE,SAVE},%  
1137     morekeywords=[2]{ACCESS,BLANK,BLOCK,DIRECT,EOF,ERR,EXIST,%  
1138     FMT,FORM,FORMATTED,IOSTAT,NAMED,NEXTREC,NUMBER,OPENED,%  
1139     REC,RECL,SEQUENTIAL,STATUS,TYPE,UNFORMATTED,UNIT},%
```

And here is another list: the list of intrinsic procedures (remember: all functions belong to the Fortran language specification!)

```
1140     morekeywords=[3]{INT,DBLE,CMLPX,ICHAR,CHAR,AINT,ANINT,% left out real  
1141     NINT,ABS,MOD,SIGN,DIM,DPROD,MAX,MIN,AIMAG,CONJG,SQRT,EXP,LOG,%  
1142     LOG10,SIN,COS,TAN,ASIN,ACOS,ATAN,ATAN2,SINH,COSH,TANH,LGE,LLE,LLT,%  
1143     LEN,INDEX},%
```

And here is the last list: fortran operators:

```

1144     morekeywords=[4]{AND,EQ,EQV,FALSE,GE,GT,OR,LE,LT,NE,NEQV,NOT,TRUE},%
1145     sensitive=f,%% not Fortran-77 standard, but allowed in Fortran-95 %%
1146     morecomment=[f]*,%
1147     morecomment=[f]C,%
1148     morecomment=[f]c,%
1149     morestring=[d]" ,%% not Fortran-77 standard, but allowed in Fortran-95 %%
1150     morestring=[d]'%
1151 }[keywords,comments,strings]%

```

```
1152 </lang1>
```

Jobst Hoffmann supplied a definition of a style for printing Fortran code:

```

1153 (*fortran-prf)
1154 \usepackage[rgb, x11names]{xcolor}
1155
1156 % common settings
1157 \lstset{%
1158     frame=tlb,%           the frame is open on the right side
1159     resetmargins=false,%
1160     rulesepcolor=\color{black},%
1161     numbers=left,%           % left
1162     numberstyle=\tiny,%
1163     numbersep=5pt,%
1164     firstnumber=1,%
1165     stepnumber=5,%
1166     columns=fixed,%           % to prevent inserting spaces
1167     fontadjust=true,%
1168     keepspaces=true,%
1169     basewidth=0.5em,%
1170     captionpos=t,%
1171     abovecaptionskip=\smallskipamount,% same amount as default
1172     belowcaptionskip=\smallskipamount,% in caption package
1173 }
1174 % settings for colored printing
1175 \lstdefinestyle{fortran}{%
1176     backgroundcolor=\color{yellow!10},%
1177     basicstyle=\small\ttfamily,%
1178     identifierstyle=\color{black},%
1179     keywordstyle=\color{blue},%
1180     keywordstyle={ [2] \color{cyan} },%
1181     keywordstyle={ [3] \color{olive} },%
1182     stringstyle=\color{teal},%
1183     commentstyle=\itshape\color{orange},%
1184 }%
1185 % settings for back and white printing
1186 \lstdefinestyle{fortranbw}{%
1187     backgroundcolor={},%
1188     basicstyle=\small\ttfamily,%
1189     identifierstyle={},%
1190     keywordstyle=\bfseries,%

```

```

1191 stringstyle=\itshape,%
1192 commentstyle=\slshape,%
1193 rulesepcolor=\color{black},%
1194 }%

```

This code is provided in the file `listings-fortran.prf`, see section 2.4.1 (References) of the listings documentation.

```
1195 </fortran-prf>
```

2.25 GAP—Groups, Algorithms, Programming

GAP is a System for Computational Discrete Algebra, a description can be found at <http://www.gap-system.org/>. Heiko Oberdiek provided a language definition without knowing this language, so any error should be announced to the current maintainer of the listings package.

```

1196 <*lang2>
1197 %%
1198 %% GAP definition
1199 %% (c) 2013 Heiko Oberdiek
1200 %%
1201 \lst@definlanguage{GAP}{%
1202   morekeywords={%
1203     Assert,Info,IsBound,QUIT,%
1204     TryNextMethod,Unbind,and,break,%
1205     continue,do,elif,%
1206     else,end,false,fi,for,%
1207     function,if,in,local,%
1208     mod,not,od,or,%
1209     quit,rec,repeat,return,%
1210     then,true,until,while%
1211   },%
1212   sensitive,%
1213   morecomment=[1]\#,%
1214   morestring=[b]" ,%
1215   morestring=[b]' ,%
1216 }[keywords,comments,strings]
1217 </lang2>

```

2.26 Guarded Command Language (GCL)

As you can read below, Mark van Eijk provided this language definition.

```

1218 <*lang2>
1219 %%
1220 %% Guarded Command Language (GCL) definition
1221 %% (c) 2002 Mark van Eijk
1222 %%
1223 \lst@definlanguage{GCL}{%

```

```

1224 {morekeywords={const,con,var,array,of,skip,if,fi,do,od,div,mod},%
1225   literate={|[]-\ensuremath{\hspace -0.1em|}}2%
1226           {|}|\ensuremath{\hspace -0.1em|}}2%
1227   {[]}\ensuremath{\hspace -0.1em}}2%
1228   {->}\ensuremath{\rightarrow}~}2%
1229   {==}\ensuremath{\equiv}~}2%
1230   {>=}\ensuremath{\geq}~}2%
1231   {<=}\ensuremath{\leq}~}2%
1232   {/\}\ensuremath{\land}~}2%
1233   {\/\}\ensuremath{\lor}~}2%
1234   {!}\ensuremath{\lnot}1%
1235   {!=}\ensuremath{\neq}~}2%
1236   {max}\ensuremath{\uparrow}1%
1237   {min}\ensuremath{\downarrow}1,%
1238   sensitive=f,%
1239   morecomment=[s]{\{\}\},%
1240   morestring=[d]'%
1241 }[keywords,comments,strings]%
1242 </lang2>

```

2.27 Gnuplot

Thanks to Dr. Christoph Giess for providing this definition.

```

1243 <*\lang2>
1244 %%
1245 %% gnuplot definition (c) Christoph Giess
1246 %%
1247 \lst@definlanguage{Gnuplot}%
1248 {keywords={abs,acos,acosh,arg,asin,asinh,atan,atan2,atanh,besj0,%
1249   besj1,besy0,besy1,ceil,cos,cosh,erf,erfc,exp,floor,gamma,ibeta,%
1250   inverf,igamma,imag,invnorm,int,lgamma,log,log10,norm,rand,real,%
1251   sgn,sin,sinh,sqrt,tan,tanh,column,tm_hour,tm_mday,tm_min,tm_mon,%
1252   tm_sec,tm_wday,tm_yday,tm_year,valid,cd,call,clear,exit,fit,%
1253   help,if,load,pause,plot,print,pwd,quit,replot,reread,reset,save,%
1254   set,show,shell,splot,test,update,angles,arrow,autoscale,border,%
1255   boxwidth,clabel,clip,ctrparam,contour,data,dgrid3d,dummy,%
1256   format,function,key,keytitle,%
1257   label,logscale,mapping,offsets,output,parametric,pointsize,%
1258   polar,rrange,samples,size,style,surface,terminal,tics,time,%
1259   timefmt,title,trange,urange,variables,view,vrange,xdata,xlabel,%
1260   xmargin,xrange,xtics,mxtics,mytics,xdtics,xmtics,xzeroaxis,%
1261   ydata,ylabel,yrange,ytics,ydtics,ymtics,yzeroaxis,zdata,zero,%
1262   zeroaxis,zlabel,zrange,ztics,zdtics,zmtics,timefm,using,title,%
1263   with,index,every,thru,smooth},%
1264   sensitive,%
1265   comment=[l]\#,%
1266   morestring=[b]" ,%
1267   morestring=[b]' ,%
1268 }[keywords,comments,strings]%

```

1269 \langle /lang2 \rangle

2.28 Hansl/Gretl

Thanks to Ignacio Díaz-Emparanza for providing the definition of hansl. Hansl is the gretl scripting language (see <http://gretl.sourceforge.net>).

1270 \langle *lang2 \rangle

```
1271 %%
1272 %% http://gretl.sourceforge.net/gretl-help/cmdref.html
1273 %% (c) 2013 Ignacio D\`iaz-Emparanza
1274 %%
1275 \lst@definlanguage{hansl}{%
1276 % $-variables are internal functions in hansl
1277 keywordsprefix ={\$},
1278 morekeywords={ % hansl commands:
1279     add,adf,anova,append,ar,ar1,%
1280     arbond,arch,arima,biprobit,boxplot,break,%
1281     catch,chow,clear,coeffsum,coint,coint2,%
1282     corr,corrgm,cusum,data,dataset,debug,%
1283     delete,diff,difftest,discrete,dpanel,dummify,%
1284     duration,elif,else,end,endif,endloop,%
1285     eqnprint,equation,estimate,fcast,foreign,fractint,%
1286     freq,function,garch,genr,gmm,gnuplot,%
1287     graphpg,hausman,heckit,help,hsk,hurst,%
1288     if,include,info,intreg,join,kalman,%
1289     kpss,labels,lad,lags,ldiff,leverage,%
1290     levinlin,logistic,logit,logs,loop,mahal,%
1291     makepkg,markers,meantest,mle,modeltab,modprint,%
1292     modtest,mpols,negbin,nls,normtest,nulldata,%
1293     ols,omit,open,orthdev,outfile,panel,%
1294     pca,pergm,poisson,print,printf,probit,%
1295     pvalue,qlrtest,qqplot,quantreg,quit,rename,%
1296     reset,restrict,rmpplot,run,runs,scatters,%
1297     sdiff,set,setinfo,setobs,setmiss,shell,%
1298     smpl,spearman,sprintf,square,sscanf,store,%
1299     summary,system,tabprint,textplot,tobit,tsls,%
1300     var,varlist,vartest,vecm,vif,wls,%
1301     xcorrgm,xtab,scalar,series,matrix,string},%
1302 morekeywords=[2]{ % Functions
1303     abs,acos,acosh,aggregate,argname,%
1304     asin,asinh,atan,atanh,atof,%
1305     bessel,BFGSmax,bkfilt,boxcox,bwfilt,%
1306     cdemean,cdf,cdiv,ceil,cholesky,%
1307     chowlin,cmult,cnorm,colname,colnames,%
1308     cols,corr,corrgm,cos,cosh,%
1309     cov,critical,cum,deseas,det,%
1310     diag,diagcat,diff,digamma,dnorm,%
1311     dsort,dummify,eigegen,eigensym,eigsolve,%
1312     epochday,errmsg,exp,fcstats,fdjac,%
```

```

1313     fft,ffti,filter,firstobs,fixname,%
1314     floor,fracdiff,gammafun,getenv,getline,%
1315     ghk,gini,ginv,halton,hdprod,%
1316     hpfilt,I,imaxc,imaxr,imhof,%
1317     iminc,iminr,inbundle,infnorm,inlist,%
1318     int,inv,invcdf,invmills,invpd,%
1319     irf,irr,isconst,isnan,isnull,%
1320     isodate,iwishart,kdensity,kfilter,ksimul,%
1321     ksmooth,kurtosis,lags,lastobs,ldet,%
1322     ldiff,lincomb,ljungbox,lngamma,log,%
1323     log10,log2,loess,logistic,lower,%
1324     lrvar,max,maxc,maxr,mcorr,%
1325     mcov,mcovg,mean,meanc,meanr,%
1326     median,mexp,min,minc,minr,%
1327     missing,misszero,mlag,mnormal,mols,%
1328     monthlen,movavg,mpols,mrandgen,mread,%
1329     mreverse,mrls,mshape,msortby,muniform,%
1330     mwrite,mxtab,nadarwat,nelem,ngetenv,%
1331     nobs,normal,npv,NRmax,nullspace,%
1332     obs,obslabel,obsnum,ok,onenorm,%
1333     ones,orthdev,pdf,pergm,pmax,%
1334     pmean,pmin,pnobs,polroots,polyfit,%
1335     princomp,prodc,prodr,psd,psdroot,%
1336     pshrink,psum,pvalue,pxsum,qform,%
1337     qnorm,qrdecomp,quadtable,quantile,randgen,%
1338     randgen1,randint,rang,ranking,rcond,%
1339     readfile,regsub,remove,replace,resample,%
1340     round,rownames,rows,sd,sdc,%
1341     sdiff,selifc,selifr,seq,setnote,%
1342     simann,sin,sinh,skewness,sort,%
1343     sortby,sqrt,sscanf,sst,strlen,%
1344     strncmp,strsplit,strstr,strip,substr,%
1345     sum,sumall,sumc,sumr,svd,%
1346     tan,tanh,toepsolv,tolower,toupper,%
1347     tr,transp,trimr,typestr,uniform,%
1348     uniq,unvech,upper,urcpval,values,%
1349     var,varname,varnum,varsimul,vec,%
1350     vech,weekday,wmean,wsd,wvar,%
1351     xmax,xmin,xpx,zeromiss,zeros,%
1352 },%
1353 sensitive=t,%
1354 morecomment=[1]{\#},%
1355 morecomment=[s]{/*}{*/},%
1356 morestring=[b]{"}%
1357 \lstalias{gret1}{hans1}
1358 </lang2>

```

2.29 Haskell

Thanks to Peter Bartke for providing the new definition.

```
1359 ⟨*lang2⟩
1360 %%
1361 %% Haskell98 as implemented in Hugs98. See http://www.haskell.org
1362 %% All keywords from Prelude and Standard Libraries
1363 %% (c) 1999 Peter Bartke
1364 %%
1365 \lst@definlanguage{Haskell}%
1366 {otherkeywords={=>},%
1367   morekeywords={abstype,if,then,else,case,class,data,default,deriving,%
1368     hiding,if,in,infix,infixl,infixr,import,instance,let,module,%
1369     newtype,of,qualified,type,where,do,AbsoluteSeek,AppendMode,%
1370     Array,BlockBuffering,Bool,BufferMode,Char,Complex,Double,Either,%
1371     FilePath,Float,Int,Integer,IO,IOError,Ix,LineBuffering,Maybe,%
1372     Ordering,NoBuffering,ReadMode,ReadWriteMode,ReadS,RelativeSeek,%
1373     SeekFromEnd,SeekMode,ShowS,StdGen,String,Void,Bounded,Enum,Eq,%
1374     Eval,ExitCode,exitFailure,exitSuccess,Floating,Fractional,%
1375     Functor,Handle,HandlePosn,IOMode,Integral,List,Monad,MonadPlus,%
1376     MonadZero,Num,Numeric,Ord,Random,RandomGen,Ratio,Rational,Read,%
1377     Real,RealFloat,RealFrac,Show,System,Prelude,EQ,False,GT,Just,%
1378     Left,LT,Nothing,Right,WriteMode,True,abs,accum,accumArray,%
1379     accumulate,acos,acosh,all,and,any,ap,appendFile,applyM,%
1380     approxRational,array,asTypeOf,asin,asinh,assocs,atan,atan2,atanh,%
1381     bounds,bracket,bracket_,break,catch,catMaybes,ceiling,chr,cis,%
1382     compare,concat,concatMap,conjugate,const,cos,cosh,curry,cycle,%
1383     decodeFloat,delete,deleteBy,deleteFirstBy,denominator,%
1384     digitToInt,div,divMod,drop,dropWhile,either,elem,elems,elemIndex,%
1385     elemIndices,encodeFloat,enumFrom,enumFromThen,enumFromThenTo,%
1386     enumFromTo,error,even,exitFailure,exitWith,exp,exponent,fail,%
1387     filter,filterM,find,findIndex,findIndices,flip,floatDigits,%
1388     floatRadix,floatRange,floatToDigits,floor,foldl,foldM,foldl1,%
1389     foldr,foldr1,fromDouble,fromEnum,fromInt,fromInteger,%
1390     fromIntegral,fromJust,fromMaybe,fromRat,fromRational,%
1391     fromRealFrac,fst,gcd,genericLength,genericTake,genericDrop,%
1392     genericSplitAt,genericIndex,genericReplicate,getArgs,getChar,%
1393     getContents,getEnv,getline,getProgName,getStdGen,getStdRandom,%
1394     group,groupBy,guard,hClose,hFileSize,hFlush,hGetBuffering,%
1395     hGetChar,hGetContents,hGetLine,hGetPosn,hIsClosed,hIsEOF,hIsOpen,%
1396     hIsReadable,hIsSeekable,hIsWritable,hLookAhead,hPutChar,hPutStr,%
1397     hPutStrLn,hPrint,hReady,hSeek,hSetBuffering,hSetPosn,head,%
1398     hugsIsEOF,hugsHIsEOF,hugsIsSearchErr,hugsIsNameErr,%
1399     hugsIsWriteErr,id,ioError,imagPart,index,indices,init,inits,%
1400     inRange,insert,insertBy,interact,intersect,intersectBy,%
1401     intersperse,intToDigit,ioeGetErrorString,ioeGetFileName,%
1402     ioeGetHandle,isAlreadyExistsError,isAlreadyInUseError,isAlpha,%
1403     isAlphaNum,isAscii,isControl,isDenormalized,isDoesNotExistError,%
1404     isDigit,isEOF,isEOFError,isFullError,isHexDigit,isIEEE,%
```

```

1405     isIllegalOperation, isInfinite, isJust, isLower, isNaN, %
1406     isNegativeZero, isNothing, isOctDigit, isPermissionError, isPrefixOf, %
1407     isPrint, isSpace, isSuffixOf, isUpper, isUserError, iterate, ixmap, %
1408     join, last, lcm, length, lex, lexDigits, lexLitChar, liftM, liftM2, %
1409     liftM3, liftM4, liftM5, lines, listArray, listToMaybe, log, logBase, %
1410     lookup, magnitude, makePolar, map, mapAccumL, mapAccumR, mapAndUnzipM, %
1411     mapM, mapM_, mapMaybe, max, maxBound, maximum, maximumBy, maybe, %
1412     maybeToList, min, minBound, minimum, minimumBy, mkPolar, mkStdGen, %
1413     mplus, mod, msum, mzero, negate, next, newStdGen, not, notElem, nub, nubBy, %
1414     null, numerator, odd, openFile, or, ord, otherwise, partition, phase, pi, %
1415     polar, pred, print, product, properFraction, putChar, putStr, putStrLn, %
1416     quot, quotRem, random, randomIO, randomR, randomRIO, randomRs, randoms, %
1417     rangeSize, read, readDec, readFile, readFloat, readHex, readInt, readIO, %
1418     readList, readLitChar, readLn, readParen, readOct, readSigned, reads, %
1419     readsPrec, realPart, realToFrac, recip, rem, repeat, replicate, return, %
1420     reverse, round, scaleFloat, scanl, scanl1, scanr, scanr1, seq, sequence, %
1421     sequence_, setStdGen, show, showChar, showEFloat, showFFloat, %
1422     showFloat, showGFloat, showInt, showList, showLitChar, showParen, %
1423     showSigned, showString, shows, showsPrec, significand, signum, sin, %
1424     sinh, snd, sort, sortBy, span, split, splitAt, sqrt, stderr, stdin, stdout, %
1425     strict, subtract, succ, sum, system, tail, tails, take, takeWhile, tan, %
1426     tanh, toEnum, toInt, toInteger, toLower, toRational, toUpper, transpose, %
1427     truncate, try, uncurry, undefined, unfoldr, union, unionBy, unless, %
1428     unlines, until, unwords, unzip, unzip3, unzip4, unzip5, unzip6, unzip7, %
1429     userError, when, words, writeFile, zero, zip, zip3, zip4, zip5, zip6, zip7, %
1430     zipWith, zipWithM, zipWithM_, zipWith3, zipWith4, zipWith5, zipWith6, %
1431     zipWith7}, %
1432     sensitive, %
1433     morecomment=[1]--, %
1434     morecomment=[n]{\{-}\{-\}}, %
1435     morestring=[b]"%
1436 }[keywords, comments, strings]%
1437 </lang2>

```

2.30 HTML

I'm quite the opposite of a HTML wizard. In particular this is true for the defined keywords. Matthias Bethke helped me out and extended the list.

```

1438 <*lang1>
1439 \lst@definelanguage{HTML}%
1440     {morekeywords={A, ABBR, ACRONYM, ADDRESS, APPLET, AREA, B, BASE, BASEFONT, %
1441     BDO, BIG, BLOCKQUOTE, BODY, BR, BUTTON, CAPTION, CENTER, CITE, CODE, COL, %
1442     COLGROUP, DD, DEL, DFN, DIR, DIV, DL, DOCTYPE, DT, EM, FIELDSET, FONT, FORM, %
1443     FRAME, FRAMESET, HEAD, HR, H1, H2, H3, H4, H5, H6, HTML, I, IFRAME, IMG, INPUT, %
1444     INS, ISINDEX, KBD, LABEL, LEGEND, LH, LI, LINK, LISTING, MAP, META, MENU, %
1445     NOFRAMES, NOSCRIPT, OBJECT, OPTGROUP, OPTION, P, PARAM, PLAINTEXT, PRE, %
1446     OL, Q, S, SAMP, SCRIPT, SELECT, SMALL, SPAN, STRIKE, STRING, STRONG, STYLE, %
1447     SUB, SUP, TABLE, TBODY, TD, TEXTAREA, TFOOT, TH, THEAD, TITLE, TR, TT, U, UL, %

```

```

1448     VAR,XMP,%
1449     accesskey,action,align,alink,alt,archive,axis,background,bgcolor,%
1450     border,cellpadding,cellspacing,charset,checked,cite,class,classid,%
1451     code,codebase,codetype,color,cols,colspan,content,coords,data,%
1452     datetime,defer,disabled,dir,event,error,for,frameborder,headers,%
1453     height,href,hreflang,hspace,http-equiv,id,ismap,label,lang,link,%
1454     longdesc,marginwidth,marginheight,maxlength,media,method,multiple,%
1455     name,nohref,noresize,noshade,nowrap,onblur,onchange,onclick,%
1456     ondblclick,onfocus,onkeydown,onkeypress,onkeyup,onload,onmousedown,%
1457     profile,readonly,onmousemove,onmouseout,onmouseover,onmouseup,%
1458     onselect,onunload,rel,rev,rows,rowspan,scheme,scope,scrolling,%
1459     selected,shape,size,src,standby,style,tabindex,text,title,type,%
1460     units,usemap,valign,value,valuetype,vlink,vspace,width,xmlns},%
1461     tag=**[s]<>,%
1462     sensitive=f,%
1463     morestring=[d]" ,% ??? doubled

```

Now we take care of comments. We don't enter comment mode if we aren't inside <>.

```

1464     MoreSelectCharTable=%
1465         \lst@CArgX--\relax\lst@DefDelimB{}{}%
1466         {\ifnum\lst@mode=\lst@tagmode\else
1467             \expandafter@gobblethree
1468             \fi}%
1469         \lst@BeginComment\lst@commentmode{\lst@commentstyle}%
1470         \lst@CArgX--\relax\lst@DefDelimE{}{}{}%
1471         \lst@EndComment\lst@commentmode
1472     }[keywords,comments,strings,html]%

```

Peter Biechele reported a problem which was due to missing \@empty in value of SelectCharTable. And after receiving a bug report from Jochen Schneider I converted the version 0.21 contents of MoreSelectCharTable to version 1.0.

```

1473 </lang1>

```

2.31 IDL

The definition is from Jürgen Heim.

```

1474 <*lang2>
1475 %%
1476 %% IDL definition (c) 1998 Juergen Heim
1477 %%
1478 \lst@definlanguage{IDL}%
1479 {morekeywords={and,begin,case,common,do,else,end,endcase,endif,%
1480     endfor,endif,endrep,endwhile,eq,for,function,ge,goto,gt,if,le,lt,%
1481     mod,ne,not,of,on_ioerror,or,pro,repeat,return,then,until,while,%
1482     xor,on_error,openw,openr,openu,print,printf,printu,plot,read,%
1483     readf,readu,writew,stop},%
1484     sensitive=f,%
1485     morecomment=[1];,%

```

```

1486   morestring=[d] '%
1487   }[keywords,comments,strings]%
1488 </lang2>

```

2.32 Inform

Thanks to Jonathan Sauer for this language definition. Ulrike Fischer pointed out that `\lstdefinlanguage` should be `\lst@definlanguage`.

```

1489 <*lang2>
1490 %%
1491 %% Inform definition (c) 2003 Jonathan Sauer
1492 %%
1493 \lst@definlanguage{inform}{%
1494   % Language keywords
1495   morekeywords={breakdo,else,false,for,has,hasnt,if,%
1496               in,indirect,jump,notin,nothing,NULL,objectloop,ofclass,%
1497               private,property,provides,return,rfalse,rtrue,self,string,%
1498               switch,to,true,until,while,with,%
1499               creature,held,multiexcept,multiheld,multiinside,noun,number,%
1500               scope,topic},%
1501   %
1502   % Inform functions
1503   morekeywords=[2]{box,child,children,font,give,inversion,metaclass,move,%
1504                 new_line,parent,print,print_ret,read,remove,restore,sibling,%
1505                 save,spaces,quit,style,bold,underline,reverse,roman remaining,%
1506                 create,destroy,recreate,copy},%
1507   %
1508   % Inform definitions
1509   morekeywords=[3]{Attribute,Array,Class,Constant,Default,End,Endif,Extend,%
1510                 Global,Ifdef,Iffalse,Ifndef,Ifnot,Iftrue,Include,Object,%
1511                 Property,Verb,Release,Serial,Statusline},%
1512   %
1513   % Library attributes
1514   morekeywords=[4]{absent,animate,clothing,concealed,container,door,edible,%
1515                 enterable,female,general,light,lockable locked,male,moved,%
1516                 neuter,on,open,openable,pluralname,proper,scenery,scored,%
1517                 static,supporter,switchable,talkable,transparent,visited,%
1518                 workflag,worn},%
1519   %
1520   % Library properties
1521   morekeywords=[5]{n_to,s_to,e_to,w_to,ne_to,nw_to,se_to,sw_to,in_to,%
1522                 out_to,u_to,d_to,add_to_scope,after,article,articles,before,%
1523                 cant_go,capacity,daemon,describe,description,door_dir,door_to,%
1524                 each_turn,found_in,grammar,initial,inside_description,invent,%
1525                 life,list_together,name number,orders,parse_name,plural,%
1526                 react_after,react_before,short_name,short_name_indef,time_left,%
1527                 time_out,when_closed,when_open,when_on,when_off,%
1528                 with_key},%

```

```

1529 %
1530 % Library routines
1531 morekeywords=[6]{Achieved,AfterRoutines,AllowPushDir,Banner,ChangePlayer,%
1532     CommonAncestor,DictionaryLookup,GetGNAOfObject,HasLightSource,%
1533     IndirectlyContains,IsSeeThrough,Locale,LoopOverScope,LTI_Insert,%
1534     MoveFloatingObjects,NextWord,NextWordStopped,NounDomain,%
1535     ObjectIsUntouchable OffersLight,ParseToken,PlaceInScope,PlayerTo,%
1536     PronounNotice,PronounValue,ScopeWithin,SetPronoun,SetTime,%
1537     StartDaemon,StartTimer,StopDaemon,StopTimer,TestScope,TryNumber,%
1538     UnsignedCompare,WordAddress,WordInProperty,WordLength,%
1539     WriteListFrom,YesOrNo},%
1540 %
1541 % Library,entry points
1542 morekeywords=[7]{AfterLife,AfterPrompt,Amusing,BeforeParsing,ChooseObjects,%
1543     DarkToDark,DeathMessage,GamePostRoutine GamePreRoutine,%
1544     Initialise,InScope,LookRoutine,NewRoom,ParseNoun,ParseNumber,%
1545     ParserError,PrintRank,PrintTaskName,PrintVerb,TimePasses,%
1546     UnknownVerb},%
1547 %
1548 % Library constants
1549 morekeywords=[8]{NEWLINE_BIT,INDENT_BIT,FULLINV_BIT,ENGLISH_BIT,RECURSE_BIT,%
1550     ALWAYS_BIT,TERSE_BIT,PARTINV_BIT,DEFART_BIT,WORKFLAG_BIT,%
1551     ISARE_BIT,CONCEAL_BIT},%
1552 %
1553 % Library,meta actions
1554 morekeywords=[9]{Pronouns,Quit,Restart,Restore,Save,Verify,ScriptOn,ScriptOff,%
1555     NotifyOn,NotifyOff,Places,Objects,Score,FullScore,Version,LMode1,%
1556     LMode2,Lmode3},%
1557 %
1558 % Library,main actions
1559 morekeywords=[10]{Close,Disrobe,Drop,Eat,Empty,EmptyT,Enter,Examine,Exit,GetOff,%
1560     Give,Go,GoIn,Insert,Inv,InvTall,InvWide,Lock,Look,Open,PutOn,Remove,%
1561     Search,Show,SwitchOff,SwitchOn,Take,Transfer,Unlock VagueGo,%
1562     Wear},%
1563 %
1564 % Library,stub actions
1565 morekeywords=[11]{Answer,Ask,AskFor,Attack,Blow,Burn,Buy,Climb,Consult,Cut,Dig,%
1566     Drink,Fill,Jump,JumpOver,Kiss,Listen,LookUnder,Mild,No,Pray,Pull,%
1567     Push,PushDir,Rub,Set,SetTo,Sing,Sleep,Smell,,Sleep,Smell,Sorry,%
1568     Squeeze,Strong,Swim,Swing,Taste,Tell,Think,ThrowAt,Tie,Touch,Turn,%
1569     Wait,Wake,WakeOther,Wave,WaveHands,Yes},%
1570 %
1571 otherkeywords={->,->},%
1572 sensitive=false,%
1573 morestring=[d]{"},%
1574 morecomment=[l]{!}%
1575 }[keywords,comments,strings]%
1576 </lang2>

```

2.33 Java and other JVM based languages

Robert Wenner sent in the first of the following two definitions.

```
1577 <*lang1>
1578 %%
1579 %% AspectJ definition (c) Robert Wenner
1580 %%
1581 \lst@definlanguage[AspectJ]{Java}[]{Java}%
1582 {morekeywords={%
1583     adviceexecution,after,args,around,aspect,aspectOf,before,%
1584     call,cflow,cflowbelow,%
1585 % declare error,declare parents,declare precedence,
1586 % declare soft,declare warning,
1587     execution,get,handler,if,initialization,issingleton,pointcut,%
1588     percfow,percfowbelow,perthis,pertarget,preinitialization,%
1589     privileged,proceed,returning,set,staticinitialization,strictfp,%
1590     target,this,thisEnclosingJoinPoint,thisJoinPoint,throwing,%
1591     within,withincode},%
1592 MoreSelectCharTable=%
1593 \lst@DefSaveDef{'.'}\lst@umdot{\lst@umdot\global\let\lst@derefop\@empty}%
1594 \ifx\lst@derefinstalled\@empty\else
1595     \global\let\lst@derefinstalled\@empty
1596 \lst@AddToHook{Output}%
1597 {\lst@ifkeywords
1598     \ifx\lst@derefop\@empty
1599         \global\let\lst@derefop\relax
1600     \ifx\lst@thestyle\lst@gkeywords@sty
1601         \ifx\lst@currstyle\relax
1602             \let\lst@thestyle\lst@identifierstyle
1603         \else
1604             \let\lst@thestyle\lst@currstyle
1605         \fi
1606     \fi
1607 \fi}
1608 \fi}
1609 \lst@AddToHook{BOL}{\global\let\lst@derefop\relax}%
1610 \lst@AddTo\lst@ProcessSpace{\global\let\lst@derefop\relax}%
1611     \fi
1612 }%
1613 </lang1>
```

Got data from <http://java.sun.com>.

```
1614 <*lang1>
1615 \lst@definlanguage{Java}%
1616 {morekeywords={abstract,boolean,break,byte,case,catch,char,class,%
1617     const,continue,default,do,double,else,extends,false,final,%
1618     finally,float,for,goto,if,implements,import,instanceof,int,%
1619     interface,label,long,native,new,null,package,private,protected,%
1620     public,return,short,static,super,switch,synchronized,this,throw,%
```

```

1621     throws,transient,true,try,void,volatile,while},%
1622     sensitive,%
1623     morecomment=[l]//,%
1624     morecomment=[s]{/*}{*/},%
1625     morestring=[b]" ,%
1626     morestring=[b]' ,%
1627 }[keywords,comments,strings]%

    Herbert Voss added the keyword label.
1628 </lang1>

    Martine Gautier made the following contribution.
1629 <*lang1>

1630 %%
1631 %% ByteCodeJava definition (c) 2004 Martine Gautier
1632 %%
1633 \lst@definelanguage{JVMIS}%
1634 {morekeywords={aaload,astore,aconst_null,aload,aload_0,aload_1,%
1635     aload_2,aload_3,anewarray,areturn,arraylength,astore,astore_0,%
1636     astore_1,astore_2,astore_3,athrow,baload,bastore,bipush,caload,%
1637     astore,checkcast,d2f,d2i,d2l,dadd,daload,dastore,dcmpl,%
1638     dconst_0,dconst_1,ddiv,dload,dload_0,dload_1,dload_2,dload_3,%
1639     dmul,dneg,drem,dreturn,dstore,dstore_0,dstore_1,dstore_2,%
1640     dstore_3,dsub,dup,dup_x1,dup_x2,dup2,dup2_x1,dup2_x2,f2d,%
1641     f2i,f2l,fadd,faload,fastore,fcmpg,fcmpl,fconst_0,fconst_1,%
1642     fconst_2,fdiv,fload,fload_0,fload_1,fload_2,fload_3,fmul,%
1643     fneg,frem,freturn,fstore,fstore_0,fstore_1,fstore_2,fstore_3,%
1644     fsub,getfield,getstatic,goto,goto_w,i2b,i2c,i2d,i2f,i2l,i2s,%
1645     iadd,iaload,iand,iastore,iconst_0,iconst_1,iconst_2,iconst_3,%
1646     iconst_4,iconst_5,idev,if_acmpeq,if_acmpne,if_icmpeq,if_icmpne,%
1647     if_icmplt,if_cmpge,if_cmpgt,if_cmple,ifeq,ifne,iflt,ifge,ifgt,%
1648     ifle,ifnonnull,ifnull,iinc,iload,iload_0,iload_1,iload_2,%
1649     iload_3,imul,ineg,instanceof,invokeinterface,invokespecial,%
1650     invokestatic,invokevirtual,ior,irem,ireturn,ishl,ishr,istore,%
1651     istore_0,istore_1,istore_2,istore_3,isub,iushr,ixor,jsr,jsr_w,%
1652     l2d,l2f,l2i,ladd,laload,land,lastore,lcmp,lconst_0,lconst_1,%
1653     ldc,ldc_w,ldc2_w,ldiv,lload,lload_0,lload_1,lload_2,lload_3,%
1654     lmul,lneg,lookupswitch,lor,lrem,lreturn,lshl,lshr,lstore,%
1655     lstore_0,lstore_1,lstore_2,lstore_3,lsub,lushr,lxor,%
1656     monitorenter,monitorexit,multianewarray,new,newarray,nop,pop,%
1657     pop2,putfield,putstatic,ret,return,saload,sastore,sipush,swap,%
1658     tableswitch,wide,limit,locals,stack},%
1659 }[keywords]%

1660 </lang1>

```

2.33.1 Scala

Bastian Germann asked to include the Scala definition provided by Frank Teubler (2009). Here it is:

```

1661 <*lang3>

```

```

1662 \lst@definlanguage{Scala}%
1663   {morekeywords={abstract,case,catch,class,def,%
1664     do,else,extends,false,final,finally,%
1665     for,if,implicit,import,lazy,match,mixin,%
1666     new,null,object,override,package,%
1667     private,protected,requires,return,sealed,%
1668     super,this,trait,true,try,%
1669     type,val,var,while,with,yield},%+
1670 % otherkeywords={_,: ,=,=>,<<:,<\%,>:,\#,@},%
1671 otherkeywords={=,>,<-,<\%,<:,>:,\#,@},%
1672   sensitive,%
1673   morecomment=[l]//,%
1674   morecomment=[n]{/*}{*/},%
1675   morestring=[b]" ,%
1676   morestring=[b]' ,%
1677   morestring=[b]"" ,%
1678 }[keywords,comments,strings]%
1679 </lang3>

```

2.34 ksh

Thanks to Jeffrey Ratcliffe for this language definition.

```

1680 <*lang3>
1681 \lst@definlanguage{ksh}
1682   {morekeywords={alias,awk,cat,echo,else,elif,fi,exec,exit,%
1683     for,in,do,done,select,case,esac,while,until,function,%
1684     time,export,cd,eval,fc,fg,kill,let,pwd,read,return,rm,%
1685     glob,goto,history,if,logout,nice,nohup,onintr,repeat,sed,%
1686     set,setenv,shift,source,switch,then,umask,unalias,%
1687     unset,wait,@,env,argv,child,home,ignoreeof,noclobber,%
1688     noglob,nomatch,path,prompt,shell,status,verbose,print,printf,%
1689     sqrt,BEGIN,END},%
1690   morecomment=[l]\#,%
1691   morestring=[d]" ,%
1692   morestring=[d]' ,%
1693   morestring=[d]'%
1694 }[keywords,comments,strings]%
1695 %   \begin{macrocode}
1696 </lang3>

```

Herbert Voss suggested to add the string delimiter ‘.

2.35 Lingo

Thanks to Mark Schade for this language definition.

```

1697 <*lang3>
1698 \lst@definlanguage{Lingo}
1699   {morekeywords={abort,after,and,before,do,down,halt,me,new,not,of,%

```

1700 on, or, otherwise, pass, put, result, return, set, tell, the, then, to, with, %
1701 repeat, while, case, if, else, true, false, global, property, _global, _key, %
1702 _mouse, _movie, _player, _sound, _system, abbr, abbrev, abbreviated, abs, %
1703 actionsenabled, activateapplication, activatewindow, active3drenderer, %
1704 activecastlib, activewindow, actorlist, add, addat, addbackdrop, addcamera, %
1705 addchild, addmodifier, addoverlay, addprop, addtoworld, addvertex, alert, %
1706 alerthook, alignment, allowcustomcaching, allowgraphicmenu, allowsavelocal, %
1707 allowtransportcontrol, allowvolumecontrol, allowzooming, alphathreshold, %
1708 ambient, ambientcolor, ancestor, angle, anglebetween, animationenabled, %
1709 antialias, antialiasthreshold, append, applicationname, applicationpath, %
1710 appminimize, atan, attenuation, attributevalue, auto, autoblend, automask, %
1711 autotab, axisangle, back, backcolor, backdrop, backgroundcolor, backspace, %
1712 beep, beepon, beginrecording, beginsprite, beveldepth, beveltype, bgcolor, %
1713 bias, bitand, bitmap, bitmapsizes, bitnot, bitor, bitrate, bitspersample, %
1714 bitxor, blend, blendconstant, blendconstantlist, blendfunction, blendfunction, %
1715 blendfunctionlist, blendlevel, blendrange, blendsource, blendsourcelist, %
1716 blendtime, bone, bonesplayer, border, both, bottom, bottomcap, bottomradius, %
1717 bottomspacing, boundary, boundingsphere, box, boxdropshadow, boxtype, %
1718 breakconnection, breakloop, brightness, broadcastprops, browsername, %
1719 buffersize, build, buttonsenabled, buttonstyle, buttontype, bytesstreamed, %
1720 boolean, cachedocverify, cachesize, call, callancestor, camera, cameracount, %
1721 cameraposition, camerarotation, cancelidleload, castlib, castlibnum, %
1722 castmemberlist, center, centerregpoint, centerstage, changearea, channelcount, %
1723 char, characterset, charpostoloc, chars, charspacing, chartonum, %
1724 checkboxaccess, checkboxtype, checkmark, checknetmessages, child, chunksize, %
1725 clearatrender, clearcache, clearerror, clearframe, clearglobals, clearvalue, %
1726 clickloc, clickmode, clickon, clone, clonedeep, clonemodelfromcastmember, %
1727 clonemotionfromcastmember, close, closed, closewindow, closexlib, collision, %
1728 collisiondata, collisionnormal, color, world, colorbuffer, colorbufferdepth, %
1729 colordepth, colorlist, colorrange, colors, colorsteps, commanddown, comments, %
1730 compressed, connecttonetserver, constrainh, constraint, constrainv, , %
1731 continue, controldown, controller, copypixels, copyrightinfo, copyto, %
1732 copytoclipboard, cos, count, cpuhogticks, creaseangle, creases, [contains], %
1733 createfolder, createmask, creatematte, creationdate, creator, crop, cross, %
1734 crossproduct, cuepassed, cuepointnames, cuepointtimes, currentloopstate, %
1735 currentspritenum, currenttime, cursor, cursorsize, curve, cylinder, ate, day, %
1736 deactivateapplication, deactivatewindow, debug, debugplaybackenabled, %
1737 decaymode, defaultrect, defaultrectmode, delay, delete, deleteall, deleteat, %
1738 deletecamera, deletefolder, deleteframe, deletegroup, deletelight, %
1739 deletemodel, deletemodelresource, deletemotion, deleteone, deleteprop, %
1740 deleteshader, deletetexture, deletevertex, density, depth, depthbufferdepth, %
1741 desktoprectlist, diffuse, diffusecolor, diffuselightmap, %
1742 digitalvideotimescale, digitalvideotype, direction, directionalcolor, %
1743 directionalpreset, directtostage, disableimagingtransformation, displayface, %
1744 displaymode, distanceto, distribution, dither, done, doneparsing, dot, %
1745 dotproduct, doubleclick, downloadnetthing, drag, draw, drawrect, dropshadow, %
1746 duplicate, duplicateframe, duration, editable, editshortcutsenabled, %
1747 elapsedtime, emissive, emitter, empty, emulatemultibuttonmouse, enabled, %
1748 enablehotspot, end, endangle, endcolor, endframe, endrecording, endsprite, %
1749 endtime, enter, enterframe, environment, erase, error, eventpassmode, %

1750 exchange,exists,exit,exitframe,exitlock,exp,externalevent,%
1751 externalparamcount,externalparamname,externalparamvalue,extractalpha,%
1752 extrude3d,face,fadein,fadeout,fadeto,far,field,fieldofview,filename,%
1753 fill,fillcolor,fillcycles,filldirection,filled,fillmode,filloffset,%
1754 fillscale,findempty,findlabel,findpos,findposnear,finishidleload,%
1755 firstindent,fixedlinespace,fixedrate,fixstagesize,flashrect,flashtostage,%
1756 flat,fliph,flipv,float,floatp,floatprecision,flush,flushinputevents,%
1757 fog,folderchar,font,fontsize,fontstyle,forecolor,forget,frame,%
1758 framecount,framelabel,framepalette,framerate,frameready,framescript,%
1759 framesound1,framesound2,framesohms,frametempo,frametransition,freeblock,%
1760 freebytes,fromcastmember,fromimageobject,front,frontwindow,%
1761 generatenormals,getaprop,atat,getbehaviordescription,getbehaviortooltip,%
1762 getboneid,geterror,geterrorstring,gethardwareinfo,gethotspotrect,getlast,%
1763 getlatestnetid,getnetaddresscookie,getneterrorstring,getnetmessage,%
1764 getnetoutgoingbytes,getnettext,getnormalized,getnthfilenameinfolder,%
1765 getnumberwaitingnetmessages,getone,getpeerconnectionlist,getpixel,%
1766 getplaylist,getpos,getpref,getprop,getpropat,getpropertydescriptionlist,%
1767 getrendererservices,getstreamstatus,gettemppath,getworldtransform,globals,%
1768 glossmap,go,gotoframe,gotonetmovie,gotonetpage,gradienttype,gravity,%
1769 group,handler,handlers,height,heightvertices,high,highlightpercentage,%
1770 highlightstrength,hilite,hither,hittest,hmstoframes,hold,hotspot,html,%
1771 hyperlink,hyperlinkclicked,hyperlinkrange,hyperlinks,hyperlinkstate,%
1772 id3tags,identity,idle,idlehandlerperiod,idleloaddone,idleloadmode,%
1773 idleloadperiod,idleloadtag,idlreadchunksize,ilk,image,imagecompression,%
1774 imageenabled,imagequality,immovable,importfileinto,inflate,ink,inker,%
1775 inlineimeenabled,insertbackdrop,insertframe,insertoverlay,inside,%
1776 installmenu,instance,integer,integerp,interface,interpolate,%
1777 interpolateto,intersect,index,interval,inverse,invert,invertmask,%
1778 isbusy,isinworld,isoktoattach,ispastcuepoint,item,itemdelimiter,kerning,%
1779 kerningthreshold,key,keyboardfocussprite,keycode,keydown,keydownscript,%
1780 keyframeplayer,keypressed,keyup,keyupscript,label,labellist,last,%
1781 lastchannel,lastclick,lastevent,lastframe,lastkey,lastroll,left,%
1782 leftindent,length,lengthvertices,level,lifetime,light,line,linearlist,%
1783 linecolor,linecount,linedirection,lineheight,lineoffset,linepostolcvc,%
1784 linesize,linkas,linked,list,listp,loaded,loadfile,loc,loch,locked,%
1785 locktranslation,loctocharpos,locv,locvtolinepos,locz,lod,log,long,%
1786 loop,loopcount,loopendtime,loopsremaining,loopstarttime,machinetype,%
1787 magnitude,map,mapImageToStage,mapmembertostage,mapstagetomember,margin,%
1788 marker,markerlist,mask,max,maxinteger,maxspeed,mci,media,mediaready,%
1789 member,membernum,members,memorysize,menu,mesh,meshdeform,milliseconds,%
1790 min,minspeed,modal,mode,model,modela,modelb,modelresource,%
1791 modelsunderloc,modelsunderray,modelunderloc,modified,modifiedby,%
1792 modifieddate,modifier,modifiers,month,mostrecentcuepoint,motion,%
1793 mousechar,mousedown,mousedownscript,mouseenter,mouseh,mouseitem,%
1794 mouseleave,mouselevel,mouseline,mouseloc,mousemember,mouseoverbutton,%
1795 mouseup,mouseupoutside,mouseupscript,mousev,mousewithin,mouseword,move,%
1796 moveablesprite,movetoback,movetofront,movevertex,movevertexhandle,%
1797 movewindow,movie,movieaboutinfo,moviecopyrightinfo,moviefilefreeseize,%
1798 moviefilesize,moviefileversion,movieimagecompression,movieimagequality,%
1799 moviename,moviepath,movierate,movietime,movieextralist,mpeglayer,%

1800 multiply, multisound, name, near, nearfiltering, neighbor, netabort, netdone, %
1801 neterror, netlastmoddate, netmime, netpresent, netstatus, nettextresult, %
1802 netthrottleticks, newcamera, newcurve, newgroup, newlight, newmesh, newmodel, %
1803 newmodelresource, newmotion, newshader, newtexture, next, none, normalize, %
1804 normallist, normals, nothing, notify, nudge, number, numchannels, %
1805 numparticles, numsegments, numtochar, objectp, offset, open, openresfile, %
1806 openwindow, openxlib, optiondown, organizationname, originalfont, originh, %
1807 originmode, originpoint, originv, orthoheight, overlay, pageheight, palette, %
1808 palettemapping, paletteref, paletteindex, pan, paragraph, param, paramcount, %
1809 parent, parsestring, particle, pasteclipboardinto, path, pathname, %
1810 pathstrength, pattern, pause, pausedatstart, pausestate, percentplayed, %
1811 percentstreamed, period, perpendicularto, persistent, pi, picture, picturep, %
1812 plane, platform, play, playbackmode, playfile, playing, playlist, playnext, %
1813 playrate, point, pointat, pointatorientation, pointinhyperlink, %
1814 pointofcontact, pointtochar, pointtoitem, pointtoline, pointtoparagraph, %
1815 pointtoward, position, positionreset, posterframe, postnetext, power, %
1816 preferred3drenderer, preload, preloadbuffer, preloadeventabort, preloadmember, %
1817 preloadmode, preloadmovie, preloadnetthing, preloadram, preloadtime, %
1818 premultiply, prepareframe, preparemovie, prerotate, prescale, pretranslate, %
1819 previous, primitives, printfrom, productversion, projection, projectionangle, %
1820 propList, proxyserver, pttohotspotid, puppet, puppetpalette, puppetsound, %
1821 puppetsprite, puppettempo, puppettransition, purgepriority, %
1822 qtregisteraccesskey, qtunregisteraccesskey, quad, quality, queue, quit, quote, %
1823 radius, ramneeded, random, randomseed, randomvector, rateshift, rawnew, read, %
1824 readvalue, recordfont, rect, ref, reflectionmap, reflectivity, region, %
1825 registerforevent, registerscript, regpoint, regpointvertex, removebackdrop, %
1826 removefromworld, removefirst, removemodifier, removeoverlay, rename, renderer, %
1827 rendererdevicelist, renderformat, renderstyle, resetworld, resizewindow, %
1828 resolution, resolve, resolvea, resolveb, resource, restart, resume, %
1829 reverttoworlddefaults, rewind, rgb, rgba4444, rgba5550, rgba5551, rgba5650, %
1830 rgba8880, rgba8888, right, rightindent, rightmousedown, rightmouseup, %
1831 rollover, romanlingo, rootlock, rootnode, rotate, rotation, rotationreset, %
1832 rtf, runmode, runpropertydialog, safeplayer, samplecount, samplerate, %
1833 samplesize, save, savedlocal, savemovie, scale, scalemode, score, scorecolor, %
1834 scoreselection, script, scriptexecutionstyle, scriptinstancelist, scriptlist, %
1835 scriptnum, scriptsenabled, scripttext, scripttype, scrollbyline, scrollbypage, %
1836 scrolltop, sds, searchcurrentfolder, searchpath, searchpaths, seconds, %
1837 selectedtext, selection, selend, selstart, sendallsprites, sendevent, %
1838 sendnetmessage, sendsprite, serialnumber, setalpha, setprop, setat, %
1839 setcollisioncallback, setflashproperty, setnetbufferlimits, %
1840 setnetmessagehandler, setpixel, setplaylist, setpref, setprop, setscriptlist, %
1841 settrackenabled, setvariable, shader, shaderlist, shadowpercentage, %
1842 shadowstrength, shapetype, shiftdown, shininess, shockwave3d, short, %
1843 showglobals, showlocals, showprops, showresfile, showxlib, shutdown, %
1844 silhouettes, sin, size, sizerange, skew, sleep, smoothness, sort, sound, %
1845 soundbusy, soundchannel, sounddevice, sounddevicelist, soundenabled, %
1846 soundkeepdevice, soundlevel, soundmixmedia, source, sourcerect, space, %
1847 specular, specularcolor, specularlightmap, sphere, spotangle, spotdecay, %
1848 sprite, spritenum, spritespacetoworldspace, sqrt, stage, stagebottom, %
1849 stagecolor, stagelleft, stageright, stagetoflash, stagetop, standard, %

```

1850     startangle,startframe,startmovie,starttime,starttimer,state,static,%
1851     status,stepframe,stilldown,stop,stopevent,stopmovie,stoptime,stream,%
1852     streammode,streamname,streamsize,streamstatus,string,stringp,%
1853     strokecolor,strokewidth,style,subdivision,sweep,swing,switchcolordepth,%
1854     symbol,symbolp,systemdate,tab,tabcount,tabs,tan,target,%
1855     tellstreamstatus,tension,text,texture,texturecoordinatelist,%
1856     texturecoordinates,texturelayer,texturelist,texturemember,texturemode,%
1857     texturemodelist,texturerenderformat,texturerepeat,texturerepeatlist,%
1858     texturetransform,texturetransformlist,texturetype,thumbnail,ticks,tilt,%
1859     time,timeout,timeouthandler,timeoutkeydown,timeoutlapsed,timeoutlength,%
1860     timeoutlist,timeoutmouse,timeoutplay,timeoutsript,timer,timescale,%
1861     title,titlevisible,toon,top,topcap,topradius,topspacing,trace,%
1862     traceload,tracelogfile,trackcount,trackenabled,tracknextkeytime,%
1863     tracknextsampletime,trackpreviouskeytime,trackpreviousampletime,%
1864     trackstarttime,trackstoptime,tracktext,tracktype,trails,transform,%
1865     transitiontype,translate,triggercallback,trimwhitespace,tunneldepth,%
1866     tweened,tweenmode,type,[transparent],union,unload,unloadmember,%
1867     unloadmovie,unregisterallevents,update,updateframe,updatelock,%
1868     updatemovieenabled,updatestage,url,usealpha,usediffusewithtexture,%
1869     usefastquads,usehypertextstyles,uselineoffset,userdata,username,value,%
1870     vector,version,vertex,vertexlist,vertices,video,videoforwindowspresent,%
1871     viewh,viewpoint,viewscale,viewv,visibility,visible,void,voidp,volume,%
1872     volumeinfo,wait,waitfornetconnection,warpmode,width,widthvertices,wind,%
1873     window>windowlist>windowpresent>windowtype>word>wordwrap>world,%
1874     worldposition>worldspacetospritespace>worldtransform>wraptransform,%
1875     wraptransformlist>write>writevalue>,,xaxis>xtra>xtralist>xtras>,yaxis,%
1876     year,yon,zaxis>zoombox>zoomwindow>repeat>Conditional>Boolean>TypeDef,%
1877     Statement>Operator>String>Comment>Identifier>Special>x,y,z}
1878     sensitive=false,
1879     morecomment=[l]{--},
1880     morestring=[b]",
1881 }[keywords,comments,strings]%
1882 % \begin{macrocode}
1883 </lang3>

```

2.36 Lisp, AutoLisp

Most data are from

- GUY STEELE: **Common Lisp**; Copyright 1990 by Digital Equipment Corporation; ISBN 1-55558-042-4.

Thanks to Aslak Raanes for the ‘single comment’ delimiters. The keywords are the ‘one-word’ functions and macros of Common Lisp, i.e. words not containing a minus. But I left out the caaaaar, ... functions. If anyone types them in, I’d like to get them.

```

1884 <*lang2>
1885 \lst@definlanguage{Lisp}%
1886 {morekeywords={abort,abs,acons,acos,acosh,adjoin,alphanumericp,alter,%

```

```

1887     append, apply, apropos, aref, arrayp, ash, asin, asinh, assoc, atan, atanh,%
1888     atom, bit, boole, boundp, break, butlast, byte, catenate, ceiling, cerror,%
1889     char, character, characterp, choose, chunk, cis, close, clrhash, coerce,%
1890     collect, commonp, compile, complement, complex, complexp, concatenate,%
1891     conjugate, cons, consp, constantp, continue, cos, cosh, cotruncate,%
1892     count, delete, denominator, describe, directory, disassemble,%
1893     documentation, dpb, dribble, ed, eighth, elt, enclose, endp, eq, eql,%
1894     equal, equalp, error, eval, evalhook, evenp, every, exp, expand, export,%
1895     expt, fboundp, fceiling, fdefinition, ffloor, fifth, fill, find, first,%
1896     float, floatp, floor, fmakunbound, format, fourth, fround, ftruncate,%
1897     funcall, functionp, gatherer, gcd, generator, gensym, gentemp, get, getf,%
1898     gethash, identity, imagpart, import, inspect, integerp, intern,%
1899     intersection, tively, isqrt, keywordp, last, latch, lcm, ldb, ldiff,%
1900     length, list, listen, listp, load, log, logand, logbitp, logcount, logeqv,%
1901     logior, lognand, lognor, lognot, logtest, logxor, macroexpand,%
1902     makunbound, map, mapc, mapcan, mapcar, mapcon, maphash, mapl, maplist,%
1903     mask, max, member, merge, min, mingle, minusp, mismatch, mod, namestring,%
1904     nbutlast, nconc, nintersection, ninth, not, notany, notevery, nreconc,%
1905     nreverse, nsublis, nsubst, nth, nthcdr, null, numberp, numerator, nunion,%
1906     oddp, open, packagep, pairlis, pathname, pathnamep, phase, plusp,%
1907     position, positions, pprint, previous, princ, print, proclaim, provide,%
1908     random, rassoc, rational, rationalize, rationalp, read, readtablep,%
1909     realp, realpart, reduce, rem, remhash, remove, remprop, replace, require,%
1910     rest, revappend, reverse, room, round, rplaca, rplacd, sbit, scan, schar,%
1911     search, second, series, set, seventh, shadow, signal, signum, sin, sinh,%
1912     sixth, sleep, some, sort, split, sqrt, streamp, string, stringp, sublis,%
1913     subseq, subseries, subsetp, subst, substitute, subtypep, svref, sxhash,%
1914     symbolp, tailp, tan, tanh, tenth, terpri, third, truename, truncate,%
1915     typep, unexport, unintern, union, until, values, vector, vectorp, warn,%
1916     write, zerop, and, assert, case, ccase, cond, ctypecase, defc, declaim,%
1917     defclass, defconstant, defgeneric, defmacro, defmethod, defpackage,%
1918     defparameter, defsetf, defstruct, deftype, defun, defvar, do, dolist,%
1919     dotimes, ecase, encapsulated, etypecase, flet, formatter, gathering,%
1920     incf, iterate, labels, let, locally, loop, macrolet, mapping, or, pop,%
1921     producing, prog, psetf, psetq, push, pushnew, remf, return, rotatef,%
1922     setf, shiftf, step, time, trace, typecase, unless, untrace, when},%
1923     sensitive,% ???
1924     alsodigit=-,%
1925     morecomment=[1];,%
1926     morecomment=[s]{\#|}{\#},% 1997 Aslak Raanes
1927     morestring=[b]"%
1928 }[keywords, comments, strings]%

1929 </lang2>

1930 <*lang2>

    Stefan Lagotzki warned me to define this as a lisp dialect ...
1931 %%
1932 %% AutoLISP/VisualLISP - Stefan Lagotzki, info@lagotzki.de
1933 %%

```

```

1934 \lst@definlanguage[Auto]{Lisp}%
1935   {morekeywords={abs,acad_colordlg,acad_helpdlg,acad_strlsort,%
1936     action_tile,add_list,alert,alloc,and,angle,angtof,angtos,append,%
1937     apply,arx,arxload,arxunload,ascii,assoc,atan,atof,atoi,atom,%
1938     atoms-family,autoarxload,autoload,Boole,boundp,caddr,cadr,car,%
1939     cdr,chr,client_data_tile,close,command,cond,cons,cos,cvunit,%
1940     defun,defun-q,defun-q-list-ref,defun-q-list-set,dictadd,dictnext,%
1941     dictremove,dictrename,dictsearch,dimx_tile,dimy_tile,distance,%
1942     distof,done_dialog,end_image,end_list,entdel,entget,entlast,%
1943     entmake,entmakex,entmod,entnext,entsel,entupd,eq,equal,*error*,%
1944     eval,exit,exp,expand,expt,fill_image,findfile,fix,float,foreach,%
1945     function,gc,gcd,get_attr,get_tile,getangle,getcfg,getcname,%
1946     getcorner,getdist,getenv,getfiled,getint,getkeyword,getorient,%
1947     getpoint,getreal,getstring,getvar,graphscr,grclear,grdraw,grread,%
1948     grtext,grvecs,handent,help,if,initdia,initget,inters,itoa,lambda,%
1949     last,layoutlist,length,list,listp,load,load_dialog,log,logand,%
1950     logior,lsh,mapcar,max,mem,member,menucmd,menugroup,min,minusp,%
1951     mode_tile,namedobjdict,nentsel,nentselp,new_dialog,not,nth,%
1952     null,numberp,open,or,osnap,polar,prin1,princ,print,progn,prompt,%
1953     quit,quote,read,read-char,read-line,redraw,regapp,rem,repeat,%
1954     reverse,rtos,set,set_tile,setcfg,setenv,setfunhelp,setq,%
1955     setvar,setview,sin,slide_image,snvalid,sqrt,ssadd,ssdel,ssget,%
1956     ssgetfirst,sslenght,ssmemb,ssname,ssnamex,sssetfirst,startapp,%
1957     start_dialog,start_image,start_list,strcase,strcat,strlen,subst,%
1958     substr,tablet,tblnext,tblobjname,tblsearch,term_dialog,terpri,%
1959     textbox,textpage,textscr,trace,trans,type,unload_dialog,untrace,%
1960     vector_image,ver,vl-acad-defun,vl-acad-undefun,vl-arx-import,%
1961     vl-bb-ref,vl-bb-set,vl-catch-all-apply,%
1962     vl-catch-all-error-message,vl-catch-all-error-p,vl-cmdf,vl-consp,%
1963     vl-directory-files,vl-doc-export,vl-doc-import,vl-doc-ref,%
1964     vl-doc-set,vl-every,vl-exit-with-error,vl-exit-with-value,%
1965     vl-file-copy,vl-file-delete,vl-file-directory-p,vl-file-rename,%
1966     vl-file-size,vl-file-systime,vl-filename-base,%
1967     vl-filename-directory,vl-filename-extension,vl-filename-mktemp,%
1968     vl-get-resource,vl-list*,vl-list->string,%
1969     vl-list-exported-functions,vl-list-length,vl-list-loaded-vlx,%
1970     vl-load-all,vl-load-com,vl-load-reactors,vl-member-if,%
1971     vl-member-if-not,vl-position,vl-prin1-to-string,%
1972     vl-princ-to-string,vl-propagate,vl-registry-delete,%
1973     vl-registry-descendents,vl-registry-read,vl-registry-write,%
1974     vl-remove,vl-remove-if,vl-remove-if-not,vl-some,vl-sort,%
1975     vl-sort-i,vl-string->list,vl-string-elt,vl-string-left-trim,%
1976     vl-string-mismatch,vl-string-position,vl-string-right-trim,%
1977     vl-string-search,vl-string-subst,vl-string-translate,%
1978     vl-string-trim,vl-symbol-name,vl-symbol-value,vl-symbolp,%
1979     vl-unload-vlx,vl-vbaload,vl-vbarun,vl-vlx-loaded-p,vlax-3D-point,%
1980     vlax-add-cmd,vlax-create-object,vlax-curve-getArea,%
1981     vlax-curve-getDistAtParam,vlax-curve-getDistAtPoint,%
1982     vlax-curve-getEndPoint,vlax-curve-getParamAtDist,%
1983     vlax-curve-getParamAtPoint,%

```

```

1984     vlax-curve-getPointAtDist,vlax-curve-getPointAtParam,%
1985     vlax-curve-getStartParam,vlax-curve-getStartPoint,%
1986     vlax-curve-isClosed,vlax-curve-isPeriodic,vlax-curve-isPlanar,%
1987     vlax-curve-getClosestPointTo,%
1988     vlax-curve-getClosestPointToProjection,vlax-curve-getFirstDeriv,%
1989     vlax-curve-getSecondDeriv,vlax-dump-object,%
1990     vlax-ename->vla-object,vlax-erased-p,vlax-for,%
1991     vlax-get-acad-object,vlax-get-object,vlax-get-or-create-object,%
1992     vlax-get-property,vlax-import-type-library,vlax-invoke-method,%
1993     vlax-ldata-delete,vlax-ldata-get,vlax-ldata-list,vlax-ldata-put,%
1994     vlax-ldata-test,vlax-make-safearray,vlax-make-variant,%
1995     vlax-map-collection,vlax-method-applicable-p,%
1996     vlax-object-released-p,vlax-product-key,%
1997     vlax-property-available-p,vlax-put-property,vlax-read-enabled-p,%
1998     vlax-release-object,vlax-remove-cmd,vlax-safearray-fill,%
1999     vlax-safearray-get-dim,vlax-safearray-get-element,%
2000     vlax-safearray-get-l-bound,vlax-safearray-get-u-bound,%
2001     vlax-safearray-put-element,vlax-safearray-type,%
2002     vlax-safearray->list,vlax-tmatrix,vlax-typeinfo-available-p,%
2003     vlax-variant-change-type,vlax-variant-type,vlax-variant-value,%
2004     vlax-vla-object->ename,vlax-write-enabled-p,vlisp-compile,%
2005     vlr-acdb-reactor,vlr-add,vlr-added-p,vlr-beep-reaction,%
2006     vlr-command-reactor,vlr-current-reaction-name,vlr-data,%
2007     vlr-data-set,vlr-deepclone-reactor,vlr-docmanager-reactor,%
2008     vlr-dwg-reactor,vlr-dxf-reactor,vlr-editor-reactor,%
2009     vlr-insert-reactor,vlr-linker-reactor,vlr-lisp-reactor,%
2010     vlr-miscellaneous-reactor,vlr-mouse-reactor,vlr-notification,%
2011     vlr-object-reactor,vlr-owner-add,vlr-owner-remove,vlr-owners,%
2012     vlr-pers,vlr-pers-list,vlr-pers-p,vlr-pers-release,%
2013     vlr-reaction-names,vlr-reaction-set,vlr-reactions,vlr-reactors,%
2014     vlr-remove,vlr-remove-all,vlr-set-notification,%
2015     vlr-sysvar-reactor,vlr-toolbar-reactor,vlr-trace-reaction,%
2016     vlr-type,vlr-types,vlr-undo-reactor,vlr-wblock-reactor,%
2017     vlr-window-reactor,vlr-xref-reactor,vports,wcmatch,while,%
2018     write-char,write-line,xdroom,xdsize,zerop},%
2019     alsodigit=->,%
2020     otherkeywords={1+,1-},%
2021     sensitive=false,%
2022     morecomment=[1];,%
2023     morecomment=[1];;%
2024     morestring=[b]"%
2025 }[keywords,comments,strings]%
2026 </lang2>

```

2.37 LLVM

LLVM provides a collection of modular and reusable compiler and toolchain technologies, all further information can be found at its home page <http://llvm.org/>. Scott Pakin provided a language definition for the LLVM intermediate presenta-

tion according to <http://llvm.org/docs/>.² The language provides

2027 `<*lang3>`

2028 `\lst@definelanguage{LLVM}{%`

2029 `morekeywords={%`

- Instructions

2030 `ret,br,switch,indirectbr,invoke,resume,unreachable,%`

2031 `add,fadd,sub,fsub,mul,fmul,udiv,sdiv,fdiv,urem,srem,frem,%`

2032 `shl,lshr,ashr,and,or,xor,%`

2033 `extractelement,insertelement,shufflevector,%`

2034 `extractvalue,insertvalue,%`

2035 `alloca,load,store,fence,cmpxchg,atomicrmw,getelementptr,%`

2036 `trunc,zext,sext,fptrunc,fpext,fptoui,fptosi,uitofp,sitofp,ptrtoint,%`

2037 `inttoptr,bitcast,to,%`

2038 `icmp,fcmp,phi,select,call,va_arg,landingpad,%`

- Atomic operations – some duplication with the above

2039 `xchg,add,sub,and,nand,or,xor,max,min,umax,umin,%`

- Comparisons

2040 `eq,ne,ugt,uge,ult,ule,sgt,sge,slt,sle,%`

2041 `false,oeq,ogt,oge,olt,ole,one,ord,ueq,ugt,uge,ult,ule,une,uno,true,%`

- Linkage types

2042 `private,linker_private,linker_private_weak,linker_private_weak_def_auto,%`

2043 `internal,available_externally,linkonce,common,weak,appending,extern_weak,%`

2044 `linkonce_odr,weak_odr,external,dllimport,dlllexport,%`

- Function headers

2045 `define,declare,%`

- Parameter attributes

2046 `zeroext,signext,inreg,byval,sret,noalias,nocapture,next,%`

- Garbage collector names

2047 `gc,%`

- Function attributes

2048 `address_safety,alignstack,alwaysinline,nonlazybind,inlinehint,naked,%`

2049 `noimplicitfloat,noinline,noredzone,noreturn,nounwind,optsize,readnone,%`

2050 `readonly,returns_twice,ssp,sspreq,uwtable,%`

- Module-level inline assembly

2051 `module,asm,%`

²In this section ‘I’ is Scott Pakin.

- Data layout

```

2052         target,datalayout,%

• Inline assembler expressions
2053         sideeffect,alignstack,%

• Other keywords – I’m probably missing some here.
2054         nuw,nsw,exact,inbounds,unnamed_addr},%
2055         morekeywords=[2]{%

• Types
2056         i1,i2,i4,i8,i16,i32,i64,i128,i256,i512,i1024,% <-- Most common integers
2057         half,float,double,x86_fp80,fp128,ppc_fp128,x86mmx,%
2058         void,label,metadata},%
2059         alsoletter=.%
2060         sensitive=false,%
2061         morecomment=[1];,%
2062         morestring=[b]"%
2063     }

2064 </lang3>

```

2.38 Logo

I don’t know where the keywords are from and what kind of Logo it is. Help me!

```

2065 <*lang3>
2066 \lst@definelanguage{Logo}%
2067 % ??? {end,unix} also keywords
2068 {morekeywords={and,atan,arctan,both,break,bf,bl,butfirst,butlast,%
2069     cbreak, close,co,continue,cos,count,clearscreen,cs,debquit,%
2070     describe,diff,difference,ed,edit,either,empty,equalp,er,erase,%
2071     errpause,errquit,fifp,filefprint,fifty,filelefttype,fip,fileprint,%
2072     fird,fileread,fity,filetype,fiwd,fileword,f,first,or,fp,fprint,%
2073     fput,fty,ftype,full,fullscreen,go,bye,goodbye,gprop,greaterp,%
2074     help,if,iff,iffalse,ift,iftrue,nth,item,keyp,llast,lessp,list,%
2075     local,lput,make,max,maximum,memberp,memtrace,min,minimum,namep,%
2076     not,numberp,oflush,openr,openread,openw,openwrite,op,output,%
2077     pause,plist,pots,pow,pprop,pps,pr,print,product,quotient,random,%
2078     rc,readchar,rl,readlist,remprop,repcount,repeat,request,rnd,run,%
2079     se,sentence,sentencep,setc,setcolor,setipause,setqpause,po,show,%
2080     sin,split,splitscreen,sqrt,stop,sum,test,text,textscreen,thing,%
2081     to,tone,top,toplevel,type,untrace,wait,word,wordp,yaccdebug,is,%
2082     mod,remainder,trace,zerop,back,bk,bto,btouch,fd,forward,fto,%
2083     ftouch,getpen,heading,hit,hitoot,ht,hideturtle,loff,lampoff,lon,%
2084     lampon,lt,left,lot,lotoot,lto,ltouch,ltouch,penc,pencolor,pd,pendown,pe,%
2085     penerase,penmode,pu,penup,px,penreverse,rt,right,rto,rtouch,%
2086     scrunch,seth,setheading,setscrun,setscrunch,setxy,shownp,st,%

```

```

2087     showturtle,towardsxy,clean,wipeclean,xcor,ycor,tur,turtle,%
2088     display,dpy},%
2089     sensitive=f% ???
2090 }[keywords]%
2091 </lang3>

```

2.39 Lua

Stephan Hennig contributed the Lua keywords.

```
2092 <*lang2>
```

We begin with the keywords for Lua 5.0:

```

2093 %%
2094 %% Lua definitions (c) 2013 Stephan Hennig
2095 %%
2096 \lst@definelanguage[5.0]{Lua}{%

```

To enable highlighting of library keywords, the dot needs to be a letter.

```
2097 alsoletter={.},%
```

The language definition knows

- language keywords

```

2098     morekeywords=[1]{%
2099         and, break, do, else, elseif, end, false, for, function, if, in,%
2100         local, nil, not, or, repeat, return, then, true, until, while,%
2101     },%

```

- the standard library identifiers

```

2102     morekeywords=[2]{%

```

– coming from the base library

```

2103         _G, _LOADED, _REQUIREDNAME, _VERSION, LUA_PATH,%
2104         assert, collectgarbage, dofile, error, gcinfo, getfenv,%
2105         getmetatable, ipairs, loadfile, loadlib, loadstring, newproxy,%
2106         next, pairs, pcall, print, rawequal, rawget, rawset, require,%
2107         setfenv, setmetatable, tonumber, tostring, type, unpack, xpcall,%

```

– coming from the coroutine library

```

2108         coroutine, coroutine.create, coroutine.resume,%
2109         coroutine.status, coroutine.wrap, coroutine.yield,%

```

– the debug library

```

2110         _TRACEBACK, debug, debug.debug, debug.gethook, debug.getinfo,%
2111         debug.getlocal, debug.getupvalue, debug.sethook, debug.setlocal,%
2112         debug.setupvalue, debug.traceback,%

```

– the io library

```

2113         io, io.close, io.flush, io.input, io.lines, io.open, io.output,%
2114         io.popen, io.read, io.stderr, io.stdin, io.stdout, io.tmpfile,%
2115         io.type, io.write,%

```

```

    - the mathematical library
2116         _pow, math, math.abs, math.acos, math.asin, math.atan, math.atan2,%
2117         math.ceil, math.cos, math.deg, math.exp, math.floor, math.frexp,%
2118         math.ldexp, math.log, math.log10, math.max, math.min, math.mod,%
2119         math.pi, math.pow, math.rad, math.random, math.randomseed, math.sin,%
2120         math.sqrt, math.tan,%

    - the os library
2121         os, os.clock, os.date, os.difftime, os.execute, os.exit, os.getenv,%
2122         os.remove, os.rename, os.setlocale, os.time, os.tmpname,%

    - the string library
2123         string, string.byte, string.char, string.dump, string.find,%
2124         string.format, string.gfind, string.gsub, string.len, string.lower,%
2125         string.rep, string.sub, string.upper,%

    - the table library
2126         table, table.concat, table.foreach, table.foreachi, table.getn,%
2127         table.insert, table.remove, table.setn, table.sort,%
2128         },%

```

and some additional identifiers

```

2129     morekeywords=[2]{%
2130         _PROMPT, _PROMPT2, arg,%
2131     },%

```

These are the common language settings

```

2132     sensitive=true,%
2133     % single line comments
2134     morecomment=[1]{--},%
2135     % multi line comments
2136     morecomment=[s]{--[[]{}]},%
2137     % backslash escaped strings
2138     morestring=[b]",%
2139     morestring=[b]',%
2140     % multi line strings
2141     morestring=[s]{[[{}]}],%
2142 }[keywords,comments,strings]%

```

And here are the new definitions for Lua 5.1:

```

2143 \lst@definlanguage[5.1]{Lua}[5.0]{Lua}{%

```

There are some deletions

```

2144     deletekeywords=[2]{%
    concerning

```

- the base library

```

2145         _LOADED, _REQUIREDNAME, LUA_PATH, gcinfo, loadlib,%

```

- the debug library


```
2146         _TRACEBACK,%
```
- the mathematical library


```
2147         __pow, math.mod,%
```
- the string library


```
2148         string.gfind,%
```
- the table library


```
2149         table.foreach, table.foreachi, table.getn, table.setn,%
2150         },%
```

and some new identifiers in standard libraries like

```
2151  morekeywords=[2]{%
```

- the base library


```
2152         load, select,%
```
- coroutine library


```
2153         coroutine.running,%
```
- debug library


```
2154         debug.getfenv, debug.getmetatable, debug.getregistry, debug.setfenv,%
2155         debug.setmetatable,%
```
- the mathematical library


```
2156         math.cosh, math.fmod, math.huge, math.modf, math.sinh, math.tanh,%
```
- the package library which itself is new in Lua 5.1


```
2157         module, package, package.config, package.cpath, package.loaded,%
2158         package.loaders, package.loadlib, package.path, package.preload,%
2159         package.seeall,%
```
- the string library and


```
2160         string.gmatch, string.match, string.reverse,%
```
- the table library


```
2161         table.maxn,%
2162         },%
```

In Lua 5.1 long bracket comments were introduced also

```
2163  morecomment=[s]{--[[]-{}=]},%  
2164  morecomment=[s]{--[[]-{}==]},%  
2165  morecomment=[s]{--[[]-{}===]},%  
2166  morecomment=[s]{--[[]-{}====]},%  
2167  morecomment=[s]{--[[]-{}=====]},%  
2168  morecomment=[s]{--[[]-{}=====]},%  
2169  morecomment=[s]{--[[]-{}=====]},%  
2170  morecomment=[s]{--[[]-{}=====]},%  
2171  morecomment=[s]{--[[]-{}=====]},%  
2172  morecomment=[s]{--[[]-{}=====]},%
```

as well as long bracket strings

```
2173  morestring=[s]{[[]-{}=]},%  
2174  morestring=[s]{[[]-{}==]},%  
2175  morestring=[s]{[[]-{}===]},%  
2176  morestring=[s]{[[]-{}====]},%  
2177  morestring=[s]{[[]-{}=====]},%  
2178  morestring=[s]{[[]-{}=====]},%  
2179  morestring=[s]{[[]-{}=====]},%  
2180  morestring=[s]{[[]-{}=====]},%  
2181  morestring=[s]{[[]-{}=====]},%  
2182  morestring=[s]{[[]-{}=====]},%  
2183 }[keywords,comments,strings]%
```

Lua 5.2 again has some changed features. These are

```
2184 \lstdefinlanguage[5.2]{Lua}[5.1]{Lua}{%
```

- new language keywords

```
2185     morekeywords=[1]{%  
2186         goto,%  
2187     },%
```

- deleted identifiers from the standard libraries like

```
2188     deletekeywords=[2]{%
```

– the base library

```
2189         getfenv, loadstring, module, newproxy, setfenv, unpack,%
```

– the debug library

```
2190         debug.getfenv, debug.setfenv,%
```

– the mathematical library

```
2191         math.log10,%
```

– the package library and

```
2192         package.loaders, package.seeall,%
```

– the table library

```
2193         table.maxn,%  
2194     },%
```

Again there are some new identifiers in the standard libraries

```
2195 morekeywords=[2]{%  
like
```

- the base library

```
2196     rawlen,%
```

- the bit library

```
2197     bit32, bit32.arshift, bit32.band, bit32.bnot, bit32.bor,%  
2198     bit32.btest, bit32.bxor, bit32.extract, bit32.lrotate,%  
2199     bit32.lshift, bit32.replace, bit32.rrotate, bit32.rshift,%
```

- the debug library

```
2200     debug.getuservalue, debug.setuservalue, debug.upvalueid,%  
2201     debug.upvaluejoin,%
```

- the package library

```
2202     package.searchers, package.searchpath,%
```

- the table library

```
2203     table.pack, table.unpack,%  
2204     },%
```

There is a new additional identifier

```
2205 morekeywords=[2]{%  
2206     _ENV,%  
2207     },%
```

and labels are also new in Lua 5.2

```
2208 moredelim=[s][keywordstyle3]{::}{::},%  
2209 }[keywords,comments,strings]%
```

In January 2015 Lua 5.3 was released, Stephan Hennig again contributed the Lua keywords.

```
2210 \lst@definlanguage[5.3]{Lua}[5.2]{Lua}{%
```

- some libraries are deprecated, so the following identifiers are deleted

```
2211     deletekeywords=[2]{%
```

– the bit32 library

```
2212     bit32, bit32.arshift, bit32.band, bit32.bnot, bit32.bor,%  
2213     bit32.btest, bit32.bxor, bit32.extract, bit32.lrotate,%  
2214     bit32.lshift, bit32.replace, bit32.rrotate, bit32.rshift,%
```

```

    – the mathematical library
2215         math.atan2, math.cosh, math.frexp, math.ldexp, math.pow,%
2216         math.sinh, math.tanh,%
2217     },%

```

Again there are some new identifiers in the standard libraries

```

2218     morekeywords=[2]{%
like
    • the coroutine library
2219         coroutine.isyieldable,%

    • the mathematical library
2220         math.maxinteger, math.mininteger, math.tointeger, math.type,%
2221         math.ult,%

    • the string library
2222         string.pack, string.packsize, string.unpack,%

    • the table library
2223         table.move,%

    • the utf-8 library
2224         utf8, utf8.char, utf8.charpattern, utf8.codepoint, utf8.codes,%
2225         utf8.len, utf8.offset,%
2226     },%
2227     }[keywords,comments,strings]%
2228     </lang2>

```

Stephan Hennig also supplied a definition of a style for printing Lua code:

```

2229 <*lua-prf>
2230 \usepackage[rgb, x11names]{xcolor}
2231 \lstdefinestyle{Lua}{%
2232     language=[5.2]Lua,
2233     basicstyle=\ttfamily,
2234     columns=spaceflexible,
2235     keywordstyle=\bfseries\color{Blue4},% language keywords
2236     keywordstyle=[2]\bfseries\color{RoyalBlue3},% std. library identifiers
2237     keywordstyle=[3]\bfseries\color{Purple3},% labels
2238     stringstyle=\bfseries\color{Coral4},% strings
2239     commentstyle=\itshape\color{Green4},% comments
2240 }

```

This code is provided in the file `listings-lua.prf`, see section 2.4.1 (Preferences) of the listings documentation.

```

2241 </lua-prf>

```

2.40 Make

Rolf Niepraschk sent me the new definitions. Markus Pahlow found a missing comma and added some keywords, which improve the highlighting with `makemacrouse=true` (but I haven't tested this).

```
2242 <*lang2>
2243 %%
2244 %% Make definitions (c) 2000 Rolf Niepraschk
2245 %%
2246 \lst@definlanguage[gnu]{make}%
2247 {morekeywords={SHELL,MAKE,MAKEFLAGS,$@,$\%,$<,$?,$^,$+,$*,%
2248     @,^,<,\%,+,%?,*,% Markus Pahlow
2249     export,unexport,include,override,define,ifdef,ifneq,ifeq,else,%
2250     endif,vpath,subst,patsubst,strip,findstring,filter,filter-out,%
2251     sort,dir,notdir,suffix,basename,addsuffix,addprefix,join,word,%
2252     words,firstword,wildcard,shell,origin,foreach,%
2253     @D,@F,*D,*F,\%D,\%F,<D,<F,^D,^F,+D,+F,?D,?F,%
2254     AR,AS,CC,CXX,CO,CPP,FC,GET,LEX,PC,YACC,YACCR,MAKEINFO,TEXI2DVI,%
2255     WEAVE,CWEAVE,TANGLE,CTANGLE,RM,M2C,LINT,COMPILE,LINK,PREPROCESS,%
2256     CHECKOUT,%
2257     ARFLAGS,ASFLAGS,CFLAGS,CXXFLAGS,COFLAGS,CPPFLAGS,FFLAGS,GFLAGS,%
2258     LDFLAGS,LOADLIBES,LFLAGS,PFLAGS,RFLAGS,YFLAGS,M2FLAGS,MODFLAGS,%
2259     LINTFLAGS,MAKEINFO_FLAGS,TEXI2DVI_FLAGS,COFLAGS,GFLAGS,%
2260     OUTPUT_OPTION,SCCS_OUTPUT_OPTION,% missing comma: Markus Pahlow
2261     .PHONY,.SUFFIXES,.DEFAULT,.PRECIOUS,.INTERMEDIATE,.SECONDARY,%
2262     .IGNORE,.SILENT,.EXPORT_ALL_VARIABLES,MAKEFILES,VPATH,MAKESHELL,%
2263     MAKELEVEL,MAKECMDGOALS,SUFFIXES},%
2264     sensitive=true,
2265     morecomment=[l]\#,%
2266     morestring=[b]"%
2267 }[keywords,comments,strings,make]%
2268 \lst@definlanguage{make}
2269 {morekeywords={SHELL,MAKE,MAKEFLAGS,$@,$\%,$<,$?,$^,$+,$*},%
2270     sensitive=true,%
2271     morecomment=[l]\#,%
2272     morestring=[b]"%
2273 }[keywords,comments,strings,make]%
```

The two `[b]`-arguments have been added after a bug report by Dr. Jobst Hoffmann

```
2274 </lang2>
```

2.41 Matlab

I took the keywords from <http://www.utexas.edu/math/Matlab/Manual>, but I removed the keywords `i`, `j` and `tmp`—the change was proposed by Kai Below.

```
2275 <*lang1>
2276 \lst@definlanguage{Matlab}%
2277 {morekeywords={gt,lt,gt,lt,amp,abs,acos,acosh,acot,acoth,acsc,acsch,%
```

2278 all, angle, ans, any, asec, asech, asin, asinh, atan, atan2, atanh, aures, %
2279 auwrite, axes, axis, balance, bar, bessell, bessely, beta, %
2280 betainc, betaln, blanks, bone, break, brighten, capture, cart2pol, %
2281 cart2sph, caxis, cd, cdf2rdf, cedit, ceil, chol, cla, clabel, clc, clear, %
2282 clf, clock, close, colmmd, Colon, colorbar, colormap, ColorSpec, colperm, %
2283 comet, comet3, compan, compass, computer, cond, condest, conj, contour, %
2284 contour3, contourc, contrast, conv, conv2, cool, copper, corrcoef, cos, %
2285 cosh, cot, coth, cov, cplxpair, cputime, cross, csc, csch, csvread, %
2286 csvwrite, cumprod, cumsum, cylinder, date, dbclear, dbcont, dbdown, %
2287 dbquit, dbstack, dbstatus, dbstep, dbstop, dbtype, dbup, ddeadv, ddeexec, %
2288 ddeinit, ddepoke, ddereq, ddeterm, ddeunadv, deblank, dec2hex, deconv, %
2289 del2, delete, demo, det, diag, diary, diff, diffuse, dir, disp, dlmread, %
2290 dlmwrite, dmperm, dot, drawnow, echo, eig, ellipj, ellipke, else, elseif, %
2291 end, engClose, engEvalString, engGetFull, engGetMatrix, engOpen, %
2292 engOutputBuffer, engPutFull, engPutMatrix, engSetEvalCallback, %
2293 engSetEvalTimeout, engWinInit, eps, erf, erfc, erfcx, erfinv, error, %
2294 errorbar, etime, etree, eval, exist, exp, expint, expm, expo, eye, fclose, %
2295 feather, feof, ferror, feval, fft, fft2, fftshift, fgetl, fgets, figure, %
2296 fill, fill3, filter, filter2, find, findstr, finite, fix, flag, fliplr, %
2297 flipud, floor, flops, fmin, fmins, fopen, for, format, fplot, fprintf, %
2298 fread, frewind, fscanf, fseek, ftell, full, function, funm, fwrite, fzero, %
2299 gallery, gamma, gammainc, gammaln, gca, gcd, gcf, gco, get, getenv, %
2300 getframe, ginput, global, gplot, gradient, gray, graymon, grid, griddata, %
2301 gtext, hadamard, hankel, help, hess, hex2dec, hex2num, hidden, hilb, hist, %
2302 hold, home, hostid, hot, hsv, hsv2rgb, if, ifft, ifft2, imag, image, %
2303 imagesc, Inf, info, input, int2str, interp1, interp2, interpft, inv, %
2304 invhilb, isempty, isglobal, ishold, isieee, isinf, isletter, isnan, %
2305 isreal, isspace, issparse, isstr, jet, keyboard, kron, lasterr, lcm, %
2306 legend, legendre, length, lin2mu, line, linspace, load, log, log10, log2, %
2307 loglog, logm, logspace, lookfor, lower, ls, lscov, lu, magic, matClose, %
2308 matDeleteMatrix, matGetDir, matGetFp, matGetFull, matGetMatrix, %
2309 matGetNextMatrix, matGetString, matlabrc, matlabroot, matOpen, %
2310 matPutFull, matPutMatrix, matPutString, max, mean, median, menu, mesh, %
2311 meshc, meshgrid, meshz, mexAtExit, mexCallMATLAB, mexdebug, %
2312 mexErrMsgTxt, mexEvalString, mexFunction, mexGetFull, mexGetMatrix, %
2313 mexGetMatrixPtr, mexPrintf, mexPutFull, mexPutMatrix, mexSetTrapFlag, %
2314 min, more, movie, moviein, mu2lin, mxMalloc, mxCopyCharacterToPtr, %
2315 mxCopyComplex16ToPtr, mxCopyInteger4ToPtr, mxCopyPtrToCharacter, %
2316 mxCopyPtrToComplex16, mxCopyPtrToInteger4, mxCopyPtrToReal8, %
2317 mxCopyReal8ToPtr, mxCreateFull, mxCreateSparse, mxCreateString, %
2318 mxFree, mxFreeMatrix, mxGetIr, mxGetJc, mxGetM, mxGetN, mxGetName, %
2319 mxGetNzmax, mxGetPi, mxGetPr, mxGetScalar, mxGetString, mxIsComplex, %
2320 mxIsFull, mxIsNumeric, mxIsSparse, mxIsString, mxIsTypeDouble, %
2321 mxSetIr, mxSetJc, mxSetM, mxSetN, mxSetName, mxSetNzmax, mxSetPi, %
2322 mxSetPr, NaN, nargchk, nargin, nargout, newplot, nextpow2, nnls, nnz, %
2323 nonzeros, norm, normest, null, num2str, nzmax, ode23, ode45, orient, orth, %
2324 pack, pascal, patch, path, pause, pcolor, pi, pink, pinv, plot, plot3, %
2325 pol2cart, polar, poly, polyder, polyeig, polyfit, polyval, polyvalm, %
2326 pow2, print, printopt, prism, prod, pwd, qr, qrdelete, qrinsert, quad, %
2327 quad8, quit, quiver, qz, rand, randn, randperm, rank, rat, rats, rbbox, %

```

2328     rcond,real,realmax,realmin,refresh,rem,reset,reshape,residue,%
2329     return,rgb2hsv,rgbplot,rootobject,roots,rose,rosser,rot90,rotate,%
2330     round,rref,rrefmovie,rsf2csf,save,saxis,schur,sec,sech,semilogx,%
2331     semilogy,set,setstr,shading,sign,sin,sinh,size,slice,sort,sound,%
2332     spalloc,sparse,spaugment,spconvert,spdiags,specular,speye,spfun,%
2333     sph2cart,sphere,spinmap,spline,spones,spparms,sprandn,sprandsym,%
2334     sprank,sprintf,spy,sqrt,sqrtm,sscanf,stairs,startup,std,stem,%
2335     str2mat,str2num,strcmp,strings,strrep,strtok,subplot,subscribe,%
2336     subspace,sum,surf,surface,surfc,surfl,surfnorm,svd,symbfact,%
2337     symmmd,symrcm,tan,tanh,tempdir,tempname,terminal,text,tic,title,%
2338     toc,toeplitz,trace,trapz,tril,triu,type,uicontrol,uigetfile,%
2339     uimenu,uiputfile,unix,unwrap,upper,vander,ver,version,view,%
2340     viewmtx,waitforbuttonpress,waterfall,wavread,wavwrite,what,%
2341     whatsnew,which,while,white,whitebg,who,whos,wilkinson,wk1read,%
2342     wk1write,xlabel,xor,ylabel,zeros,zlabel,zoom},%
2343     sensitive,%
2344     morecomment=[l]\%,%
2345     morestring=[m]'%
2346 }[keywords,comments,strings]%
2347 </lang1>

```

2.42 Mathematica

Michael Wiese typed in all the keywords for the 1.0 and 3.0 versions. Oliver Ruebenkoenig wrote a script to generate the lists for the 5.2 version.

```

2348 <*lang1>
2349 \lst@definelanguage[5.2]{Mathematica}[3.0]{Mathematica}%%
2350 {morekeywords={Above,AbsoluteOptions,AbsoluteTiming,AccountingForm,%
2351     AccuracyGoal,Active,ActiveItem,AddOnHelpPath,%
2352     AdjustmentBox,AdjustmentBoxOptions,After,AiryAiPrime,%
2353     AlgebraicRulesData,Algebraics,Alias,AlignmentMarker,%
2354     AllowInlineCells,AllowScriptLevelChange,Analytic,AnimationCycleOffset,%
2355     AnimationCycleRepetitions,AnimationDirection,AnimationDisplayTime,ApartSquareFree,%
2356     AppellF1,ArgumentCountQ,ArrayDepth,ArrayPlot,%
2357     ArrayQ,ArrayRules,AspectRatioFixed,Assuming,%
2358     Assumptions,AutoDelete,AutoEvaluateEvents,AutoGeneratedPackage,%
2359     AutoIndent,AutoIndentSpacings,AutoItalicWords,AutoloadPath,%
2360     AutoOpenNotebooks,AutoOpenPalettes,AutoScroll,AutoSpacing,%
2361     AutoStyleOptions,Axis,BackgroundTasksSettings,Backsubstitution,%
2362     Backward,Baseline,Before,BeginDialogPacket,%
2363     BeginFrontEndInteractionPacket,Below,BezoutMatrix,BinaryFormat,%
2364     BinaryGet,BinaryRead,BinaryReadList,BinaryWrite,%
2365     BitAnd,BitNot,BitOr,BitXor,%
2366     Black,BlankForm,Blue,Boole,%
2367     Booleans,Bottom,Bounds,Box,%
2368     BoxBaselineShift,BoxData,BoxDimensions,BoxFormFormatTypes,%
2369     BoxFrame,BoxMargins,BoxRegion,Brown,%
2370     Buchberger,Button,ButtonBox,ButtonBoxOptions,%

```

2371 ButtonCell,ButtonContents,ButtonData,ButtonEvaluator,%
2372 ButtonExpandable,ButtonFrame,ButtonFunction,ButtonMargins,%
2373 ButtonMinHeight,ButtonNote,ButtonNotebook,ButtonSource,%
2374 ButtonStyle,ButtonStyleMenuListing,ByteOrdering,CallPacket,%
2375 CarmichaelLambda,Cell,CellAutoOverwrite,CellBaseline,%
2376 CellBoundingBox,CellBracketOptions,CellContents,CellDingbat,%
2377 CellEditDuplicate,CellElementsBoundingBox,CellElementSpacings,CellEvaluationDuplicate,%
2378 CellFrame,CellFrameColor,CellFrameLabelMargins,CellFrameLabels,%
2379 CellFrameMargins,CellGroup,CellGroupData,CellGrouping,%
2380 CellGroupingRules,CellHorizontalScrolling,CellLabel,CellLabelAutoDelete,%
2381 CellLabelMargins,CellLabelPositioning,CellMargins,CellObject,%
2382 CellOpen,CellPasswords,CellPrint,CellSize,%
2383 CellStyle,CellTags,CellularAutomaton,Center,%
2384 CharacterEncoding,CharacterEncodingsPath,CharacteristicPolynomial,CharacterRange,%
2385 CheckAll,CholeskyDecomposition,Clip,ClipboardNotebook,%
2386 Closed,ClosingAutoSave,CoefficientArrays,CoefficientDomain,%
2387 CofactorExpansion,ColonForm,ColorFunctionScaling,ColorRules,%
2388 ColorSelectorSettings,Column,ColumnAlignments,ColumnLines,%
2389 ColumnsEqual,ColumnSpacings,ColumnWidths,CommonDefaultFormatTypes,%
2390 CompileOptimizations,CompletionsListPacket,Complexes,ComplexityFunction,%
2391 Compose,ComposeSeries,ConfigurationPath,ConjugateTranspose,%
2392 Connect,ConsoleMessage,ConsoleMessagePacket,ConsolePrint,%
2393 ContentsBoundingBox,ContextToFileName,ContinuedFraction,ConversionOptions,%
2394 ConversionRules,ConvertToBitmapPacket,ConvertToPostScript,ConvertToPostScriptPacket,%
2395 Copyable,CoshIntegral,CounterAssignments,CounterBox,%
2396 CounterBoxOptions,CounterEvaluator,CounterFunction,CounterIncrements,%
2397 CounterStyle,CounterStyleMenuListing,CreatePalettePacket,Cross,%
2398 CurrentlySpeakingPacket,Cyan,CylindricalDecomposition,DampingFactor,%
2399 DataRange,Debug,DebugTag,Decimal,%
2400 DedekindEta,DefaultDuplicateCellStyle,DefaultFontProperties,DefaultFormatType,%
2401 DefaultFormatTypeForStyle,DefaultInlineFormatType,DefaultInputFormatType,
2402 DefaultNaturalLanguage,%
2403 DefaultNewCellStyle,DefaultNewInlineCellStyle,DefaultNotebook,DefaultOutputFormatType,%
2404 DefaultStyleDefinitions,DefaultTextFormatType,DefaultTextInlineFormatType,DefaultValues,%
2405 DefineExternal,DegreeLexicographic,DegreeReverseLexicographic,Deletable,%
2406 DeleteContents,DeletionWarning,DelimiterFlashTime,DelimiterMatching,%
2407 Delimiters,DependentVariables,DiacriticalPositioning,DialogLevel,%
2408 DifferenceOrder,DigitCharacter,DigitCount,DiracDelta,%
2409 Direction,DirectoryName,DisableConsolePrintPacket,DiscreteDelta,%
2410 DisplayAnimation,DisplayEndPacket,DisplayFlushImagePacket,DisplayForm,%
2411 DisplayPacket,DisplayRules,DisplaySetSizePacket,DisplayString,%
2412 DivisionFreeRowReduction,DOSTextFormat,DoubleExponential,DoublyInfinite,%
2413 Down,DragAndDrop,DrawHighlighted,DualLinearProgramming,%
2414 DumpGet,DumpSave,Edit,Editable,%
2415 EditButtonSettings,EditCellTagsSettings,EditDefinition,EditIn,%
2416 Element,EliminationOrder,EllipticExpPrime,EllipticNomeQ,%
2417 EllipticReducedHalfPeriods,EllipticThetaPrime,Empty,EnableConsolePrintPacket,%
2418 Encoding,EndAdd,EndDialogPacket,EndFrontEndInteractionPacket,%
2419 EndOfLine,EndOfString,Enter,EnterExpressionPacket,%
2420 EnterTextPacket,EqualColumns,EqualRows,EquatedTo,%

2421 Erfi,ErrorBox,ErrorBoxOptions,ErrorNorm,%
 2422 ErrorPacket,ErrorsDialogSettings,Evaluatable,EvaluatePacket,%
 2423 EvaluationCell,EvaluationCompletionAction,EvaluationMonitor,EvaluationNotebook,%
 2424 Evaluator,EvaluatorNames,EventEvaluator,ExactNumberQ,%
 2425 ExactRootIsolation,Except,ExcludedForms,Exists,%
 2426 ExitDialog,ExponentPosition,ExponentStep,Export,%
 2427 ExportAutoReplacements,ExportPacket,ExportString,ExpressionPacket,%
 2428 ExpToTrig,Extension,ExternalCall,ExternalDataCharacterEncoding,%
 2429 Extract,Fail,FEDisableConsolePrintPacket,FEEnableConsolePrintPacket,%
 2430 Fibonacci,File,FileFormat,FileInformation,%
 2431 FileName,FileNameDialogSettings,FindFit,FindInstance,%
 2432 FindMaximum,FindSettings,FitAll,FlushPrintOutputPacket,%
 2433 Font,FontColor,FontFamily,FontName,%
 2434 FontPostScriptName,FontProperties,FontReencoding,FontSize,%
 2435 FontSlant,FontSubstitutions,FontTracking,FontVariations,%
 2436 FontWeight,ForAll,FormatRules,FormatTypeAutoConvert,%
 2437 FormatValues,FormBox,FormBoxOptions,Forward,%
 2438 ForwardBackward,FourierCosTransform,FourierParameters,FourierSinTransform,%
 2439 FourierTransform,FractionalPart,FractionBox,FractionBoxOptions,%
 2440 FractionLine,FrameBox,FrameBoxOptions,FresnelC,%
 2441 FresnelS,FromContinuedFraction,FromDigits,FrontEndExecute,%
 2442 FrontEndObject,FrontEndStackSize,FrontEndToken,FrontEndTokenExecute,%
 2443 FrontEndVersion,Full,FullAxes,FullSimplify,%
 2444 FunctionExpand,FunctionInterpolation,GaussKronrod,GaussPoints,%
 2445 GenerateBitmapCaches,GenerateConditions,GeneratedCell,GeneratedParameters,%
 2446 Generic,GetBoundingBoxSizePacket,GetContext,GetFileName,%
 2447 GetFrontEndOptionsDataPacket,GetLinebreakInformationPacket,%
 2448 GetMenusPacket,GetPageBreakInformationPacket,%
 2449 Glaisher,GlobalPreferences,GlobalSession,Gradient,%
 2450 GraphicsData,GraphicsGrouping,Gray,Green,%
 2451 Grid,GridBaseline,GridBox,GridBoxOptions,%
 2452 GridCreationSettings,GridDefaultElement,GridFrame,GridFrameMargins,%
 2453 GroupPageBreakWithin,HarmonicNumber,Hash,HashTable,%
 2454 HeadCompose,HelpBrowserLookup,HelpBrowserNotebook,HelpBrowserSettings,%
 2455 HessenbergDecomposition,Hessian,HoldAllComplete,HoldComplete,%
 2456 HoldPattern,Horizontal,HorizontalForm,HorizontalScrollPosition,%
 2457 HTMLSave,Hypergeometric0F1Regularized,Hypergeometric1F1Regularized,%
 2458 Hypergeometric2F1Regularized,%
 2459 HypergeometricPFQ,HypergeometricPFQRegularized,HyperlinkCreationSettings,Hyphenation,%
 2460 HyphenationOptions,IgnoreCase,ImageCache,ImageCacheValid,%
 2461 ImageMargins,ImageOffset,ImageRangeCache,ImageRegion,%
 2462 ImageResolution,ImageRotated,ImageSize,Import,%
 2463 ImportAutoReplacements,ImportString,IncludeFileExtension,IncludeSingularTerm,%
 2464 IndentingNewlineSpacings,IndentMaxFraction,IndexCreationOptions,Inequality,%
 2465 InexactNumberQ,InexactNumbers,Inherited,InitializationCell,%
 2466 InitializationCellEvaluation,InitializationCellWarning,%
 2467 InlineCounterAssignments,InlineCounterIncrements,%
 2468 InlineRules,InputAliases,InputAutoFormat,InputAutoReplacements,%
 2469 InputGrouping,InputNamePacket,InputNotebook,InputPacket,%
 2470 InputSettings,InputStringPacket,InputToBoxFormPacket,InputToInputForm,%

2471 InputToStandardForm, InsertionPointObject, IntegerExponent, IntegerPart, %
 2472 Integers, Interactive, Interlaced, InterpolationOrder, %
 2473 InterpolationPoints, InterpolationPrecision, InterpretationBox, %
 2474 InterpretationBoxOptions, %
 2475 InterpretTemplate, InterruptSettings, Interval, IntervalIntersection, %
 2476 IntervalMemberQ, IntervalUnion, InverseBetaRegularized, InverseEllipticNomeQ, %
 2477 InverseErf, InverseErfc, InverseFourierCosTransform, %
 2478 InverseFourierSinTransform, %
 2479 InverseFourierTransform, InverseGammaRegularized, InverseJacobiCD, %
 2480 InverseJacobiCN, %
 2481 InverseJacobiCS, InverseJacobiDC, InverseJacobiDN, InverseJacobiDS, %
 2482 InverseJacobiNC, InverseJacobiND, InverseJacobiNS, InverseJacobiSC, %
 2483 InverseJacobiSD, InverseLaplaceTransform, InverseWeierstrassP, InverseZTransform, %
 2484 Jacobian, JacobiCD, JacobiCN, JacobiCS, %
 2485 JacobiDC, JacobiDN, JacobiDS, JacobiNC, %
 2486 JacobiND, JacobiNS, JacobiSC, JacobiSD, %
 2487 JordanDecomposition, K, Khinchin, KleinInvariantJ, %
 2488 KroneckerDelta, Language, LanguageCategory, LaplaceTransform, %
 2489 Larger, Launch, LayoutInformation, Left, %
 2490 LetterCharacter, Lexicographic, LicenseID, LimitsPositioning, %
 2491 LimitsPositioningTokens, LinearSolveFunction, LinebreakAdjustments, LineBreakWithin, %
 2492 LineForm, LineIndent, LineSpacing, LineWrapParts, %
 2493 LinkActivate, LinkClose, LinkConnect, LinkConnectedQ, %
 2494 LinkCreate, LinkError, LinkFlush, LinkHost, %
 2495 LinkInterrupt, LinkLaunch, LinkMode, LinkObject, %
 2496 LinkOpen, LinkOptions, LinkPatterns, LinkProtocol, %
 2497 LinkRead, LinkReadHeld, LinkReadyQ, Links, %
 2498 LinkWrite, LinkWriteHeld, ListConvolve, ListCorrelate, %
 2499 Listen, ListInterpolation, ListQ, LiteralSearch, %
 2500 LongestMatch, LongForm, Loopback, LUBackSubstitution, %
 2501 LUdecomposition, MachineID, MachineName, MachinePrecision, %
 2502 MacintoshSystemPageSetup, Magenta, Magnification, MakeBoxes, %
 2503 MakeExpression, MakeRules, Manual, MatchLocalNameQ, %
 2504 MathematicaNotation, MathieuC, MathieuCharacteristicA, MathieuCharacteristicB, %
 2505 MathieuCharacteristicExponent, MathieuCPrime, MathieuS, MathieuSPrime, %
 2506 MathMLForm, MathMLText, MatrixRank, Maximize, %
 2507 MaxIterations, MaxPlotPoints, MaxPoints, MaxRecursion, %
 2508 MaxStepFraction, MaxSteps, MaxStepSize, Mean, %
 2509 Median, MeijerG, MenuPacket, MessageOptions, %
 2510 MessagePacket, MessagesNotebook, MetaCharacters, Method, %
 2511 MethodOptions, Minimize, MinRecursion, MinSize, %
 2512 Mode, ModularLambda, MonomialOrder, MonteCarlo, %
 2513 Most, MousePointerNote, MultiDimensional, MultilaunchWarning, %
 2514 MultilineFunction, MultiplicativeOrder, Multiplicity, Nand, %
 2515 NeedCurrentFrontEndPackagePacket, NeedCurrentFrontEndSymbolsPacket, %
 2516 NestedScriptRules, NestWhile, %
 2517 NestWhileList, NevilleThetaC, NevilleThetaD, NevilleThetaN, %
 2518 NevilleThetaS, Newton, Next, NHoldAll, %
 2519 NHoldFirst, NHoldRest, NMaximize, NMinimize, %
 2520 NonAssociative, NonPositive, Nor, Norm, %

2521 NormalGrouping,NormalSelection,NormFunction,Notebook,%
 2522 NotebookApply,NotebookAutoSave,NotebookClose,NotebookConvert,%
 2523 NotebookConvertSettings,NotebookCreate,NotebookCreateReturnObject,NotebookDefault,%
 2524 NotebookDelete,NotebookDirectory,NotebookFind,NotebookFindReturnObject,%
 2525 NotebookGet,NotebookGetLayoutInformationPacket,NotebookGetMisspellingsPacket,%
 2526 NotebookInformation,%
 2527 NotebookLocate,NotebookObject,NotebookOpen,NotebookOpenReturnObject,%
 2528 NotebookPath,NotebookPrint,NotebookPut,NotebookPutReturnObject,%
 2529 NotebookRead,NotebookResetGeneratedCells,Notebooks,NotebookSave,%
 2530 NotebookSaveAs,NotebookSelection,NotebookSetupLayoutInformationPacket,%
 2531 NotebooksMenu,%
 2532 NotebookWrite,NotElement,NProductExtraFactors,NProductFactors,%
 2533 NRoots,NSumExtraTerms,NSumTerms,NumberMarks,%
 2534 NumberMultiplier,NumberString,NumericFunction,NumericQ,%
 2535 NValues,Offset,OLEData,OneStepRowReduction,%
 2536 Open,OpenFunctionInspectorPacket,OpenSpecialOptions,OptimizationLevel,%
 2537 OptionInspectorSettings,OptionQ,OptionsPacket,OptionValueBox,%
 2538 OptionValueBoxOptions,Orange,Ordering,Oscillatory,%
 2539 OutputAutoOverwrite,OutputFormData,OutputGrouping,OutputMathEditExpression,%
 2540 OutputNamePacket,OutputToOutputForm,OutputToStandardForm,Over,%
 2541 Overflow,Overlaps,Overscript,OverscriptBox,%
 2542 OverscriptBoxOptions,OwnValues,PadLeft,PadRight,%
 2543 PageBreakAbove,PageBreakBelow,PageBreakWithin,PageFooterLines,%
 2544 PageFooters,PageHeaderLines,PageHeaders,PalettePath,%
 2545 PaperWidth,ParagraphIndent,ParagraphSpacing,ParameterVariables,%
 2546 ParentConnect,ParentForm,Parentthesize,PasteBoxFormInlineCells,%
 2547 Path,PatternTest,PeriodicInterpolation,Pick,%
 2548 Piecewise,PiecewiseExpand,Pink,Pivoting,%
 2549 PixelConstrained,Placeholder,Plain,Plot3Matrix,%
 2550 PointForm,PolynomialForm,PolynomialReduce,Polynomials,%
 2551 PowerModList,Precedence,PreferencesPath,PreserveStyleSheet,%
 2552 Previous,PrimaryPlaceholder,Primes,PrincipalValue,%
 2553 PrintAction,PrintingCopies,PrintingOptions,PrintingPageRange,%
 2554 PrintingStartingPageNumber,PrintingStyleEnvironment,PrintPrecision,%
 2555 PrivateCellOptions,%
 2556 PrivateEvaluationOptions,PrivateFontOptions,PrivateNotebookOptions,PrivatePaths,%
 2557 ProductLog,PromptForm,Purple,Quantile,%
 2558 QuasiMonteCarlo,QuasiNewton,RadicalBox,RadicalBoxOptions,%
 2559 RandomSeed,RationalFunctions,Rationals,RawData,%
 2560 RawMedium,RealBlockForm,Reals,Reap,%
 2561 Red,Refine,Refresh,RegularExpression,%
 2562 Reinstall,Release,Removed,RenderingOptions,%
 2563 RepeatedString,ReplaceList,Rescale,ResetMenusPacket,%
 2564 Resolve,ResumePacket,ReturnExpressionPacket,ReturnInputFormPacket,%
 2565 ReturnPacket,ReturnTextPacket,Right,Root,%
 2566 RootReduce,RootSum,Row,RowAlignments,%
 2567 RowBox,RowLines,RowMinHeight,RowsEqual,%
 2568 RowSpacings,RSolve,RuleCondition,RuleForm,%
 2569 RulerUnits,Saveable,SaveAutoDelete,ScreenRectangle,%
 2570 ScreenStyleEnvironment,ScriptBaselineShifts,ScriptLevel,ScriptMinSize,%

2571 ScriptRules,ScriptSizeMultipliers,ScrollingOptions,ScrollPosition,%
 2572 Second,SectionGrouping,Selectable,SelectedNotebook,%
 2573 Selection,SelectionAnimate,SelectionCell,SelectionCellCreateCell,%
 2574 SelectionCellDefaultStyle,SelectionCellParentStyle,SelectionCreateCell,%
 2575 SelectionDuplicateCell,%
 2576 SelectionEvaluate,SelectionEvaluateCreateCell,SelectionMove,SelectionSetStyle,%
 2577 SelectionStrategy,SendFontInformationToKernel,SequenceHold,SequenceLimit,%
 2578 SeriesCoefficient,SetBoxFormNamesPacket,SetEvaluationNotebook,%
 2579 SetFileLoadingContext,%
 2580 SetNotebookStatusLine,SetOptionsPacket,SetSelectedNotebook,%
 2581 SetSpeechParametersPacket,%
 2582 SetValue,ShortestMatch,ShowAutoStyles,ShowCellBracket,%
 2583 ShowCellLabel,ShowCellTags,ShowClosedCellArea,ShowContents,%
 2584 ShowCursorTracker,ShowGroupOpenCloseIcon,ShowPageBreaks,ShowSelection,%
 2585 ShowShortBoxForm,ShowSpecialCharacters,ShowStringCharacters,%
 2586 ShrinkWrapBoundingBox,%
 2587 SingleLetterItalics,SingularityDepth,SingularValueDecomposition,%
 2588 SingularValueList,%
 2589 SinhIntegral,Smaller,Socket,SolveDelayed,%
 2590 SoundAndGraphics,Sow,Space,SpaceForm,%
 2591 SpanAdjustments,SpanCharacterRounding,SpanLineThickness,SpanMaxSize,%
 2592 SpanMinSize,SpanningCharacters,SpanSymmetric,Sparse,%
 2593 SparseArray,SpeakTextPacket,SpellingDictionaries,SpellingDictionariesPath,%
 2594 SpellingOptions,SpellingSuggestionsPacket,Spherical,Split,%
 2595 SqrtBox,SqrtBoxOptions,StandardDeviation,StandardForm,%
 2596 StartingStepSize,StartOfLine,StartOfString,StartupSound,%
 2597 StepMonitor,StieltjesGamma,StoppingTest,StringCases,%
 2598 StringCount,StringExpression,StringFreeQ,StringQ,%
 2599 StringReplaceList,StringReplacePart,StringSplit,StripBoxes,%
 2600 StripWrapperBoxes,StructuredSelection,StruveH,StruveL,%
 2601 StyleBox,StyleBoxAutoDelete,StyleBoxOptions,StyleData,%
 2602 StyleDefinitions,StyleForm,StyleMenuListing,StyleNameDialogSettings,%
 2603 StylePrint,StyleSheetPath,Subresultants,SubscriptBox,%
 2604 SubscriptBoxOptions,Subsets,Subsuperscript,SubsuperscriptBox,%
 2605 SubsuperscriptBoxOptions,SubtractFrom,SubValues,SugarCube,%
 2606 SuperscriptBox,SuperscriptBoxOptions,SuspendPacket,SylvesterMatrix,%
 2607 SymbolName,Syntax,SyntaxForm,SyntaxPacket,%
 2608 SystemException,SystemHelpPath,SystemStub,Tab,%
 2609 TabFilling,TabSpacings,TagBox,TagBoxOptions,%
 2610 TaggingRules,TagStyle,TargetFunctions,TemporaryVariable,%
 2611 TensorQ,TeXSave,TextAlignment,TextBoundingBox,%
 2612 TextData,TextJustification,TextLine,TextPacket,%
 2613 TextParagraph,TextRendering,TextStyle,ThisLink,%
 2614 TimeConstraint,TimeVariable,TitleGrouping,ToBoxes,%
 2615 ToColor,ToFileName,Toggle,ToggleFalse,%
 2616 Tolerance,TooBig,Top,ToRadicals,%
 2617 Total,Tr,TraceAction,TraceInternal,%
 2618 TraceLevel,TraditionalForm,TraditionalFunctionNotation,TraditionalNotation,%
 2619 TraditionalOrder,TransformationFunctions,TransparentColor,Trapezoidal,%
 2620 TrigExpand,TrigFactor,TrigFactorList,TrigReduce,%

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2621 TrigToExp,Tuples,UnAlias,Underflow,%
2622 Underoverscript,UnderoverscriptBox,UnderoverscriptBoxOptions,Underscript,%
2623 UnderscriptBox,UnderscriptBoxOptions,UndocumentedTestFEParsePacket,%
2624 UndocumentedTestGetSelectionPacket,%
2625 UnitStep,Up,URL,Using,%
2626 V2Get,Value,ValueBox,ValueBoxOptions,%
2627 ValueForm,Variance,Verbatim,Verbose,%
2628 VerboseConvertToPostScriptPacket,VerifyConvergence,VerifySolutions,Version,%
2629 VersionNumber,Vertical,VerticalForm,ViewPointSelectorSettings,%
2630 Visible,VisibleCell,WeierstrassHalfPeriods,WeierstrassInvariants,%
2631 WeierstrassSigma,WeierstrassZeta,White,Whitespace,%
2632 WhitespaceCharacter,WindowClickSelect,WindowElements,WindowFloating,%
2633 WindowFrame,WindowFrameElements,WindowMargins,WindowMovable,%
2634 WindowSize,WindowTitle,WindowToolbars,WindowWidth,%
2635 WordBoundary,WordCharacter,WynnDegree,XMLElement},%
2636 moreendkeywords={,$AddOnsDirectory,$AnimationDisplayFunction,%
2637 $AnimationFunction,%
2638 $Assumptions,$BaseDirectory,$BoxForms,$ByteOrdering,%
2639 $CharacterEncoding,$ConditionHold,$CurrentLink,$DefaultPath,%
2640 $ExportEncodings,$ExportFormats,$FormatType,$FrontEnd,%
2641 $HistoryLength,$HomeDirectory,$ImportEncodings,$ImportFormats,%
2642 $InitialDirectory,$InstallationDate,$InstallationDirectory,%
2643 $InterfaceEnvironment,%
2644 $LaunchDirectory,$LicenseExpirationDate,$LicenseID,$LicenseProcesses,%
2645 $LicenseServer,$MachineDomain,$MaxExtraPrecision,$MaxLicenseProcesses,%
2646 $MaxNumber,$MaxPiecewiseCases,$MaxPrecision,$MaxRootDegree,%
2647 $MinNumber,$MinPrecision,$NetworkLicense,$NumberMarks,%
2648 $Off,$OutputForms,$ParentLink,$ParentProcessID,%
2649 $PasswordFile,$PathnameSeparator,$PreferencesDirectory,$PrintForms,%
2650 $PrintLiteral,$ProcessID,$ProcessorType,$ProductInformation,%
2651 $ProgramName,$PSDirectDisplay,$RandomState,$RasterFunction,%
2652 $RootDirectory,$SetParentLink,$SoundDisplay,$SuppressInputFormHeads,%
2653 $SystemCharacterEncoding,$SystemID,$TemporaryPrefix,$TextStyle,%
2654 $TopDirectory,$TraceOff,$TraceOn,$TracePattern,%
2655 $TracePostAction,$TracePreAction,$UserAddOnsDirectory,$UserBaseDirectory,%
2656 $UserName,Constant,Flat,HoldAll,%
2657 HoldAllComplete,HoldFirst,HoldRest,Listable,%
2658 Locked,NHoldAll,NHoldFirst,NHoldRest,%
2659 NumericFunction,OneIdentity,Orderless,Protected,%
2660 ReadProtected,SequenceHold},%
2661 }%

2662 %%
2663 %% Mathematica definitions (c) 1999 Michael Wiese
2664 %%
2665 \lst@definlanguage[3.0]{Mathematica}[1.0]{Mathematica}%
2666 {morekeywords={Abort,AbortProtect,AbsoluteDashing,AbsolutePointSize,%
2667 AbsoluteThickness,AbsoluteTime,AccountingFormAiry,AiPrime,AiryBi,%
2668 AiryBiPrime,Alternatives,AnchoredSearch,AxesEdge,AxesOrigin,%
2669 AxesStyle,Background,BetaRegularized,BoxStyle,C,CheckAbort,%

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2670 Circle,ClebschGordan,CMYKColor,ColorFunction,ColorOutput,Compile,%
2671 Compiled,CompiledFunction,ComplexExpand,ComposeList,Composition,%
2672 ConstrainedMax,ConstrainedMin,Contexts,ContextToFilename,%
2673 ContourLines,Contours,ContourShading,ContourSmoothing,%
2674 ContourStyle,CopyDirectory,CopyFile,CosIntegral,CreateDirectory,%
2675 Cuboid,Date,DeclarePackage,DefaultColor,DefaultFont>Delete,%
2676 DeleteCases>DeleteDirectory>DeleteFile>Dialog>DialogIndent,%
2677 DialogProlog>DialogSymbols>DigitQ>Directory>DirectoryStack>Disk,%
2678 Dispatch>DownValues>DSolve>Encode>Epilog>Erfc>Evaluate,%
2679 ExponentFunction>FaceGrids>FileByteCount>FileDate>FileNames,%
2680 FileType>Find>FindList>FixedPointList>FlattenAt>Fold>FoldList,%
2681 Frame>FrameLabel>FrameStyle>FrameTicks>FromCharacterCode,%
2682 FromDate>FullGraphics>FullOptions>GammaRegularized,%
2683 GaussianIntegers>GraphicsArray>GraphicsSpacing>GridLines,%
2684 GroebnerBasis>Heads>HeldPart>HomeDirectory>Hue>IgnoreCases,%
2685 InputStream>Install>InString>IntegerDigits>InterpolatingFunction,%
2686 InterpolatingPolynomial>Interpolation>Interrupt>InverseFunction,%
2687 InverseFunctions>JacobiZeta>LetterQ>LinearProgramming>ListPlay,%
2688 LogGamma>LowerCaseQ>MachineNumberQ>MantissaExponent>MapIndexed,%
2689 MapThread>MatchLocalNames>MatrixExp>MatrixPower>MeshRange,%
2690 MeshStyle>MessageList>Module>NDSolve>NSolve>NullRecords,%
2691 NullWords>NumberFormat>NumberPadding>NumberSigns>OutputStream,%
2692 PaddedForm>ParentDirectory>Pause>Play>PlayRange>PlotRegion,%
2693 PolygonIntersections>PolynomialGCD>PolynomialLCM>PolynomialMod,%
2694 PostScript>PowerExpand>PrecisionGoal>PrimePi>Prolog,%
2695 QRDecomposition>Raster>RasterArray>RealDigits>Record>RecordLists,%
2696 RecordSeparators>ReleaseHold>RenameDirectory>RenameFile,%
2697 ReplaceHeldPart>ReplacePart>ResetDirectory>Residue,%
2698 RiemannSiegelTheta>RiemannSiegelZ>RotateLabel>SameTest,%
2699 SampleDepth>SampledSoundFunction>SampledSoundList>SampleRate,%
2700 SchurDecomposition>SessionTime>SetAccuracy>SetDirectory,%
2701 SetFileDate>SetPrecision>SetStreamPosition>Shallow>SignPadding,%
2702 SinIntegral>SixJSymbol>Skip>Sound>SpellingCorrection,%
2703 SphericalRegion>Stack>StackBegin>StackComplete>StackInhibit,%
2704 StreamPosition>Streams>StringByteCount>StringConversion,%
2705 StringDrop>StringInsert>StringPosition>StringReplace,%
2706 StringReverse>StringTake>StringToStream>SurfaceColor,%
2707 SyntaxLength>SyntaxQ>TableAlignments>TableDepth,%
2708 TableDirections>TableHeadings>TableSpacing>ThreeJSymbol>TimeUsed,%
2709 TimeZone>ToCharacterCode>ToDate>ToHeldExpression>TokenWords,%
2710 ToLowerCase>ToUpperCase>Trace>TraceAbove>TraceBackward,%
2711 TraceDepth>TraceDialog>TraceForward>TraceOff>TraceOn,%
2712 TraceOriginal>TracePrint>TraceScan>Trig>Unevaluated>Uninstall,%
2713 UnsameQ>UpperCaseQ>UpValues>ViewCenter>ViewVertical>With>Word,%
2714 WordSearch>WordSeparators},%
2715 morendkeywords={Stub>Temporary>,\$Aborted>,\$BatchInput>,\$BatchOutput,%
2716 \$CreationDate>,\$DefaultFont>,\$DumpDates>,\$DumpSupported>,\$Failed,%
2717 \$Input>,\$Inspector>,\$IterationLimit>,\$Language>,\$Letters>,\$Linked,%
2718 \$LinkSupported>,\$MachineEpsilon>,\$MachineID>,\$MachineName,%
2719 \$MachinePrecision>,\$MachineType>,\$MaxMachineNumber>,\$MessageList,%

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2720     $MessagePrePrint,$MinMachineNumber,$ModuleNumber,$NewMessage,%
2721     $NewSymbol,$Notebooks,$OperatingSystem,$Packages,$PipeSupported,%
2722     $PreRead,$ReleaseNumber,$SessionID,$SoundDisplayFunction,%
2723     $StringConversion,$StringOrder,$SyntaxHandler,$TimeUnit,%
2724     $VersionNumber}%
2725 }%

2726 \lst@definlanguage[1.0]{Mathematica}%
2727 {morekeywords={Abs,Accuracy,AccurayGoal,AddTo,AiryAi,AlgebraicRules,%
2728     AmbientLight,And,Apart,Append,AppendTo,Apply,ArcCos,ArcCosh,%
2729     ArcCot,ArcCoth,ArcCsc,ArcCsch,ArcSec,ArcSech,ArcSin,ArcSinh,%
2730     ArcTan,ArcTanh,Arg,ArithmeticGeometricMean,Array,AspectRatio,%
2731     AtomQ,Attributes,Axes,AxesLabel,BaseForm,Begin,BeginPackage,%
2732     BernoulliB,BesselI,BesselJ,BesselK,BesselY,Beta,Binomial,Blank,%
2733     BlankNullSequence,BlankSequence,Block,Boxed,BoxRatios,Break,Byte,%
2734     ByteCount,Cancel,Cases,Catch,Ceiling,CForm,Character,Characters,%
2735     ChebyshevT,ChebyshevU,Check,Chop,Clear,ClearAll,ClearAttributes,%
2736     ClipFill,Close,Coefficient,CoefficientList,Collect,ColumnForm,%
2737     Complement,Complex,CompoundExpression,Condition,Conjugate,%
2738     Constants,Context,Continuation,Continue,ContourGraphics,%
2739     ContourPlot,Cos,Cosh,Cot,Coth,Count,Csc,Csch,Cubics,Cyclotomic,%
2740     D,Dashing,Decompose,Decrement,Default,Definition,Denominator,%
2741     DensityGraphics,DensityPlot,Depth,Derivative,Det,DiagonalMatrix,%
2742     DigitBlock,Dimensions,DirectedInfinity,Display,DisplayFunction,%
2743     Distribute,Divide,DivideBy,Divisors,DivisorSigma,Do,Dot,Drop,Dt,%
2744     Dump,EdgeForm,Eigensystem,Eigenvalues,Eigenvectors,Eliminate,%
2745     EllipticE,EllipticExp,EllipticF,EllipticK,EllipticLog,EllipticPi,%
2746     EllipticTheta,End,EndPackage,EngineeringForm,Environment,Equal,%
2747     Erf,EulerE,EulerPhi,EvenQ,Exit,Exp,Expand,ExpandAll,%
2748     ExpandDenominator,ExpandNumerator,ExpIntegralE,ExpIntegralEi,%
2749     Exponent,Expression,ExtendedGCD,FaceForm,Factor,FactorComplete,%
2750     Factorial,Factorial2,FactorInteger,FactorList,FactorSquareFree,%
2751     FactorSquareFreeList,FactorTerms,FactorTermsList,FindMinimum,%
2752     FindRoot,First,Fit,FixedPoint,Flatten,Floor,FontForm,For,Format,%
2753     FormatType,FortranForm,Fourier,FreeQ,FullDefinition,FullForm,%
2754     Function,Gamma,GCD,GegenbauerC,General,Get,Goto,Graphics,%
2755     Graphics3D,GrayLevel,Greater,GreaterEqual,Head,HermiteH,%
2756     HiddenSurface,Hold,HoldForm,HypergeometricOF1,Hypergeometric1F1,%
2757     Hypergeometric2F1,HypergeometricU,Identity,IdentityMatrix,If,Im,%
2758     Implies,In,Increment,Indent,Infix,Information,Inner,Input,%
2759     InputForm,InputString,Insert,Integer,IntegerQ,Integrate,%
2760     Intersection,Inverse,InverseFourier,InverseJacobiSN,%
2761     InverseSeries,JacobiAmplitude,JacobiP,JacobiSN,JacobiSymbol,Join,%
2762     Label,LaguerreL,Last,LatticeReduce,LCM,LeafCount,LegendreP,%
2763     LegendreQ,LegendreType,Length,LerchPhi,Less,LessEqual,Level,%
2764     Lighting,LightSources,Limit,Line,LinearSolve,LineBreak,List,%
2765     ListContourPlot,ListDensityPlot,ListPlot,ListPlot3D,Literal,Log,%
2766     LogicalExpand,LogIntegral,MainSolve,Map,MapAll,MapAt,MatchQ,%
2767     MatrixForm,MatrixQ,Max,MaxBend,MaxMemoryUsed,MemberQ,%
2768     MemoryConstrained,MemoryInUse,Mesh,Message,MessageName,Messages,%

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2769   Min,Minors,Minus,Mod,Modulus,MoebiusMu,Multinomial,N,NameQ,Names,%
2770   NBernoulliB,Needs,Negative,Nest,NestList,NIntegrate,%
2771   NonCommutativeMultiply,NonConstants,NonNegative,Normal,Not,%
2772   NProduct,NSum,NullSpace,Number,NumberForm,NumberPoint,NumberQ,%
2773   NumberSeparator,Numerator,O,OddQ,Off,On,OpenAppend,OpenRead,%
2774   OpenTemporary,OpenWrite,Operate,Optional,Options,Or,Order,%
2775   OrderedQ,Out,Outer,OutputForm,PageHeight,PageWidth,%
2776   ParametricPlot,ParametricPlot3D,Part,Partition,PartitionsP,%
2777   PartitionsQ,Pattern,Permutations,Plot,Plot3D,PlotDivision,%
2778   PlotJoined,PlotLabel,PlotPoints,PlotRange,PlotStyle,Pochhammer,%
2779   Plus,Point,PointSize,PolyGamma,Polygon,PolyLog,PolynomialQ,%
2780   PolynomialQuotient,PolynomialRemainder,Position,Positive,Postfix,%
2781   Power,PowerMod,PrecedenceForm,Precision,PreDecrement,Prefix,%
2782   PreIncrement,Prepend,PrependTo,Prime,PrimeQ,Print,PrintForm,%
2783   Product,Protect,PseudoInverse,Put,PutAppend,Quartics,Quit,%
2784   Quotient,Random,Range,Rational,Rationalize,Raw,Re,Read,ReadList,%
2785   Real,Rectangle,Reduce,Remove,RenderAll,Repeated,RepeatedNull,%
2786   Replace,ReplaceAll,ReplaceRepeated,Rest,Resultant,Return,Reverse,%
2787   RGBColor,Roots,RotateLeft,RotateRight,Round,RowReduce,Rule,%
2788   RuleDelayed,Run,RunThrough,SameQ,Save,Scaled,Scan,ScientificForm,%
2789   Sec,Sech,SeedRandom,Select,Sequence,SequenceForm,Series,%
2790   SeriesData,Set,SetAttributes,SetDelayed,SetOptions,Shading,Share,%
2791   Short,Show,Sign,Signature,Simplify,Sin,SingularValues,Sinh,%
2792   Skeleton,Slot,SlotSequence,Solve,SolveAlways,Sort,%
2793   SphericalHarmonicY,Splice,Sqrt,StirlingS1,StirlingS2,String,%
2794   StringBreak,StringForm,StringJoin,StringLength,StringMatchQ,%
2795   StringSkeleton,Subscript,Subscripted,Subtract,SubtractForm,Sum,%
2796   Superscript,SurfaceGraphics,Switch,Symbol,Table,TableForm,TagSet,%
2797   TagSetDelayed,TagUnset,Take,Tan,Tanh,ToString,TensorRank,TeXForm,%
2798   Text,TextForm,Thickness,Thread,Through,Throw,Ticks,%
2799   TimeConstrained,Times,TimesBy,Timing,ToExpression,Together,%
2800   ToRules,ToString,TotalHeight,TotalWidth,Transpose,TreeForm,TrueQ,%
2801   Unequal,Union,Unique,Unprotect,Unset,Update,UpSet,UpSetDelayed,%
2802   ValueQ,Variables,VectorQ,ViewPoint,WeierstrassP,%
2803   WeierstrassPPrime,Which,While,WorkingPrecision,Write,WriteString,%
2804   Xor,ZeroTest,Zeta},%
2805   moreendkeywords={All,Automatic,Catalan,ComplexInfinity,Constant,%
2806   Degree,E,EndOfFile,EulerGamma,False,Flat,GoldenRatio,HoldAll,%
2807   HoldFirst,HoldRest,I,Indeterminate,Infinity,Listable,Locked,%
2808   Modular,None,Null,OneIdentity,Orderless,Pi,Protected,%
2809   ReadProtected,True,$CommandLine,$Context,$ContextPath,$Display,%
2810   $DisplayFunction,$Echo,$Epilog,$IgnoreEOF,$Line,$Messages,%
2811   $Output,$Path,$Post,$Pre,$PrePrint,$RecursionLimit,$System,%
2812   $Urgent,$Version},%
2813   sensitive,%
2814   morecomment=[s]{(*}{*)},%
2815   morestring=[d]"%
2816 }[keywords,comments,strings]%
2817 </lang1>

```



```

2857 % keywords[2] = Operators (Tables 6-9 in MetaPost User's manual)
2858 morekeywords=[2]{abs,and,angle,arclength,arctime,ASCII,bbox,bluepart,%
2859 boolean,bot,ceiling,center,char,color,cosd,cutafter,cutbefore,%
2860 cycle,decimal,dir,direction,directionpoint,directiontime,div,%
2861 dotprod,floor,fontsize,greenpart,hex,infont,intersectionpoint,%
2862 intersectiontimes,inverse,known,length,lft,llcorner,lrcorner,%
2863 makepath,makepen,mexp,mlog,mod,normaldeviate,not,numeric,oct,%
2864 odd,or,pair,path,pen,penoffset,picture,point,postcontrol,%
2865 precontrol,redpart,reverse,rotated,round,rt,scaled,shifted,%
2866 sind,slanted,sqrt,str,string,subpath,substring,top,transform,%
2867 transformed,ulcorner,uniformdeviate,unitvector,unknown,%
2868 urcorner,whatever,xpart,xscaled,xxpart,ypart,yscaled,%
2869 yxpart,ypart,zscaled,of,reflectedabout,rotatedaround,ulft,urt,%
2870 llft,lrt,readfrom,write,stroked,filled,textual,clipped,bounded,%
2871 pathpart,penpart,dashpart,textpart,fontpart},%
2872 % keywords[3] = Commands (Table 10)
2873 morekeywords=[3]{addto,clip,cutdraw,draw,drawarrow,drawdblarrow,%
2874 fill,filldraw,interim,let,loggingall,newinternal,pickup,%
2875 save,setbounds,shipout,show,showdependencies,showtoken,%
2876 showvariable,special,tracingall,tracingnone,undraw,unfill,%
2877 unfilldraw,to,also,contour,doublepath,withcolor,withpen,%
2878 dashed,randomseed},%
2879 % keywords[4] = Function-Like Macros (Table 11)
2880 morekeywords=[4]{boxit,boxjoin,bpath,buildcycle,circleit,dashpattern,%
2881 decr,dotlabel,dotlabels,drawboxed,drawboxes,drawoptions,%
2882 drawunboxed,fixpos,fixsize,incr,interpath,label,labels,max,min,pic,%
2883 thelabel,z,image},%
2884 % keywords[5] = Internal and Predefined Variables (Tables 3, 4)
2885 morekeywords=[5]{ahangle,ahlength,bboxmargin,charcode,circmargin,%
2886 day,defaultdx,defaultdy,defaultpen,defaultscale,labeloffset,%
2887 linecap,linejoin,miterlimit,month,pausing,prologues,showstopping,%
2888 time,tracingcapsules,tracingchoices,tracingcommands,%
2889 tracingequations,tracinglostchars,tracingmacros,tracingonline,%
2890 tracingoutput,tracingrestores,tracingspecs,tracingstats,%
2891 tracingtitles,truecorners,warningcheck,year},
2892 morekeywords=[5]{background,currentpen,currentpicture,cuttings,%
2893 defaultfont},%
2894 % keywords[6] = Predefined Constants (Table 5)
2895 morekeywords=[6]{beveled,black,blue,bp,butt,cc,cm,dd,ditto,down,%
2896 epsilon,evenly,false,fullcircle,green,halfcircle,identity,%
2897 in,infinity,left,mitered,mm,nullpicture,origin,pc,pencircle,%
2898 pt,quartercircle,red,right,rounded,squared,true,unitsquare,%
2899 up,white,withdots},
2900 sensitive=false,%
2901 alsoother={0123456789$},%
2902 morecomment=[1]\%,%
2903 morestring=[mf]{input\ },%
2904 morestring=[b]"%
2905 }[keywords,comments,strings,mf]%

```

2906 \langle /lang3 \rangle

2.45 Miranda

Thanks to Peter Bartke for providing the definition.

2907 \langle *lang2 \rangle

```
2908 %%
2909 %% Miranda definition (c) 1998 Peter Bartke
2910 %%
2911 %% Miranda: pure lazy functional language with polymorphic type system,
2912 %%         garbage collection and functions as first class citizens
2913 %%
2914 \lst@definlanguage{Miranda}%
2915 {morekeywords={abstype,div,if,mod,otherwise,readvals,show,type,where,%
2916     with,bool,char,num,sys_message,False,True,Appendfile,Closefile,%
2917     Exit,Stderr,Stdout,System,Tofile,\%include,\%export,\%free,%
2918     \%insert,abs,and,arctan,cjustify,code,concat,const,converse,cos,%
2919     decode,digit,drop,dropwhile,entier,error,exp,filemode,filter,%
2920     foldl,foldl1,foldr,foldr1,force,fst,getenv,hd,hugenum,id,index,%
2921     init,integer,iterate,last,laz,layn,letter,limit,lines,ljustify,%
2922     log,log10,map,map2,max,max2,member,merge,min,min2,mkset,neg,%
2923     numval,or,pi,postfix,product,read,rep,repeat,reverse,rjustify,%
2924     scan,seq,showfloat,shownum,showscaled,sin,snd,sort,spaces,sqrt,%
2925     subtract,sum,system,take,takewhile,tinynum,tl,transpose,undef,%
2926     until,zip2,zip3,zip4,zip5,zip6,zip},%
2927     sensitive,%
2928     morecomment=[l]||,%
2929     morestring=[b]"%
2930 }[keywords,comments,strings]%
2931  $\langle$ /lang2 $\rangle$ 
```

2.46 Mizar

As you can read below, Adam Grabowski provided this language definition.

2932 \langle *lang3 \rangle

```
2933 %%
2934 %% Mizar definition (c) 2003 Adam Grabowski
2935 %%
2936 %% Mizar is freely available at URL www.mizar.org for the Linux x86,
2937 %% Solaris x86, and Windows operating systems.
2938 %%
2939 \lst@definlanguage{Mizar}%
2940 {otherkeywords={->,( \# , \# ), . = ), \&},%
2941     morekeywords={vocabulary,constructors,$1,$1,$2,$3,$4,$5,$6,$7,$8,%
2942     @proof,according,aggregate,and,antonym,as,associativity,assume,%
2943     asymmetry,attr,be,begin,being,by,canceled,case,cases,cluster,%
2944     clusters,coherence,commutativity,compatibility,connectedness,%
2945     consider,consistency,constructors,contradiction,correctness,def,%
```

```

2946     deffunc,define,definition,definitions,defpred,end,environ,equals,%
2947     ex,exactly,existence,for,from,func,given,hence,hereby,holds,%
2948     idempotence,if,iff,implies,involutiveness,irreflexivity,is,it,%
2949     let,means,mode,non,not,notation,now,of,or,otherwise,over,per,%
2950     pred,prefix,projectivity,proof,provided,qua,reconsider,redefine,%
2951     reflexivity,requirements,reserve,scheme,schemes,section,selector,%
2952     set,st,struct,such,suppose,symmetry,synonym,take,that,the,then,%
2953     theorem,theorems,thesis,thus,to,transitivity,uniqueness,%
2954     vocabulary,where},%
2955     sensitive=t,%
2956     morecomment=[1]:%
2957 }[keywords,comments]%
2958  $\langle$ /lang3

```

2.47 ML

Thanks to Torben Hoffmann for providing the definition.

```

2959  $\langle$ *lang2
2960 %%
2961 %% ML definition (c) 1999 Torben Hoffmann
2962 %%
2963 \lst@definlanguage{ML}%
2964 {morekeywords={abstype,and,andalso,as,case,do,datatype,else,end,%
2965     eqtype,exception,fn,fun,functor,handle,if,in,include,infix,%
2966     infixr,let,local,nonfix,of,op,open,orelse,raise,rec,sharing,sig,%
2967     signature,struct,structure,then,type,val,with,withtype,while},%
2968     sensitive,%
2969     morecomment=[n]{(*){(*)}},%
2970     morestring=[d]"%
2971 }[keywords,comments,strings]%
2972  $\langle$ /lang2

```

2.48 Modula-2

Took data from

- NIKLAUS WIRTH: **Programmieren in Modula-2**, Übers. Guido Pfeiffer; 2. Auflage – Berlin; Heidelberg; New York; London; Paris; Tokyo; Hong Kong: Springer, 1991; ISBN 3-540-51689-1.

```

2973  $\langle$ *lang3
2974 \lst@definlanguage{Modula-2}%
2975 {morekeywords={AND,ARRAY,BEGIN,BY,CASE,CONST,DIV,DO,ELSE,ELSIF,END,%
2976     EXIT,EXPORT,FOR,FROM,IF,IMPLEMENTATION,IMPORT,IN,MOD,MODULE,NOT,%
2977     OF,OR,POINTER,PROCEDURE,QUALIFIED,RECORD,REPEAT,RETURN,SET,THEN,%
2978     TYPE,UNTIL,VAR,WHILE,WITH,ABS,BITSET,BOOLEAN,CAP,CARDINAL,CHAR,%
2979     CHR,DEC,EXCL,FALSE,FLOAT,HALT,HIGH,INC,INCL,INTEGER,LONGCARD,%
2980     LONGINT,LONGREAL,MAX,MIN,NIL,ODD,ORD,PROC,REAL,SIZE,TRUE,TRUNC,%

```

```

2981     VAL,DEFINITION,LOOP},% added keywords due to Peter Bartke 99/07/22
2982     sensitive,%
2983     morecomment=[n]{(*){(*)},%
2984     morestring=[d]' ,%
2985     morestring=[d]"%
2986   }[keywords,comments,strings]%
2987 </lang3>

```

2.49 MuPAD

This definition was provided by Christopher Creutzig. Again thanks to Ulrike Fischer for pointing to a missing @ in `\lstdefinelanguage`.

```

2988 <*lang3>
2989 \lst@definelanguage{MuPAD}{%
2990   morekeywords={end,next,break,if,then,elif,else,end_if,case,end_case,%
2991     otherwise,for,from,to,step,downto,in,end_for,while,end_while,%
2992     repeat,until,end_repeat,or,and,not,xor,div,mod,union,minus,%
2993     intersect,subset,proc,begin,end_proc,domain,end_domain,category,%
2994     end_category,axiom,end_axiom,quit,delete,frame},%
2995   morekeywords=[2]{NIL,FAIL,TRUE,FALSE,UNKNOWN,I,RD_INF,RD_NINF,%
2996     RD_NAN,name,local,option,save,inherits,of,do},%
2997   otherkeywords={\%if,?,!,:=,<,>,<=<,<>,>=>,<=>,:,.,.,.,->,%
2998     @,@@,\$},%
2999   sensitive=true,%
3000   morecomment=[1]{//},%
3001   morecomment=[n]{/*}{*/},%
3002   morestring=[b]" ,%
3003   morestring=[d]{'%
3004 }[keywords,comments,strings]
3005 </lang3>

```

2.50 NASTRAN

The definition is from Jeffrey Ratcliffe—except the `MoreSelectCharTable` part which simulates the keyword `BEGIN BULK`.

```

3007 \lst@definelanguage{NASTRAN}
3008 {morekeywords={ENDDATA},%
3009   morecomment=[1]$,%
3010   MoreSelectCharTable=%
3011     \lst@CargX BEGIN\ BULK\relax\lst@CDef{}%
3012     {\lst@ifmode\else \ifnum\lst@length=\z@
3013       \lst@EnterMode{\lst@GPmode}{\lst@modetrue
3014         \let\lst@currstyle\lst@gkeywords@sty}%
3015       \fi \fi}%
3016     {\ifnum\lst@mode=\lst@GPmode
3017       \lst@XPrintToken \lst@LeaveMode

```

```

3018         \fi}%
3019     }[keywords,comments]%
3020 </lang3>

```

2.51 Oberon-2

```

3021 <*lang3>
3022 \lst@definlanguage{Oberon-2}%
3023 {morekeywords={ARRAY,BEGIN,BOOLEAN,BY,CASE,CHAR,CONST,DIV,DO,ELSE,%
3024     ELSIF,END,EXIT,FALSE,FOR,IF,IMPORT,IN,INTEGER,IS,LONGINT,%
3025     LONGREAL,LOOP,MOD,MODULE,NIL,OF,OR,POINTER,PROCEDURE,REAL,RECORD,%
3026     REPEAT,RETURN,SET,SHORTINT,THEN,TO,TRUE,TYPE,UNTIL,VAR,WHILE,%
3027     WITH,ABS,ASH,CAP,CHR,COPY,DEC,ENTIER,EXCL,HALT,INC,INCL,LEN,LONG,%
3028     MAX,MIN,NEW,ODD,ORD,SHORT,SIZE},%
3029     sensitive,%
3030     morecomment=[n]{(*){*}},%
3031     morestring=[d]',%
3032     morestring=[d]"%
3033 }[keywords,comments,strings]%
3034 </lang3>

```

2.52 OCL

This definition is based on chapter 7 of the OMG UML standard version 1.3:

- **OMG: OMG Unified Modeling Language Specification; © 1999**
 OMG; Available at <ftp://ftp.omg.org/pub/docs/ad/99-06-08.pdf>.

This language is due to Achim D. Brucker.

```

3035 <*lang3>
3036 %%
3037 %% OCL definition (c) 2000 Achim D. Brucker
3038 %%
3039 %% You are allowed to use, modify and distribute this code either under
3040 %% the terms of the LPPL (version 1.0 or later) or the GPL (version 2.0
3041 %% or later).
3042 %%

```

First we define are very decorative style. In the OMG standard only the boolean (infix (?)) operations are highlighted, but I think all OCL-defined operations should be highlighted, because they are *guaranteed* to be side-effect-free (in OCL only side effect free evaluations or path expressions are allowed).

```

3043 \lst@definlanguage[decorative]{OCL}[OMG]{OCL}
3044 {otherkeywords={@pre},%
3045     moreendkeywords={name,attributes,associatoinEnds,operations,%
3046     supertypes,allSupertypes,allInstances,oclIsKindOf,oclIsTypeOf,%
3047     oclAsType,oclInState,oclIsNew,evaluationType,abs,floor,round,max,%
3048     min,div,mod,size,concat,toUpper,toLower,substring,includes,%
3049     excludes,count,includesAll,excludesAll,isEmpty,notEmpty,sum,%
3050     exists,forall,isUnique,sortedBy,iterate,union,intersection,%

```

```

3051     including,excluding,symmetricDifference,select,reject,collect,%
3052     asSequence,asBag,asSequence,asSet,append,prepend,subSequence,at,%
3053     first,last,true,false,isQuery}%
3054 }%

```

Remark: "isQuery" is not real OCL, but a important attribute of the underlying UML model.

The dialect called **OMG** is a very spare version. If you use this variant with bold style for first and second order keywords you get the look and feel of the OMG standard. First order keywords are the OCL context declarations (see section 7.3 of the OMG standard):

```

3055 \lst@definlanguage[OMG]{OCL}%
3056     {morekeywords={context,pre,inv,post},%

```

Second order keywords are the operation which are defined for type Boolean (see pages 7-34/35 of the OMG standard) and the let-operation (in principle these are the infix operations):

```

3057     ndkeywords={or,xor,and,not,implies,if,then,else,endif},%

```

Third order keywords are the basic data types as declared in section 7.4 of the OMG standard:

```

3058     morekeywords=[3]{Boolean,Integer,Real,String,Set,Sequence,Bag,%
3059         OclType,OclAny,OclExpression,Enumeration,Collection,},%
3060     sensitive=t,%
3061     morecomment=[1]--,%
3062     morestring=[d]'%
3063 }[keywords,comments,strings]%

```

After a bug report by Martin Süßkraut `morerdkeywords` has been changed to the correct optional argument [3].

```

3064 </lang3>

```

2.53 Octave

```

3065 <*lang1>

```

As you can read below the definition is due to Ulrich G. Wortmann. Additions due to Sebastian Schubert.

```

3066 %%
3067 %% Octave definition (c) 2001,2002 Ulrich G. Wortmann
3068 %%
3069 \lst@definlanguage{Octave}%
3070     {morekeywords={gt,lt,amp,abs,acos,acosh,acot,acoth,acsc,acsch,%
3071         all,angle,ans,any,asec,asech,asin,asinh,atan,atan2,atanh,auread,%
3072         auwrite,axes,axis,balance,bar,bessel,besselk,bessely,beta,%
3073         betainc,betaln,blanks,bone,break,brighten,capture,cart2pol,%
3074         cart2sph,caxis,cd,cdf2rdf,cedit,ceil,chol,cla,clabel,clc,clear,%
3075         clf,clock,close,colmmd,Colon,colorbar,colormap,ColorSpec,colperm,%
3076         comet,comet3,compan,compass,computer,cond,condest,conj,contour,%
3077         contour3,contourc,contrast,conv,conv2,cool,copper,corrcoef,cos,%
3078         cosh,cot,coth,cov,cplxpair,cputime,cross,csc,csch,csvread,%

```

```

3079     csvwrite,cumprod,cumsum,cylinder,date,dbclear,dbcont,dbdown,%
3080     dbquit,dbstack,dbstatus,dbstep,dbstop,dbtype,dbup,ddeadv,ddeexec,%
3081     ddeinit,ddepoke,ddereq,ddeterm,ddeunadv,deblank,dec2hex,deconv,%
3082     del2,delete,demo,det,diag,diary,diff,diffuse,dir,disp,dlmread,%
3083     dlmwrite,dmperm,dot,drawnow,echo,eig,ellipj,ellipke,else,elseif,%
3084     end,engClose,engEvalString,engGetFull,engGetMatrix,engOpen,%
3085     engOutputBuffer,engPutFull,engPutMatrix,engSetEvalCallback,%
3086     engSetEvalTimeout,engWinInit,eps,erf,erfc,erfcx,erfinv,%
3087     errorbar,etime,etree,eval,exist,exp,expint,expm,expo,eye,fclose,%
3088     feather,feof,ferror,feval,fft,fft2,fftshift,fgetl,fgets,figure,%
3089     fill,fill3,filter,filter2,find,findstr,finite,fix,flag,fliplr,%
3090     flipud,floor,flops,fmin,fmins,fopen,for,format,fplot,fprintf,%
3091     fread,frewind,fscanf,fseek,ftell,full,function,funm,fwrite,fzero,%
3092     gallery,gamma,gammainc,gammaln,gca,gcd,gcf,gco,get,getenv,%
3093     getframe,ginput,global,gplot,gradient,gray,graymon,grid,griddata,%
3094     gtext,hadamard,hankel,help,hess,hex2dec,hex2num,hidden,hilb,hist,%
3095     hold,home,hostid,hot,hsv,hsv2rgb,if,ifft,ifft2,imag,image,%
3096     imagesc,Inf,info,input,int2str,interp1,interp2,interpft,inv,%
3097     invhilb,isempty,isglobal,ishold,isieee,isinfl,isletter,isnan,%
3098     isreal,isspace,issparse,isstr,jet,keyboard,kron,lasterr,lcm,%
3099     legend,legendre,length,lin2mu,line,linspace,load,log,log10,log2,%
3100     loglog,logm,logspace,lookfor,lower,ls,lscov,lu,magic,matClose,%
3101     matDeleteMatrix,matGetDir,matGetFp,matGetFull,matGetMatrix,%
3102     matGetNextMatrix,matGetString,matlabrc,matlabroot,matOpen,%
3103     matPutFull,matPutMatrix,matPutString,max,mean,median,menu,mesh,%
3104     meshc,meshgrid,meshz,mexAtExit,mexCallMATLAB,mexdebug,%
3105     mexErrMsgTxt,mexEvalString,mexFunction,mexGetFull,mexGetMatrix,%
3106     mexGetMatrixPtr,mexPrintf,mexPutFull,mexPutMatrix,mexSetTrapFlag,%
3107     min,more,movie,moviein,mu2lin,mxMalloc,mxCopyCharacterToPtr,%
3108     mxCopyComplex16ToPtr,mxCopyInteger4ToPtr,mxCopyPtrToCharacter,%
3109     mxCopyPtrToComplex16,mxCopyPtrToInteger4,mxCopyPtrToReal8,%
3110     mxCopyReal8ToPtr,mxCreateFull,mxCreateSparse,mxCreateString,%
3111     mxFree,mxFreeMatrix,mxGetIr,mxGetJc,mxGetM,mxGetN,mxGetName,%
3112     mxGetNzmax,mxGetPi,mxGetPr,mxGetScalar,mxGetString,mxIsComplex,%
3113     mxIsFull,mxIsNumeric,mxIsSparse,mxIsString,mxIsTypeDouble,%
3114     mxSetIr,mxSetJc,mxSetM,mxSetN,mxSetName,mxSetNzmax,mxSetPi,%
3115     mxSetPr,NaN,nargchk,nargin,nargout,newplot,nextpow2,nls,nnz,%
3116     nonzeros,norm,normest,null,num2str,nzmax,ode23,ode45,orient,orth,%
3117     pack,pascal,patch,path,pause,pcolor,pi,pink,pinv,plot,plot3,%
3118     pol2cart,polar,poly,polyder,polyeig,polyfit,polyval,polyvalm,%
3119     pow2,print,printopt,prism,prod,pwd,qr,qrdelete,qrinsert,quad,%
3120     quad8,quit,quiver,qz,rand,randn,randperm,rank,rat,rats,rbbox,%
3121     rcond,real,realmax,realmin,refresh,rem,reset,reshape,residue,%
3122     return,rgb2hsv,rgbplot,rootobject,roots,rose,rosser,rot90,rotate,%
3123     round,rref,rrefmovie,rsf2csf,save,saxis,schur,sec,sech,semilogx,%
3124     semilogy,set,setstr,shading,sign,sin,sinh,size,slice,sort,sound,%
3125     spalloc,sparse,spaugment,sconvert,spdiags,specular,speye,spfun,%
3126     sph2cart,sphere,spinmap,spline,spones,spparms,sprandn,sprandsym,%
3127     sprank,sprintf,spy,sqrt,sqrtm,sscanf,stairs,startup,std,stem,%
3128     str2mat,str2num,strcmp,strings,strcmp,subplot,subscribe,%

```

```

3129     subspace,sum,surf,surface,surfc,surfl,surfnorm,svd,symbfact,%
3130     symmmd,symrcm,tan,tanh,tempdir,tempname,terminal,text,tic,title,%
3131     toc,toeplitz,trace,trapz,tril,triu,type,uicontrol,uigetfile,%
3132     uimenu,uiputfile,unix,unwrap,upper,vander,ver,version,view,%
3133     viewmtx,waitforbuttonpress,waterfall,wavread,wavwrite,what,%
3134     whatsnew,which,while,white,whitebg,who,whos,wilkinson,wk1read,%
3135     stderr,stdout,plot,set,endif,wk1write,xlabel,xor,ylabel,zeros,%
3136     xlabel,zoom,endwhile,endifunction,printf,case,switch,otherwise,%
3137     system,lsode,endfor,error,ones,oneplot,__gnuplot_set__,do,until},%
3138     sensitive=t,%
3139     morecomment=[l]\#,%
3140     morecomment=[l]\#\#,%
3141     morecomment=[l]\%,%
3142     morestring=[m] ',%
3143     morestring=[m] "%
3144 }[keywords,comments,strings]%
3145 </lang1>

```

2.54 Oz

```
3146 <*lang2>
```

Thanks to Andres Becerra Sandoval for providing this language definition.

```

3147 %%
3148 %% Oz definition (c) Andres Becerra Sandoval
3149 %%
3150 \lst@definlanguage{Oz}%
3151 {morekeywords={andthen,at,attr,case,catch,choice,class,%
3152     cond,declare,define,dis,div,else,elsecase,%
3153     elseif,end,export,fail,false,feat,finally,%
3154     from,fun,functor,if,import,in,local,%
3155     lock,meth,mod,not,of,or,orelse,%
3156     prepare,proc,prop,raise,require,self,skip,%
3157     then,thread,true,try,unit},%
3158     sensitive=true,%
3159     morecomment=[l]{\%},%
3160     morecomment=[s]{/*}{*/},%
3161     morestring=[b] "%,%
3162     morestring=[d] '%
3163 }[keywords,comments,strings]%
3164 </lang2>

```

2.55 Pascal

```
3165 <*lang1>
```

Thanks to Andreas Stephan for reporting non-keywords alpha, byte, pack and unpack.

```

3166 \lst@definlanguage[XSC]{Pascal}[Standard]{Pascal}
3167 {deletekeywords={alfa,byte,pack,unpack},% 1998 Andreas Stephan
3168     morekeywords={dynamic,external,forward,global,module,nil,operator,%
3169     priority,sum,type,use,dispose,mark,page,release,cimatrix,%

```

```

3170     cinterval, civector, cmatrix, complex, cvector, dotprecision, imatrix, %
3171     interval, ivector, rmatrix, rvector, string, im, inf, re, sup, chr, comp, %
3172     eof, eoln, expo, image, ival, lb, lbound, length, loc, mant, maxlength, odd, %
3173     ord, pos, pred, round, rval, sign, substring, succ, trunc, ub, ubound}%
3174 }%

3175 \lst@definlanguage[Borland6]{Pascal}[Standard]{Pascal}
3176 {morekeywords={asm, constructor, destructor, implementation, inline, %
3177     interface, nil, object, shl, shr, string, unit, uses, xor}, %
3178     moreendkeywords={Abs, Addr, ArcTan, Chr, Concat, Copy, Cos, CSeg, DiskFree, %
3179     DiskSize, DosExitCode, DosVersion, DSeg, EnvCount, EnvStr, Eof, Eoln, %
3180     Exp, FExpand, FilePos, FileSize, Frac, FSearch, GetBkColor, GetColor, %
3181     GetDefaultPalette, GetDriverName, GetEnv, GetGraphMode, GetMaxMode, %
3182     GetMaxX, GetMaxY, GetModeName, GetPaletteSize, GetPixel, GetX, GetY, %
3183     GraphErrorMsg, GraphResult, Hi, ImageSize, InstallUserDriver, %
3184     InstallUserFont, Int, IOResult, KeyPressed, Length, Lo, MaxAvail, %
3185     MemAvail, MsDos, Odd, Of, Ord, OvrGetBuf, OvrGetRetry, ParamCount, %
3186     ParamStr, Pi, Pos, Pred, Ptr, Random, ReadKey, Round, SeekEof, SeekEoln, %
3187     Seg, SetAspectRatio, Sin, SizeOf, Sound, SPtr, Sqr, Sqrt, SSeg, Succ, %
3188     Swap, TextHeight, TextWidth, Trunc, TypeOf, UpCase, WhereX, WhereY, %
3189     Append, Arc, Assign, AssignCrt, Bar, Bar3D, BlockRead, BlockWrite, ChDir, %
3190     Circle, ClearDevice, ClearViewPort, Close, CloseGraph, ClrEol, ClrScr, %
3191     Dec, Delay, Delete, DelLine, DetectGraph, Dispose, DrawPoly, Ellipse, %
3192     Erase, Exec, Exit, FillChar, FillEllipse, FillPoly, FindFirst, FindNext, %
3193     FloodFill, Flush, FreeMem, FSplit, GetArcCoords, GetAspectRatio, %
3194     GetDate, GetDefaultPalette, GetDir, GetCBreak, GetFAttr, %
3195     GetFillSettings, GetFTime, GetImage, GetIntVec, GetLineSettings, %
3196     GetMem, GetPalette, GetTextSettings, GetTime, GetVerify, %
3197     GetViewSettings, GoToXY, Halt, HighVideo, Inc, InitGraph, Insert, %
3198     InsLine, Intr, Keep, Line, LineRel, LineTo, LowVideo, Mark, Mkdir, Move, %
3199     MoveRel, MoveTo, MsDos, New, NormVideo, NoSound, OutText, OutTextXY, %
3200     OvrClearBuf, OvrInit, OvrInitEMS, OvrSetBuf, PackTime, PieSlice, %
3201     PutImage, PutPixel, Randomize, Rectangle, Release, Rename, %
3202     RestoreCrtMode, Rmdir, RunError, Sector, Seek, SetActivePage, %
3203     SetAllPalette, SetBkColor, SetCBreak, SetColor, SetDate, SetFAttr, %
3204     SetFillPattern, SetFillStyle, SetFTime, SetGraphBufSize, %
3205     SetGraphMode, SetIntVec, SetLineStyle, SetPalette, SetRGBPalette, %
3206     SetTextBuf, SetTextJustify, SetTextStyle, SetTime, SetUserCharSize, %
3207     SetVerify, SetViewPort, SetVisualPage, SetWriteMode, Sound, Str, %
3208     SwapVectors, TextBackground, TextColor, TextMode, Truncate, %
3209     UnpackTime, Val, Window}%
3210 }%

3211 \lst@definlanguage[Standard]{Pascal}%
3212 {morekeywords={alfa, and, array, begin, boolean, byte, case, char, const, div, %
3213     do, downto, else, end, false, file, for, function, get, goto, if, in, %
3214     integer, label, maxint, mod, new, not, of, or, pack, packed, page, program, %
3215     put, procedure, read, readln, real, record, repeat, reset, rewrite, set, %
3216     text, then, to, true, type, unpack, until, var, while, with, write, %
3217     writeln}, %
3218     sensitive=f, %

```

```

3219   morecomment=[s]{(*){(*)}},%
3220   morecomment=[s]{\{\}\{\}\},%
3221   morestring=[d]'%
3222   }[keywords,comments,strings]%
3223 </lang1>

```

2.56 Perl

I got the data from <http://www.perl.com>. But I wish to thank Herbert Weinhart for the book 'Learning Perl'.

```

3224 <*lang1>
3225 \lst@definlanguage{Perl}%
3226   {morekeywords={abs,accept,alarm,atan2,bind,binmode,bless,caller,%
3227     chdir,chmod,chomp,chop,chown,chr,chroot,close,closedir,connect,%
3228     continue,cos,crypt,dbmclose,dbmopen,defined,delete,die,do,dump,%
3229     each,else,elsif,endgrent,endhostent,endnetent,endprotoent,%
3230     endpwent,endservent,eof,eval,exec,exists,exit,exp,fcntl,fileno,%
3231     flock,for,foreach,fork,format,formline,getc,getgrent,getgrgid,%
3232     getgrnam,gethostbyaddr,gethostbyname,gethostent,getlogin,%
3233     getnetbyaddr,getnetbyname,getnetent,getpeername,getpgrp,%
3234     getppid,getpriority,getprotobyname,getprotobynumber,getprotoent,%
3235     getpwent,getpwnam,getpwuid,getservbyname,getservbyport,%
3236     getservent,getsockname,getsockopt,glob,gmtime,goto,grep,hex,if,%
3237     import,index,int,iocctl,join,keys,kill,last,lc,lcfirst,length,%
3238     link,listen,local,localtime,log,lstat,m,map,mkdir,msgctl,msgget,%
3239     msgrcv,msgsnd,my,next,no,oct,open,opendir,ord,pack,package,pipe,%
3240     pop,pos,print,printf,prototype,push,q,qq,quotemeta,qw,qx,rand,%
3241     read,readdir,readlink,recv,redo,ref,rename,require,reset,return,%
3242     reverse,rewinddir,rindex,rmdir,s,scalar,seek,seekdir,select,%
3243     semctl,semget,semop,send,setgrent,sethostent,setnetent,setpgrp,%
3244     setpriority,setprotoent,setpwent,setservent,setsockopt,shift,%
3245     shmctl,shmget,shmread,shmwrite,shutdown,sin,sleep,socket,%
3246     socketpair,sort,splice,split,sprintf,sqrt,srand,stat,study,sub,%
3247     substr,symlink,syscall,sysopen,sysread,system,syswrite,tell,%
3248     telldir,tie,tied,time,times,tr,truncate,uc,ucfirst,umask,undef,%
3249     unless,unlink,unpack,unshift,untie,until,use,utime,values,vec,%
3250     wait,waitpid,wantarray,warn,while,write,y}},%
3251   sensitive,%
3252   morecomment=[l]\#,%
3253   morestring=[b]" ,%
3254   morestring=[b]' ,%
3255   MoreSelectCharTable=%
3256     \lst@ReplaceInput{\$}\#\{\lst@ProcessOther\$}\lst@ProcessOther\#}%
3257   }[keywords,comments,strings]%
3258 </lang1>

```

2.57 PHP

Luca Balzerani sent me this language definition.

```

3259 ⟨*lang2⟩
3260 %%
3261 %% PHP definition by Luca Balzerani
3262 %%
3263 \lstdefinlanguage{PHP}%
3264 {morekeywords={%
3265 %--- core language
3266 <?,?>,::,break,case,continue,default,do,else,%
3267 elseif,for,foreach,if,include,require,phpinfo,%
3268 switch,while,false,FALSE,true,TRUE,%
3269 %--- apache functions
3270 apache_lookup_uri,apache_note,ascii2ebcdic,ebcdic2ascii,%
3271 virtual,apache_child_terminate,apache_setenv,%
3272 %--- array functions
3273 array,array_change_key_case,array_chunk,array_count_values,%
3274 array_filter,array_flip,array_fill,array_intersect,%
3275 array_keys,array_map,array_merge,array_merge_recursive,%
3276 array_pad,array_pop,array_push,array_rand,array_reverse,%
3277 array_shift,array_slice,array_splice,array_sum,array_unique,%
3278 array_values,array_walk,arsort,asort,compact,count,current,each,%
3279 extract,in_array,array_search,key,krsort,ksort,list,natsort,%
3280 next,pos,prev,range,reset,rsort,shuffle,sizeof,sort,uasort,%
3281 usort,%
3282 %--- aspell functions
3283 aspell_new,aspell_check,aspell_check_raw,aspell_suggest,%
3284 %--- bc functions
3285 bcadd,bccomp,bcdiv,bcmul,bcpow,bcscale,bcsqrt,bcsub,%
3286 %--- bzip2 functions
3287 bzclose,bzcompress,bzdecompress,bzerrno,bzerror,bzerrstr,%
3288 bzopen,bzread,bzwrite,%
3289 %--- calendar functions
3290 JDToGregorian,GregorianToJD,JDToJulian,JulianToJD,JDToJewish,%
3291 JDToFrench,FrenchToJD,JDMonthName,JDDayOfWeek,easter_date,%
3292 unixtojd,jdtounix,cal_days_in_month,cal_to_jd,cal_from_jd,%
3293 %--- ccvs functions
3294 ccvs_init,ccvs_done,ccvs_new,ccvs_add,ccvs_delete,ccvs_auth,%
3295 ccvs_reverse,ccvs_sale,ccvs_void,ccvs_status,ccvs_count,%
3296 ccvs_report,ccvs_command,ccvs_textvalue,%
3297 %--- classobj functions
3298 call_user_method,call_user_method_array,class_exists,get_class,%
3299 get_class_vars,get_declared_classes,get_object_vars,%
3300 is_a,is_subclass_of,method_exists,%
3301 %--- com functions
3302 COM,VARIANT,com_load,com_invoke,com_propget,com_get,com_propput,%
3303 com_set,com_addrf,com_release,com_isenum,com_load_typelib,%
3304 %--- cpdf functions
3305 cpdf_add_annotation,cpdf_add_outline,cpdf_arc,cpdf_begin_text,%
3306 cpdf_clip,cpdf_close,cpdf_closepath,cpdf_closepath_fill_stroke,%
3307 cpdf_continue_text,cpdf_curveto,cpdf_end_text,cpdf_fill,%

```

```

3308     cpdf_finalize,cpdf_finalize_page,%
3309     cpdf_import_jpeg,cpdf_lineto,cpdf_moveto,cpdf_newpath,cpdf_open,%
3310     cpdf_page_init,cpdf_place_inline_image,cpdf_rect,cpdf_restore,%
3311     cpdf_rmoveto,cpdf_rotate,cpdf_rotate_text,cpdf_save,%
3312     cpdf_scale,cpdf_set_char_spacing,cpdf_set_creator,%
3313     cpdf_set_font,cpdf_set_horiz_scaling,cpdf_set_keywords,%
3314     cpdf_set_page_animation,cpdf_set_subject,cpdf_set_text_matrix,%
3315     cpdf_set_text_rendering,cpdf_set_text_rise,cpdf_set_title,%
3316     cpdf_setdash,cpdf_setflat,cpdf_setgray,cpdf_setgray_fill,%
3317     cpdf_setlinecap,cpdf_setlinejoin,cpdf_setlinewidth,%
3318     cpdf_setrgbcolor,cpdf_setrgbcolor_fill,cpdf_setrgbcolor_stroke,%
3319     cpdf_show_xy,cpdf_stringwidth,cpdf_set_font_directories,%
3320     cpdf_set_viewer_preferences,cpdf_stroke,cpdf_text,%
3321     cpdf_set_action_url,%
3322 %--- crack functions
3323     crack_opendict,crack_closedict,crack_check,crack_getlastmessage,%
3324 %--- ctype functions
3325     ctype_alnum,ctype_alpha,ctype_cntrl,ctype_digit,ctype_lower,%
3326     ctype_print,ctype_punct,ctype_space,ctype_upper,ctype_xdigit,%
3327 %--- curl functions
3328     curl_init,curl_setopt,curl_exec,curl_close,curl_version,%
3329     curl_error,curl_getinfo,%
3330 %--- cybercash functions
3331     cybercash_encr,cybercash_decr,cybercash_base64_encode,%
3332 %--- cybermut functions
3333     cybermut_creerformulairecm,cybermut_testmac,%
3334 %--- cyrus functions
3335     cyrus_connect,cyrus_authenticate,cyrus_bind,cyrus_unbind,%
3336     cyrus_close,%
3337 %--- datetime functions
3338     checkdate,date,getdate,gettimeofday,gmtime,gmmktime,gmstrftime,%
3339     microtime,mktime,strftime,time,strtotime,%
3340 %--- dbase functions
3341     dbase_create,dbase_open,dbase_close,dbase_pack,dbase_add_record,%
3342     dbase_delete_record,dbase_get_record,%
3343     dbase_numfields,dbase_numrecords,%
3344 %--- dba functions
3345     dba_close,dba_delete,dba_exists,dba_fetch,dba_firstkey,%
3346     dba_nextkey,dba_popen,dba_open,dba_optimize,dba_replace,%
3347 %--- dbm functions
3348     dbmopen,dbmclose,dbmexists,dbmfetch,dbminsert,dbmreplace,%
3349     dbmfirstkey,dbmnextkey,dbmnextkey,dblast,%
3350 %--- dbx functions
3351     dbx_close,dbx_connect,dbx_error,dbx_query,dbx_sort,dbx_compare,%
3352 %--- dio functions
3353     dio_open,dio_read,dio_write,dio_truncate,dio_stat,dio_seek,%
3354     dio_close,%
3355 %--- dir functions
3356     chroot,chdir,dir,closedir,getcwd,opendir,readdir,rewinddir,%
3357 %--- dotnet functions

```

```

3358     dotnet_load,%
3359 %--- errorfunc functions
3360     error_log,error_reporting,restore_error_handler,%
3361     trigger_error,user_error,%
3362 %--- exec functions
3363     escapeshellarg,escapeshellcmd,exec,passthru,system,shell_exec,%
3364 %--- fbsql functions
3365     fbsql_affected_rows,fbsql_autocommit,fbsql_change_user,%
3366     fbsql_commit,fbsql_connect,fbsql_create_db,fbsql_create_blob,%
3367     fbsql_database_password,fbsql_data_seek,fbsql_db_query,%
3368     fbsql_drop_db,fbsql_errno,fbsql_error,fbsql_fetch_array,%
3369     fbsql_fetch_field,fbsql_fetch_lengths,fbsql_fetch_object,%
3370     fbsql_field_flags,fbsql_field_name,fbsql_field_len,%
3371     fbsql_field_table,fbsql_field_type,fbsql_free_result,%
3372     fbsql_list_dbs,fbsql_list_fields,fbsql_list_tables,%
3373     fbsql_num_fields,fbsql_num_rows,fbsql_pconnect,fbsql_query,%
3374     fbsql_read_clob,fbsql_result,fbsql_rollback,fbsql_set_lob_mode,%
3375     fbsql_start_db,fbsql_stop_db,fbsql_tablename,fbsql_warnings,%
3376     fbsql_get_autostart_info,fbsql_hostname,fbsql_password,%
3377     fbsql_username,%
3378 %--- fdf functions
3379     fdf_open,fdclose,fdcreate,fdsave,fdget_value,%
3380     fdf_next_field_name,fdset_ap,fdset_status,fdget_status,%
3381     fdf_get_file,fdset_flags,fdset_opt,%
3382     fdf_set_javascript_action,fdset_encoding,fdadd_template,%
3383 %--- filepro functions
3384     filepro,filepro_fieldname,filepro_fieldtype,filepro_fieldwidth,%
3385     filepro_fieldcount,filepro_rowcount,%
3386 %--- filesystem functions
3387     basename,chgrp,chmod,chown,clearstatcache,copy,delete,dirname,%
3388     diskreespace,disk_total_space,fclose,feof,fflush,fgetc,fgetcsv,%
3389     fgetss,file_get_contents,file,file_exists,fileatime,filectime,%
3390     fileinode,filemtime,fileowner,fileperms,filesize,filetype,flock,%
3391     fopen,fpassthru,fputs,fread,fscanf,fseek,fstat,ftell,ftruncate,%
3392     set_file_buffer,is_dir,is_executable,is_file,is_link,%
3393     is_writable,is_writeable,is_uploaded_file,link,linkinfo,mkdir,%
3394     parse_ini_file,pathinfo,pclose,popen,readfile,readlink,rename,%
3395     rmdir,stat,lstat,realpath,symlink,tempnam,tmpfile,touch,umask,%
3396 %--- fribidi functions
3397     fribidi_log2vis,%
3398 %--- ftp functions
3399     ftp_connect,ftp_login,ftp_pwd,ftp_cdup,ftp_chdir,ftp_mkdir,%
3400     ftp_nlist,ftp_rawlist,ftp_systype,ftp_pasv,ftp_get,ftp_fget,%
3401     ftp_fput,ftp_size,ftp_mdtm,ftp_rename,ftp_delete,ftp_site,%
3402     ftp_quit,ftp_exec,ftp_set_option,ftp_get_option,%
3403 %--- funchand functions
3404     call_user_func_array,call_user_func,create_function,%
3405     func_get_args,func_num_args,function_exists,%
3406     register_shutdown_function,register_tick_function,%
3407 %--- gettext functions

```

```

3408     bindtextdomain,bind_textdomain_codeset,dcgettext,dcngettext,%
3409     dngettext,gettext,ngettext,textdomain,%
3410 %--- gmp functions
3411     gmp_init,gmp_intval,gmp_strval,gmp_add,gmp_sub,gmp_mul,%
3412     gmp_div_r,gmp_div_qr,gmp_div,gmp_mod,gmp_divexact,gmp_cmp,%
3413     gmp_com,gmp_abs,gmp_sign,gmp_fact,gmp_sqrt,gmp_sqrtrm,%
3414     gmp_pow,gmp_powm,gmp_prob_prime,gmp_gcd,gmp_gcdext,gmp_invert,%
3415     gmp_jacobi,gmp_random,gmp_and,gmp_or,gmp_xor,gmp_setbit,%
3416     gmp_scan0,gmp_scan1,gmp_popcount,gmp_hamdist,%
3417 %--- http functions
3418     header,headers_sent,setcookie,%
3419 %--- hw functions
3420     hw_Array2Objrec,hw_Children,hw_ChildrenObj,hw_Close,hw_Connect,%
3421     hw_Deleteobject,hw_DocByAnchor,hw_DocByAnchorObj,%
3422     hw_Document_BodyTag,hw_Document_Content,hw_Document_SetContent,%
3423     hw_ErrorMsg,hw_EditText,hw_Error,hw_Free_Document,hw_GetParents,%
3424     hw_GetChildColl,hw_GetChildCollObj,hw_GetRemote,%
3425     hw_GetSrcByDestObj,hw_GetObject,hw_GetAndLock,hw_GetText,%
3426     hw_GetObjectByQueryObj,hw_GetObjectByQueryColl,%
3427     hw_GetChildDocColl,hw_GetChildDocCollObj,hw_GetAnchors,%
3428     hw_Mv,hw_Identify,hw_InCollections,hw_Info,hw_InsColl,hw_InsDoc,%
3429     hw_InsertObject,hw_mapid,hw_Modifyobject,hw_New_Document,%
3430     hw_Output_Document,hw_pConnect,hw_PipeDocument,hw_Root,%
3431     hw_Who,hw_getusername,hw_stat,hw_setlinkroot,hw_connection_info,%
3432     hw_insertanchors,hw_getrellink,hw_changeobject,%
3433 %--- ibase functions
3434     ibase_connect,ibase_pconnect,ibase_close,ibase_query,%
3435     ibase_fetch_row,ibase_fetch_object,ibase_field_info,%
3436     ibase_free_result,ibase_prepare,ibase_execute,ibase_trans,%
3437     ibase_rollback,ibase_timefmt,ibase_num_fields,ibase_blob_add,%
3438     ibase_blob_close,ibase_blob_create,ibase_blob_echo,%
3439     ibase_blob_import,ibase_blob_info,ibase_blob_open,%
3440 %--- icap functions
3441     icap_open,icap_close,icap_fetch_event,icap_list_events,%
3442     icap_delete_event,icap_snooze,icap_list_alarms,%
3443     icap_rename_calendar,icap_delete_calendar,icap_reopen,%
3444 %--- iconv functions
3445     iconv,iconv_get_encoding,iconv_set_encoding,ob_iconv_handler,%
3446 %--- ifx functions
3447     ifx_connect,ifx_pconnect,ifx_close,ifx_query,ifx_prepare,ifx_do,%
3448     ifx_errormsg,ifx_affected_rows,ifx_getsqlca,ifx_fetch_row,%
3449     ifx_fieldtypes,ifx_fieldproperties,ifx_num_fields,ifx_num_rows,%
3450     ifx_create_char,ifx_free_char,ifx_update_char,ifx_get_char,%
3451     ifx_copy_blob,ifx_free_blob,ifx_get_blob,ifx_update_blob,%
3452     ifx_textasvarchar,ifx_byteasvarchar,ifx_nullformat,%
3453     ifxus_free_slob,ifxus_close_slob,ifxus_open_slob,%
3454     ifxus_seek_slob,ifxus_read_slob,ifxus_write_slob,%
3455 %--- iisfunc functions
3456     iis_get_server_by_path,iis_get_server_by_comment,iis_add_server,%
3457     iis_set_dir_security,iis_get_dir_security,iis_set_server_rights,%

```

```

3458     iis_set_script_map,iis_get_script_map,iis_set_app_settings,%
3459     iis_stop_server,iis_stop_service,iis_start_service,%
3460 %--- image functions
3461     exif_imagetype,exif_read_data,exif_thumbnail,getimagesize,%
3462     imagealphablending,imagearc,imagefilledarc,imageellipse,%
3463     imagechar,imagecharup,imagecolorallocate,imagecolordeallocate,%
3464     imagecolorclosest,imagecolorclosestalpha,imagecolorclosestthwb,%
3465     imagecolorexactalpha,imagecolorresolve,imagecolorresolvealpha,%
3466     imagecolorset,imagecolorsforindex,imagecolorstotal,%
3467     imagecopy,imagecopymerge,imagecopymergegray,imagecopyresized,%
3468     imagecreate,imagecreatetruecolor,imagetruecolortopalette,%
3469     imagecreatefromgd2,imagecreatefromgd2part,imagecreatefromgif,%
3470     imagecreatefrompng,imagecreatefromwbmp,imagecreatefromstring,%
3471     imagecreatefromxpm,imagedashedline,imagedestroy,imagefill,%
3472     imagefilledrectangle,imagefilltoborder,imagefontheight,%
3473     imagegd,imagegd2,imagegif,imagepng,imagejpeg,imagewbmp,%
3474     imageline,imageloadfont,imagepalettecopy,imagepolygon,%
3475     imagepsencodefont,imagepsfreefont,imagepsloadfont,%
3476     imagepslantfont,imagepstext,imagerectangle,imagesetpixel,%
3477     imagesetstyle,imagesettile,imagesetthickness,imagestring,%
3478     imagesx,imagesy,imagettfbbox,imageftbbox,imagettftext,%
3479     imagetypes,jpeg2wbmp,png2wbmp,iptcembed,read_exif_data,%
3480 %--- imap functions
3481     imap_8bit,imap_alerts,imap_append,imap_base64,imap_binary,%
3482     imap_bodystruct,imap_check,imap_clearflag_full,imap_close,%
3483     imap_delete,imap_deletemailbox,imap_errors,imap_expunge,%
3484     imap_fetchbody,imap_fetchheader,imap_fetchstructure,%
3485     imap_getmailboxes,imap_getsubscribed,imap_header,%
3486     imap_headers,imap_last_error,imap_listmailbox,%
3487     imap_mail,imap_mail_compose,imap_mail_copy,imap_mail_move,%
3488     imap_mime_header_decode,imap_msgno,imap_num_msg,imap_num_recent,%
3489     imap_ping,imap_popen,imap_qprint,imap_renamemailbox,imap_reopen,%
3490     imap_rfc822_parse_headers,imap_rfc822_write_address,%
3491     imap_search,imap_setacl,imap_set_quota,imap_setflag_full,%
3492     imap_status,imap_subscribe,imap_uid,imap_undelete,%
3493     imap_utf7_decode,imap_utf7_encode,imap_utf8,imap_thread,%
3494 %--- info functions
3495     assert,assert_options,extension_loaded,dl,getenv,get_cfg_var,%
3496     get_defined_constants,get_extension_funcs,getmygid,%
3497     get_loaded_extensions,get_magic_quotes_gpc,%
3498     getlastmod,getmyinode,getmypid,getmyuid,get_required_files,%
3499     ini_alter,ini_get,ini_get_all,ini_restore,ini_set,phpcredits,%
3500     phpversion,php_logo_guid,php_sapi_name,php_uname,putenv,%
3501     set_time_limit,version_compare,zend_logo_guid,zend_version,%
3502 %--- ircg functions
3503     ircg_pconnect,ircg_fetch_error_msg,ircg_set_current,ircg_join,%
3504     ircg_msg,ircg_notice,ircg_nick,ircg_topic,ircg_channel_mode,%
3505     ircg_whois,ircg_kick,ircg_ignore_add,ircg_ignore_del,%
3506     ircg_is_conn_alive,ircg_lookup_format_messages,%
3507     ircg_set_on_die,ircg_set_file,ircg_get_username,%

```

```

3508     ircg_nickname_unescape,%
3509 %--- java functions
3510     java_last_exception_clear,java_last_exception_get,%
3511 %--- ldap functions
3512     ldap_add,ldap_bind,ldap_close,ldap_compare,ldap_connect,%
3513     ldap_delete,ldap_dn2ufn,ldap_err2str,ldap_errno,ldap_error,%
3514     ldap_first_attribute,ldap_first_entry,ldap_free_result,%
3515     ldap_get_dn,ldap_get_entries,ldap_get_option,ldap_get_values,%
3516     ldap_list,ldap_modify,ldap_mod_add,ldap_mod_del,%
3517     ldap_next_attribute,ldap_next_entry,ldap_read,ldap_rename,%
3518     ldap_set_option,ldap_unbind,ldap_8859_to_t61,%
3519     ldap_next_reference,ldap_parse_reference,ldap_parse_result,%
3520     ldap_sort,ldap_start_tls,ldap_t61_to_8859,%
3521 %--- mail functions
3522     mail_ezmlm_hash,%
3523 %--- math functions
3524     abs,acos,acosh,asin,asinh,atan,atanh,atan2,base_convert,bindec,%
3525     cos,cosh,decbin,dechex,decoct,deg2rad,exp,expm1,floor,%
3526     hexdec,hypot,is_finite,is_infinite,is_nan,lcg_value,log,log10,%
3527     max,min,mt_rand,mt_srand,mt_getrandmax,number_format,octdec,pi,%
3528     rad2deg,rand,round,sin,sinh,sqrt,srand,tan,tanh,%
3529 %--- mbstring functions
3530     mb_language,mb_parse_str,mb_internal_encoding,mb_http_input,%
3531     mb_detect_order,mb_substitute_character,mb_output_handler,%
3532     mb_strlen,mb_strpos,mb_strrpos,mb_substr,mb_strcut,mb_strwidth,%
3533     mb_convert_encoding,mb_detect_encoding,mb_convert_kana,%
3534     mb_decode_mimeheader,mb_convert_variables,%
3535     mb_decode_numericentity,mb_send_mail,mb_get_info,%
3536     mb_ereg,mb_eregi,mb_ereg_replace,mb_eregi_replace,mb_split,%
3537     mb_ereg_search,mb_ereg_search_pos,mb_ereg_search_regs,%
3538     mb_ereg_search_getregs,mb_ereg_search_getpos,%
3539 %--- mcal functions
3540     mcal_open,mcal_popen,mcal_reopen,mcal_close,%
3541     mcal_rename_calendar,mcal_delete_calendar,mcal_fetch_event,%
3542     mcal_append_event,mcal_store_event,mcal_delete_event,%
3543     mcal_list_alarms,mcal_event_init,mcal_event_set_category,%
3544     mcal_event_set_description,mcal_event_set_start,%
3545     mcal_event_set_alarm,mcal_event_set_class,mcal_is_leap_year,%
3546     mcal_date_valid,mcal_time_valid,mcal_day_of_week,%
3547     mcal_date_compare,mcal_next_recurrence,%
3548     mcal_event_set_recur_daily,mcal_event_set_recur_weekly,%
3549     mcal_event_set_recur_monthly_wday,mcal_event_set_recur_yearly,%
3550     mcal_event_add_attribute,mcal_expunge,mcal_week_of_year,%
3551 %--- mcrypt functions
3552     mcrypt_get_cipher_name,mcrypt_get_block_size,%
3553     mcrypt_create_iv,mcrypt_cbc,mcrypt_cfb,mcrypt_ecb,mcrypt_ofb,%
3554     mcrypt_list_modes,mcrypt_get_iv_size,mcrypt_encrypt,%
3555     mcrypt_module_open,mcrypt_module_close,mcrypt_generic_deinit,%
3556     mcrypt_generic,mdecrypt_generic,mcrypt_generic_end,%
3557     mcrypt_enc_is_block_algorithm_mode,%

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3558     mcrypt_enc_is_block_mode,mcrypt_enc_get_block_size,%
3559     mcrypt_enc_get_supported_key_sizes,mcrypt_enc_get_iv_size,%
3560     mcrypt_enc_get_modes_name,mcrypt_module_self_test,%
3561     mcrypt_module_is_block_algorithm,mcrypt_module_is_block_mode,%
3562     mcrypt_module_get_algo_key_size,%
3563 %--- mhash functions
3564     mhash_get_hash_name,mhash_get_block_size,mhash_count,mhash,%
3565 %--- misc functions
3566     connection_aborted,connection_status,connection_timeout,%
3567     define,defined,die,eval,exit,get_browser,highlight_file,%
3568     ignore_user_abort,iptcparse,leak,pack,show_source,sleep,uniqid,%
3569     usleep,%
3570 %--- mnogosearch functions
3571     udm_add_search_limit,udm_alloc_agent,udm_api_version,%
3572     udm_cat_list,udm_clear_search_limits,udm_errno,udm_error,%
3573     udm_free_agent,udm_free_ispell_data,udm_free_res,%
3574     udm_get_res_field,udm_get_res_param,udm_load_ispell_data,%
3575     udm_check_charset,udm_check_stored,udm_close_stored,udm_crc32,%
3576 %--- msession functions
3577     msession_connect,msession_disconnect,msession_count,%
3578     msession_destroy,msession_lock,msession_unlock,msession_set,%
3579     msession_uniq,msession_randstr,msession_find,msession_list,%
3580     msession_set_array,msession_listvar,msession_timeout,%
3581     msession_getdata,msession_setdata,msession_plugin,%
3582 %--- mysql functions
3583     mysql,mysql_affected_rows,mysql_close,mysql_connect,mysql_create_db,%
3584     mysql_data_seek,mysql_dbname,mysql_drop_db,mysql_dropdb,mysql_error,%
3585     mysql_fetch_field,mysql_fetch_object,mysql_fetch_row,%
3586     mysql_field_seek,mysql_fieldtable,mysql_fieldtype,mysql_fieldflags,%
3587     mysql_free_result,mysql_freeresult,mysql_list_fields,%
3588     mysql_list_dbs,mysql_listdbs,mysql_list_tables,mysql_listtables,%
3589     mysql_num_rows,mysql_numfields,mysql_numrows,mysql_pconnect,%
3590     mysql_regcase,mysql_result,mysql_select_db,mysql_selectdb,%
3591 %--- mssql functions
3592     mssql_close,mssql_connect,mssql_data_seek,mssql_fetch_array,%
3593     mssql_fetch_object,mssql_fetch_row,mssql_field_length,%
3594     mssql_field_seek,mssql_field_type,mssql_free_result,%
3595     mssql_min_error_severity,mssql_min_message_severity,%
3596     mssql_num_fields,mssql_num_rows,mssql_pconnect,mssql_query,%
3597     mssql_select_db,mssql_bind,mssql_execute,mssql_fetch_assoc,%
3598     mssql_guid_string,mssql_init,mssql_rows_affected,%
3599 %--- muscat functions
3600     muscat_setup,muscat_setup_net,muscat_give,muscat_get,%
3601 %--- mysql functions
3602     mysql_affected_rows,mysql_change_user,mysql_character_set_name,%
3603     mysql_connect,mysql_create_db,mysql_data_seek,mysql_db_name,%
3604     mysql_drop_db,mysql_errno,mysql_error,mysql_escape_string,%
3605     mysql_fetch_assoc,mysql_fetch_field,mysql_fetch_lengths,%
3606     mysql_fetch_row,mysql_field_flags,mysql_field_name,%
3607     mysql_field_seek,mysql_field_table,mysql_field_type,%

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3608     mysql_info,mysql_insert_id,mysql_list_dbs,mysql_list_fields,%
3609     mysql_list_tables,mysql_num_fields,mysql_num_rows,%
3610     mysql_ping,mysql_query,mysql_unbuffered_query,%
3611     mysql_result,mysql_select_db,mysql_tablename,mysql_thread_id,%
3612     mysql_get_host_info,mysql_get_proto_info,mysql_get_server_info,%
3613 %--- network functions
3614     checkdnsrr,closelog,debugger_off,debugger_on,%
3615     fsockopen,gethostbyaddr,gethostbyname,gethostbyname1,getmxrr,%
3616     getprotobynumber,getservbyname,getservbyport,ip2long,long2ip,%
3617     pfsockopen,socket_get_status,socket_set_blocking,%
3618     syslog,%
3619 %--- nis functions
3620     yp_get_default_domain,yp_order,yp_master,yp_match,yp_first,%
3621     yp_errno,yp_err_string,yp_all,yp_cat,%
3622 %--- oci8 functions
3623     OCIDefineByName,OCIBindByName,OCILogon,OCIPLogon,OCINLogon,%
3624     OCIExecute,OCICommit,OCIRollback,OCINewDescriptor,OCIRowCount,%
3625     OCIResult,OCIFetch,OCIFetchInto,OCIFetchStatement,%
3626     OCIColumnName,OCIColumnSize,OCIColumnType,OCIServerVersion,%
3627     OCINewCursor,OCIFreeStatement,OCIFreeCursor,OCIFreeDesc,%
3628     OCIError,OCIInternalDebug,OCICancel,OCISetPrefetch,%
3629     OCISaveLobFile,OCISaveLob,OCILoadLob,OCIColumnScale,%
3630     OCIColumnTypeRaw,OCINewCollection,OCIFreeCollection,%
3631     OCICollAppend,OCICollAssignElem,OCICollGetElem,OCICollMax,%
3632     OCICollTrim,%
3633 %--- oracle functions
3634     Ora_Bind,Ora_Close,Ora_ColumnName,Ora_ColumnSize,Ora_ColumnType,%
3635     Ora_CommitOff,Ora_CommitOn,Ora_Do,Ora_Error,Ora_ErrorCode,%
3636     Ora_Fetch,Ora_Fetch_Into,Ora_GetColumn,Ora_Logoff,Ora_Logon,%
3637     Ora_Numcols,Ora_Numrows,Ora_Open,Ora_Parse,Ora_Rollback,%
3638 %--- outcontrol functions
3639     flush,ob_start,ob_get_contents,ob_get_length,ob_get_level,%
3640     ob_flush,ob_clean,ob_end_flush,ob_end_clean,ob_implicit_flush,%
3641 %--- ovrimos functions
3642     ovrimos_connect,ovrimos_close,ovrimos_longreadlen,%
3643     ovrimos_execute,ovrimos_cursor,ovrimos_exec,ovrimos_fetch_into,%
3644     ovrimos_result,ovrimos_result_all,ovrimos_num_rows,%
3645     ovrimos_field_name,ovrimos_field_type,ovrimos_field_len,%
3646     ovrimos_free_result,ovrimos_commit,ovrimos_rollback,%
3647 %--- pcntl functions
3648     pcntl_fork,pcntl_signal,pcntl_waitpid,pcntl_wexitstatus,%
3649     pcntl_wifsignaled,pcntl_wifstopped,pcntl_wstopsig,%
3650     pcntl_exec,%
3651 %--- pcre functions
3652     preg_match,preg_match_all,preg_replace,preg_replace_callback,%
3653     preg_quote,preg_grep,Pattern Modifiers,Pattern Syntax,%
3654 %--- pdf functions
3655     pdf_add_annotation,pdf_add_bookmark,pdf_add_launchlink,%
3656     pdf_add_note,pdf_add_outline,pdf_add_pdflink,pdf_add_thumbnail,%
3657     pdf_arc,pdf_arcn,pdf_attach_file,pdf_begin_page,%

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3658 pdf_begin_template, pdf_circle, pdf_clip, pdf_close, pdf_closepath, %
3659 pdf_closepath_stroke, pdf_close_image, pdf_close_pdi, %
3660 pdf_concat, pdf_continue_text, pdf_curveto, pdf_delete, %
3661 pdf_endpath, pdf_end_pattern, pdf_end_template, pdf_fill, %
3662 pdf_findfont, pdf_get_buffer, pdf_get_font, pdf_get_fontname, %
3663 pdf_get_image_height, pdf_get_image_width, pdf_get_parameter, %
3664 pdf_get_pdi_value, pdf_get_majorversion, pdf_get_minorversion, %
3665 pdf_initgraphics, pdf_lineto, pdf_makespotcolor, pdf_moveto, %
3666 pdf_open, pdf_open_CCITT, pdf_open_file, pdf_open_gif, %
3667 pdf_open_image_file, pdf_open_jpeg, pdf_open_memory_image, %
3668 pdf_open_pdi_page, pdf_open_png, pdf_open_tiff, pdf_place_image, %
3669 pdf_rect, pdf_restore, pdf_rotate, pdf_save, pdf_scale, pdf_setcolor, %
3670 pdf_setflat, pdf_setfont, pdf_setgray, pdf_setgray_fill, %
3671 pdf_setlinecap, pdf_setlinejoin, pdf_setlinewidth, pdf_setmatrix, %
3672 pdf_setpolydash, pdf_setrgbcolor, pdf_setrgbcolor_fill, %
3673 pdf_set_border_color, pdf_set_border_dash, pdf_set_border_style, %
3674 pdf_set_duration, pdf_set_font, pdf_set_horiz_scaling, %
3675 pdf_set_info_author, pdf_set_info_creator, pdf_set_info_keywords, %
3676 pdf_set_info_title, pdf_set_leading, pdf_set_parameter, %
3677 pdf_set_text_rendering, pdf_set_text_rise, pdf_set_text_matrix, %
3678 pdf_set_word_spacing, pdf_show, pdf_show_boxed, pdf_show_xy, %
3679 pdf_stringwidth, pdf_stroke, pdf_translate, %
3680 %--- pfp functions
3681 pfp_init, pfp_cleanup, pfp_process, pfp_process_raw, %
3682 %--- pgs functions
3683 pg_close, pg_affected_rows, pg_connect, pg_dbname, pg_end_copy, %
3684 pg_query, pg_fetch_array, pg_fetch_object, pg_fetch_row, %
3685 pg_field_name, pg_field_num, pg_field_prtlen, pg_field_size, %
3686 pg_free_result, pg_last_oid, pg_host, pg_last_notice, pg_lo_close, %
3687 pg_lo_export, pg_lo_import, pg_lo_open, pg_lo_read, pg_lo_seek, %
3688 pg_lo_read_all, pg_lo_unlink, pg_lo_write, pg_num_fields, %
3689 pg_options, pg_pconnect, pg_port, pg_put_line, pg_fetch_result, %
3690 pg_client_encoding, pg_trace, pg_tty, pg_untrace, pg_get_result, %
3691 pg_send_query, pg_cancel_query, pg_connection_busy, %
3692 pg_connection_status, pg_copy_from, pg_copy_to, pg_escape_bytea, %
3693 pg_result_error, %
3694 %--- posix functions
3695 posix_kill, posix_getpid, posix_getppid, posix_getuid, %
3696 posix_getgid, posix_getegid, posix_setuid, posix_seteuid, %
3697 posix_setegid, posix_getgroups, posix_getlogin, posix_getpgrp, %
3698 posix_setpgid, posix_getpgid, posix_getsid, posix_uname, %
3699 posix_ctermid, posix_ttyname, posix_isatty, posix_getcwd, %
3700 posix_getgrnam, posix_getgrgid, posix_getpwnam, posix_getpwuid, %
3701 %--- printer functions
3702 printer_open, printer_abort, printer_close, printer_write, %
3703 printer_set_option, printer_get_option, printer_create_dc, %
3704 printer_start_doc, printer_end_doc, printer_start_page, %
3705 printer_create_pen, printer_delete_pen, printer_select_pen, %
3706 printer_delete_brush, printer_select_brush, printer_create_font, %
3707 printer_select_font, printer_logical_fontheight, %

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3708     printer_draw_rectangle,printer_draw_ellipse,printer_draw_text,%
3709     printer_draw_chord,printer_draw_pie,printer_draw_bmp,%
3710 %--- pspell functions
3711     pspell_add_to_personal,pspell_add_to_session,pspell_check,%
3712     pspell_config_create,pspell_config_ignore,pspell_config_mode,%
3713     pspell_config_repl,pspell_config_runtogether,%
3714     pspell_new,pspell_new_config,pspell_new_personal,%
3715     pspell_store_replacement,pspell_suggest,%
3716 %--- qtdom functions
3717     qdom_tree,qdom_error,%
3718 %--- readline functions
3719     readline,readline_add_history,readline_clear_history,%
3720     readline_info,readline_list_history,readline_read_history,%
3721 %--- recode functions
3722     recode_string,recode,recode_file,%
3723 %--- regex functions
3724     ereg,ereg_replace,eregi,eregi_replace,split,spliti,sql_regcase,%
3725 %--- sem functions
3726     sem_get,sem_acquire,sem_release,sem_remove,shm_attach,%
3727     shm_remove,shm_put_var,shm_get_var,shm_remove_var,ftok,%
3728 %--- sesam functions
3729     sesam_connect,sesam_disconnect,sesam_settransaction,%
3730     sesam_rollback,sesam_execimm,sesam_query,sesam_num_fields,%
3731     sesam_diagnostic,sesam_fetch_result,sesam_affected_rows,%
3732     sesam_field_array,sesam_fetch_row,sesam_fetch_array,%
3733     sesam_free_result,%
3734 %--- session functions
3735     session_start,session_destroy,session_name,session_module_name,%
3736     session_id,session_register,session_unregister,session_unset,%
3737     session_get_cookie_params,session_set_cookie_params,%
3738     session_encode,session_set_save_handler,session_cache_limiter,%
3739     session_write_close,%
3740 %--- shmop functions
3741     shmop_open,shmop_read,shmop_write,shmop_size,shmop_delete,%
3742 %--- snmp functions
3743     snmpget,snmpset,snmpwalk,snmpwalkoid,snmp_get_quick_print,%
3744     snmprealwalk,%
3745 %--- strings functions
3746     addcslashes,addslashes,bin2hex,chop,chr,chunk_split,%
3747     count_chars,crc32,crypt,echo,explode,get_html_translation_table,%
3748     hebrew,hebrevc,htmlentities,htmlspecialchars,implode,join,%
3749     localeconv,ltrim,md5,md5_file,metaphone,nl_langinfo,nl2br,ord,%
3750     print,printf,quoted_printable_decode,quotemeta,str_rot13,rtrim,%
3751     setlocale,similar_text,soundex,sprintf,strcasecmp,strcmp,%
3752     strcmp,strcmp,strcmp,strip_tags,stripslashes,stripslashes,%
3753     strlen,strnatcmp,strnatcasecmp,strncmp,str_pad,strpos, strrchr,%
3754     strrev, strrpos, strspn, strstr, strtok, strtolower, strtoupper,%
3755     strstr,substr,substr_count,substr_replace,trim,ucfirst,ucwords,%
3756     vsprintf,wordwrap,%
3757 %--- swf functions

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3758     swf_openfile,swf_closefile,swf_labelframe,swf_showframe,%
3759     swf_getframe,swf_mulcolor,swf_addcolor,swf_placeobject,%
3760     swf_removeobject,swf_nextid,swf_startdoaction,%
3761     swf_actiongeturl,swf_actionnextframe,swf_actionprevframe,%
3762     swf_actionstop,swf_actiontogglequality,swf_actionwaitforframe,%
3763     swf_actiongotolabel,swf_enddoaction,swf_defineline,%
3764     swf_definepoly,swf_startshape,swf_shapelinesolid,%
3765     swf_shapefillsolid,swf_shapefillbitmapclip,%
3766     swf_shapemoveto,swf_shapelineto,swf_shapecurveto,%
3767     swf_shapearc,swf_endshape,swf_definefont,swf_setfont,%
3768     swf_fontslant,swf_fonttracking,swf_getfontinfo,swf_definetext,%
3769     swf_definebitmap,swf_getbitmapinfo,swf_startsymbol,%
3770     swf_startbutton,swf_addbuttonrecord,swf_oncondition,%
3771     swf_viewport,swf_ortho,swf_ortho2,swf_perspective,swf_polarview,%
3772     swf_pushmatrix,swf_popmatrix,swf_scale,swf_translate,swf_rotate,%
3773 %--- sybase functions
3774     sybase_affected_rows,sybase_close,sybase_connect,%
3775     sybase_fetch_array,sybase_fetch_field,sybase_fetch_object,%
3776     sybase_field_seek,sybase_free_result,sybase_get_last_message,%
3777     sybase_min_error_severity,sybase_min_message_severity,%
3778     sybase_num_fields,sybase_num_rows,sybase_pconnect,sybase_query,%
3779     sybase_select_db,%
3780 %--- uodbc functions
3781     odbc_autocommit,odbc_binmode,odbc_close,odbc_close_all,%
3782     odbc_connect,odbc_cursor,odbc_do,odbc_error,odbc_errormsg,%
3783     odbc_execute,odbc_fetch_into,odbc_fetch_row,odbc_fetch_array,%
3784     odbc_fetch_object,odbc_field_name,odbc_field_num,%
3785     odbc_field_len,odbc_field_precision,odbc_field_scale,%
3786     odbc_longreadlen,odbc_num_fields,odbc_pconnect,odbc_prepare,%
3787     odbc_result,odbc_result_all,odbc_rollback,odbc_setoption,%
3788     odbc_tableprivileges,odbc_columns,odbc_columnprivileges,%
3789     odbc_primarykeys,odbc_foreignkeys,odbc_procedures,%
3790     odbc_specialcolumns,odbc_statistics,%
3791 %--- url functions
3792     base64_decode,base64_encode,parse_url,rawurldecode,rawurlencode,%
3793     urlencode,%
3794 %--- var functions
3795     doubleval,empty,floatval,gettype,get_defined_vars,%
3796     import_request_variables,intval,is_array,is_bool,is_double,%
3797     is_int,is_integer,is_long,is_null,is_numeric,is_object,is_real,%
3798     is_scalar,is_string,isset,print_r,serialize,settype,strval,%
3799     unset,var_dump,var_export,is_callable,%
3800 %--- vpopmail functions
3801     vpopmail_add_domain,vpopmail_del_domain,%
3802     vpopmail_add_domain_ex,vpopmail_del_domain_ex,%
3803     vpopmail_add_user,vpopmail_del_user,vpopmail_passwd,%
3804     vpopmail_auth_user,vpopmail_alias_add,vpopmail_alias_del,%
3805     vpopmail_alias_get,vpopmail_alias_get_all,vpopmail_error,%
3806 %--- w32api functions
3807     w32api_set_call_method,w32api_register_function,%

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3808     w32api_deftype,w32api_init_dtype,%
3809 %--- wddx functions
3810     wddx_serialize_value,wddx_serialize_vars,wddx_packet_start,%
3811     wddx_add_vars,wddx_deserialize,%
3812 %--- xml functions
3813     xml_parser_create,xml_set_object,xml_set_element_handler,%
3814     xml_set_processing_instruction_handler,xml_set_default_handler,%
3815     xml_set_notation_decl_handler,%
3816     xml_parse,xml_get_error_code,xml_error_string,%
3817     xml_get_current_column_number,xml_get_current_byte_index,%
3818     xml_parser_free,xml_parser_set_option,xml_parser_get_option,%
3819     utf8_encode,xml_parser_create_ns,%
3820     xml_set_start_namespace_decl_handler,%
3821 %--- xslt functions
3822     xslt_set_log,xslt_create,xslt_errno,xslt_error,xslt_free,%
3823     xslt_set_sax_handler,xslt_set_scheme_handler,%
3824     xslt_set_base,xslt_set_encoding,xslt_set_sax_handlers,%
3825 %--- yaz functions
3826     yaz_addinfo,yaz_close,yaz_connect,yaz_errno,yaz_error,yaz_hits,%
3827     yaz_database,yaz_range,yaz_record,yaz_search,yaz_present,%
3828     yaz_scan,yaz_scan_result,yaz_ccl_conf,yaz_ccl_parse,%
3829     yaz_wait,yaz_sort,%
3830 %--- zip functions
3831     zip_close,zip_entry_close,zip_entry_compressedsize,%
3832     zip_entry_filesize,zip_entry_name,zip_entry_open,zip_entry_read,%
3833     zip_read,%
3834 %--- zlib functions
3835     gzclose,gzEOF,gzfile,gzgetc,gzgets,gzgetss,gzopen,gzpassthru,%
3836     gzread,gzrewind,gzseek,gztell,gzwrite,readgzfile,gzcompress,%
3837     gzdeflate,gzinflate,gzencode,},%
3838     sensitive,%
3839     morecomment=[l]\#,%
3840     morecomment=[l]//,%
3841     morecomment=[s]{/*}{*/},%
3842     morestring=[b]" ,%
3843     morestring=[b]' %
3844 }[keywords,comments,strings]%
3845 </lang2>

```

2.58 Plasm

Alessio Pace provided the following definition.

```

3846 <*lang3>
3847 \lst@definlanguage{Plasm}%
3848 {sensitive=false,%
3849     morekeywords={aa,abs,ac,acolor,acos,actor,al,alias,align,and,%
3850         animation,animation,appearance,apply,ar,arc,as,asin,assoc,atan,%
3851         axialcamera,axialcameras,basehermite,bbox,bbox,bernstein,%

```

3852 bernsteinbasis, bezier, beziercurve, beziermanifold, bezierstripe, %
3853 beziersurface, bigger, biggest, bilinearsurface, binormal, %
3854 biquadraticsurface, black, blend, blue, bottom, box, brown, bspize, %
3855 bspline, bsplinebasis, c, cabinet, camera, cart, case, cat, catch, ceil, %
3856 centeredcameras, centralcavalier, char, charseq, choose, circle, %
3857 circumference, class, cmap, color, comp, computecoords, cone, %
3858 conicalsurface, cons, control, convexcoords, convexhull, coonspatch, %
3859 copy, cos, cosh, crease, crosspolytope, cube, cubiccardinal, %
3860 cubiccardinalbasis, cubichermite, cubicbspline, cubicbsplinebasis, %
3861 cuboid, curl, curvature, curve2cspath, curve2mapvect, cyan, cylinder, %
3862 cylindricalsurface, d, deboor, def, depol, depth_sort, depth_test, %
3863 derbernstein, derbernsteinbase, derbezier, determinant, difference, %
3864 differencepr, dim, dimetric, dirproject, displaygraph, displaynubspline, %
3865 displaynurb spline, distl, distr, div, divergence, dodecahedron, dot, down, %
3866 dp, drawedges, drawforks, drawtree, ds, dsphere, dump, ellipse, %
3867 embed, end, eq, ex, exp, explode, export, extract_bodies, extract_polygons, %
3868 extract_wires, extrude, extrusion, fact, false, feature, ff, fillcolor, %
3869 filter, finitecone, first, flash, flashani, floor, fontcolor, fontheight, %
3870 fontspacing, fontwidth, fractalsimplex, frame, frame, frameflash, fromto, %
3871 gausscurvature, ge, grad, gradient, gradmap, gray, green, gt, help, hermite, %
3872 hermitebasis, hermitesurface, hexahedron, icosahedron, id, idnt, if, in, %
3873 inarcs, innerprod, inset, insl, insr, intersection, intersectionpr, %
3874 intervals, intmax, intmin, intsto, inv, isa, isanimpol, isbool, ischar, %
3875 isclosedshape, iscloseto, isempty, iseven, isfun, isfunvect, isge, isgt, %
3876 isint, isintneg, isinto, isintpos, isle, islt, ismat, ismatof, isnat, %
3877 isnull, isnum, isnumneg, isnumpos, isodd, isometric, isorthoshape, ispair, %
3878 ispoint, ispointseq, ispol, ispoldim, ispolytope, ispurepol, isreal, %
3879 isrealneg, isrealpos, isrealvect, isseq, isseqof, isshape, issimplex, %
3880 issqrmat, isstring, isvect, iszero, jacobian, join, joints, k, last, le, %
3881 left, leftcavalier, len, less, lesseq, lex, lift, light, linecolor, %
3882 linesize, list, ln, load, loadlib, loop, lt, lxmy, magenta, map, mapshapes, %
3883 markersize, mat, matdotprod, material, mathom, max, mean, meanpoint, med, %
3884 merge, mesh, min, minkowski, mirror, mixedprod, mk, mkframe, mkpol, %
3885 mkvector, mkversork, mod, model, move, mul, multextrude, mxby, mxmy, mxty, %
3886 myfont, n, nat2string, neq, ngon, norm2, normalmap, not, nu_grid, nubspline, %
3887 nubsplineknots, nurb spline, nurb splineknots, octahedron, offset, %
3888 onepoint, open, optimize, or, orange, ord, ortho, orthoproject, orthox, %
3889 orthoy, orthoz, outarcs, outerloop, outerwarp, pairediff, parallel, %
3890 pascaltriangle, pdiff, pdifference, permutahedron, permutations, %
3891 perspective, perspective, pi, pivotop, plane, planemapping, pmap, %
3892 points2shape, polar, polyline, polymarker, polypoint, power, powerset, %
3893 presort, principalnormal, print, prism, profileprodsurface, %
3894 progressivesum, project, projection, purple, pyramid, q, quadarray, %
3895 quadmesh, quote, r, raise, range, rationalbezier, rationalblend, %
3896 rationalbspline, rationalize, red, rev, reverse, rgbacolor, right, %
3897 rightcavalier, ring, rn, rotatedtext, rotationalsurface, rotn, rtail, %
3898 ruledsurface, rxmy, s, save, scalarmatprod, scalarvectprod, schlegel2d, %
3899 schlegel3d, sdifference, sdifferencepr, segment, sel, setand, setdiff, %
3900 setfontcolor, setor, setxor, sex, shape_0, shape_1, shape2points, %
3901 shape2pol, shapeclosed, shapecomb, shapediff, shapedist, %

```

3902     shapeinbetweening,shapeinf,shapejoin,shapelen,shapenorm,%
3903     shapenormal,shapeprod,shaperot,shapesum,shapesup,shapezero,shift,%
3904     showprop,sign,signal,simplex,simplexpile,sin,sinh,size,skeleton,%
3905     skew,smaller,smallest,solidifier,solidify,sort,sphere,spline,%
3906     splinesampling,splitcells,splitpols,sqr,sqrt,star,string,%
3907     stringtokens,struct,sub,svg,sweep,t,tail,tan,tangent,tanh,%
3908     tensorprodsurface,tetrahedron,text,texture,textwithattributes,%
3909     thinsolid,threepoints,time,tmax,tmin,top,torus,torusmap,trace,%
3910     trans,tree,trianglefan,trianglestripe,trimetric,true,trunccone,tt,%
3911     tube,twopoints,uk,ukpol,ukpolf,union,unionpr,unitvect,unprune,up,%
3912     vect2dtoangle,vect2mat,vectdiff,vectnorm,vectprod,vectsum,view,%
3913     viewmodel,viewmodel,vrml,warp,warp,where,white,with,xcavalier,xor,%
3914     xquadarray,xx,ycavalier,yellow},%
3915     moredirectives={loadlib},%
3916     otherkeywords={- , + , * , ** , / , ~ , | , . . . , ^ , \& , \&\& , \# , \#\#} ,%
3917     morecomment=[s]{\%}{\%} ,%
3918     morestring=[b] ' ,%
3919     literate={~}{{\sim$}}{1} {^}{{\wedge$}}{1} ,%
3920 }[keywords,directives,comments,strings]%
3921 </lang3>

```

2.59 PL/I

Found the data in

- BERNHARD FISCHER, HERMAN FISCHER: **Structured Programming in PL/I and PL/C**; Copyright © 1976 by Marcel Dekker, Inc.; ISBN 0-8247-6394-7

```

3922 <*lang3>
3923 \lst@definlanguage{PL/I}%
3924 {morekeywords={ABS,ATAN,AUTOMATIC,AUTO,ATAND,BEGIN,BINARY,BIN,BIT,%
3925     BUILTIN,BY,CALL,CHARACTER,CHAR,CHECK,COLUMN,COL,COMPLEX,CPLX,%
3926     COPY,COS,COSD,COSH,DATA,DATE,DECIMAL,DEC,DECLARE,DCL,DO,EDIT,%
3927     ELSE,END,ENDFILE,ENDPAGE,ENTRY,EXP,EXTERNAL,EXT,FINISH,FIXED,%
3928     FIXEDOVERFLOW,FOFL,FLOAT,FORMAT,GET,GO,GOTO,IF,IMAG,INDEX,%
3929     INITIAL,INIT,INTERNAL,INT,LABEL,LENGTH,LIKE,LINE,LIST,LOG,LOG2,%
3930     LOG10,MAIN,MAX,MIN,MOD,NOCHECK,NOFIXEDOVERFLOW,NOFOFL,NOOVERFLOW,%
3931     NOOFL,NOSIZE,NOUNDERFLOW,NOUFL,NOZERODIVIDE,NOZDIV,ON,OPTIONS,%
3932     OVERFLOW,OFL,PAGE,PICTURE,PROCEDURE,PROC,PUT,READ,REPEAT,RETURN,%
3933     RETURNS,ROUND,SIN,SIND,SINH,SIZE,SKIP,SQRT,STATIC,STOP,STRING,%
3934     SUBSTR,SUM,SYSIN,SYSPRINT,TAN,TAND,TANH,THEN,TO,UNDERFLOW,UFL,%
3935     VARYING,WHILE,WRITE,ZERODIVIDE,ZDIV},%
3936     sensitive=f,%
3937     morecomment=[s]{/*}{*/},%
3938     morestring=[d] '%
3939 }[keywords,comments,strings]%
3940 </lang3>

```

2.60 PostScript

Herbert Voss provided the following definition, written by Christophe Jorssen provided the following definition.

```
3941 ⟨*lang3⟩
3942 %%
3943 %% PostScript language definition (c) 2005 Christophe Jorssen.
3944 %%
3945 \lst@definlanguage{PostScript}{%
3946   morekeywords={abs,add,aload,anchorsearch,and,arc,arcn,arct,arcto,array,ashow,
3947     astore,atan,awidthshow,begin,bind,bitshift,bytesavailable, cachestatus,
3948     ceiling,charpath,clear,cleartomark,cleardictstack,clip,clippath,closefile,
3949     closepath,colorimage,concat,concatmatrix,condition,copy,copypage,cos,count,
3950     countdictstack,countexecstack,counttomark,cshow,currentblackgeneration,
3951     currentcacheparams,currentcmykcolor,currentcolor,currentcolorrendering,
3952     currentcolorscreen,currentcolorspace,currentcolortransfer,currentcontext,
3953     currentdash,currentdevparams,currentdict,currentfile,currentflat,currentfont,
3954     currentglobal,currentgray,currentgstate,currenthalftone,currenthalftonephase,
3955     currenthsbcolor,currentlinecap,currentlinejoin,currentlinewidth,currentmatrix,
3956     currentmiterlimit,currentobjectformat,currentpacking,currentpagedevice,
3957     currentpoint,currentrgbcolor,currentscreen,currentshared,currentstrokeadjust,
3958     currentsystemparams,currenttransfer,currentundercolorremoval,currentuserparams,
3959     curveto,cvi,cvilit,cvn,cvr,cvrs,cvs,cvx,def,defaultmatrix,definefont,
3960     defineresource,defineusername,defineuserobject,deletefile,detach,deviceinfo,
3961     dict,dictstack,div,dtransform,dup,
3962     echo,eexec,end,eoclip,eofill,eoviewclip,eq,erasepage,errordict,exch,exec,
3963     execform,execstack,execuserobject,executeonly,executive,exit,
3964     exp,false,file,filenameforall,fileposition,fill,filter,findencoding,findfont,
3965     findresource,flattenpath,floor,flush,flushfile,FontDirectory,for,forall,fork,ge,
3966     get,getinterval,globaldict,GlobalFontDirectory,glyphshow,grestore,gstoreall,
3967     gsave,gstate,gt,identmatrix,idiv,idtransform,if,ifelse,image,
3968     imagemask,index,ineofill,infill,initclip,initgraphics,initmatrix,initviewclip,
3969     instroke,internaldict,inueofill,inufill,inustroke,
3970     invertmatrix,ISOLatin1Encoding,itransform,join,kshow,
3971     known,languagelevel,le,length,lineto,ln,load,lock,log,loop,lt,
3972     makefont,makepattern,mark,matrix,maxlength,mod,monitor,moveto,mul,ne,neg,
3973     newpath,noaccess,not,notify,null,nulldevice,or,packedarray,
3974     pathbbox,pathforall,pop,print,printobject,product,prompt,pstack,put,putinterval,
3975     quit,rand,rcurveto,read,readhexstring,readline,readonly,readstring,
3976     realtime,rectclip,rectfill,rectstroke,rectviewclip,renamefile,repeat,resetfile,
3977     resourceforall,resourcestatus,restore,reversepath,revision,rlineto,rmoveto,roll,
3978     rootfont,rotate,round,rrand,run,save,scale,scalefont,scheck,search,selectfont,
3979     serialnumber,setbbox,setblackgeneration,setcachedevice,setcachedevice2,
3980     setcachelimit,setcacheparams,setcharwidth,setcmykcolor,setcolor,
3981     setcolorrendering,setcolorscreen,setcolorspace,setcolortransfer, setdash,
3982     setdevparams,setfileposition,setflat,setfont,setglobal,setgray,setgstate,
3983     sethalftone,sethalftonephase,sethsbcolor,setlinecap,setlinejoin,setlinewidth,
3984     setmatrix,setmiterlimit,setobjectformat,setoverprint,setpacking,setpagedevice,
3985     setpattern,setrgbcolor,setscreen,setshared,setstrokeadjust,setsystemparams,
```

```

3986     settransfer, setucacheparams, setundercolorremoval, setuserparams, setvmthreshold,
3987     shareddict, show, showpage, sin, sqrt, srand, stack,
3988     StandardEncoding, start, startjob, status, statusdict, stop, stopped, store, string,
3989     stringwidth, stroke, strokepath, sub, systemdict, transform,
3990     translate, true, truncate, type, token, uappend, ucache, ucachestatus,
3991     ueofill, ufill, undef,
3992     upath, userdict, UserObjects,
3993     usertime, ustroke, ustrokepath, version, viewclip, viewclippath, vmreclaim,
3994     vmstatus, wait, wcheck, where, widthshow, write, writehexstring, writeobject,
3995     writestring, wtranslation, xcheck, xor, xshow, xyshow, yield, yshow},
3996     sensitive,
3997     morecomment=[1] \%} [keywords, comments]
3998 </lang3>

```

2.61 POV-Ray

Berthold Höllmann sent me the definition. But I removed `blankstring=false` and `flexiblecolumns=true` from the driver since they have nothing to do with a language definition.

```

3999 <*lang1>
4000 %%
4001 %% POV definition (c) 1999 Berthold H\ollmann
4002 %%
4003 \lst@definlanguage{POV}%
4004 {morekeywords={abs,absorption,acos,acosh,adaptive,adc_bailout,agate,%
4005     agate_turb,all,alpha,ambient,ambient_light,angle,aperture,append,%
4006     arc_angle,area_light,array,asc,asin,asinh,assumed_gamma,atan,%
4007     atan2,atanh,average,background,bezier_spline,bicubic_patch,%
4008     black_hole,blob,blue,blur_samples,bounded_by,box,boxed,bozo,%
4009     break,brick,brick_size,brightness,brilliance,bumps,bump_map,%
4010     bump_size,camera,case,caustics,ceil,checker,chr,clipped_by,clock,%
4011     clock_delta,color,color_map,colour,colour_map,component,%
4012     composite,concat,cone,confidence,conic_sweep,control0,control1,%
4013     cos,cosh,count,crackle,crand,cube,cubic,cubic_spline,cubic_wave,%
4014     cylinder,cylindrical,debug,declare,default,defined,degrees,%
4015     density,density_file,density_map,dents,difference,diffuse,%
4016     dimensions,dimension_size,direction,disc,distance,%
4017     distance_maximum,div,eccentricity,else,emission,end,error,%
4018     error_bound,exp,extinction,fade_distance,fade_power,falloff,%
4019     falloff_angle,false,fclose,file_exists,filter,finish,fisheye,%
4020     flatness,flip,floor,focal_point,fog,fog_alt,fog_offset,fog_type,%
4021     fopen,frequency,gif,global_settings,gradient,granite,%
4022     gray_threshold,green,height_field,hexagon,hf_gray_16,hierarchy,%
4023     hollow,hypercomplex,if,ifdef,iff,ifndef,image_map,include,int,%
4024     interior,interpolate,intersection,intervals,inverse,ior,irid,%
4025     irid_wavelength,jitter,julia_fractal,lambda,lathe,leopard,%
4026     light_source,linear_spline,linear_sweep,local,location,log,%
4027     looks_like,look_at,low_error_factor,macro,mandel,map_type,marble,%

```

```

4028     material,material_map,matrix,max,max_intersections,max_iteration,%
4029     max_trace_level,media,media_attenuation,media_interaction,merge,%
4030     mesh,metallic,min,minimum_reuse,mod,mortar,nearest_count,no,%
4031     normal,normal_map,no_shadow,number_of_waves,object,octaves,off,%
4032     offset,omega,omnimax,on,once,onion,open,orthographic,panoramic,%
4033     perspective,pgm,phase,phong,phong_size,pi,pigment,pigment_map,%
4034     planar,plane,png,point_at,poly,polygon,poly_wave,pot,pow,ppm,%
4035     precision,prism,pwr,quadratic_spline,quadric,quartic,quaternion,%
4036     quick_color,quick_colour,quilted,radial,radians,radiosity,radius,%
4037     rainbow,ramp_wave,rand,range,ratio,read,reciprocal,%
4038     recursion_limit,red,reflection,reflection_exponent,refraction,%
4039     render,repeat,rgb,rgbf,rgbft,rgbt,right,ripples,rotate,roughness,%
4040     samples,scale,scallop_wave,scattering,seed,shadowless,sin,%
4041     sine_wave,sinh,sky,sky_sphere,slice,slope_map,smooth,%
4042     smooth_triangle,sor,specular,sphere,spherical,spiral1,spiral2,%
4043     spotlight,spotted,sqr,sqrt,statistics,str,strcmp,strength,strlen,%
4044     strlwr,strupr, Sturm,substr,superellipsoid,switch,sys,t,tan,tanh,%
4045     text,texture,texture_map,tga,thickness,threshold,tightness,tile2,%
4046     tiles,torus,track,transform,translate,transmit,triangle,%
4047     triangle_wave,true,ttf,turbulence,turb_depth,type,u,%
4048     ultra_wide_angle,undef,union,up,use_color,use_colour,use_index,%
4049     u_steps,v,val,variance,vaxis_rotate,vcross,vdot,version,vlength,%
4050     vnormalize,vrotate,v_steps,warning,warp,water_level,waves,while,%
4051     width,wood,wrinkles,write,x,y,yes,z},%
4052     moredirectives={break,case,debug,declare,default,else,end,fclose,%
4053     fopen,local,macro,read,render,statistics,switch,undef,version,%
4054     warning,write},%
4055     moredelim=[directive]\#,%
4056     sensitive,%
4057     morecomment=[l]//,%
4058     morecomment=[s]{/*}{*/},%
4059     morestring=[d]" ,%
4060 }[keywords,directives,comments,strings]%
4061 </lang1>

```

2.62 Prolog

Dominique de Waleffe mailed me the data for Prolog. He took the keywords from the LGrind language definition file.

```

4062 <*lang2>
4063 %%
4064 %% Prolog definition (c) 1997 Dominique de Waleffe
4065 %%
4066 \lst@definlanguage{Prolog}%
4067 {morekeywords={op,mod,abort,ancestors,arg,ascii,ask,assert,asserta,%
4068     assertz,atom,atomic,char,clause,close,concat,consult,ed,ef,em,%
4069     eof,fail,file,findall,write,functor,getc,integer,is,length,%
4070     listing,load,name,nl,nonvar,not,numbervars,op,or,pp,prin,print,%

```

```

4071     private,prompt,putc,ratom,read,read_from_this_file,rename,repeat,%
4072     retract,retractall,save,see,seeing,seen,sh,skip,statistics,%
4073     subgoal_of,system,tab,tell,telling,time,told,trace,true,unload,%
4074     untrace,var,write},%
4075     sensitive=f,%
4076     morecomment=[l]\%,%
4077     morecomment=[s]{/*}{*/},%
4078     morestring=[bd]" ,%
4079     morestring=[bd]'%
4080 }[keywords,comments,strings]%
4081 </lang2>

```

2.63 Promela

Thanks to William ThimblebyPromela for this language definition.

```

4082 <*lang3>
4083 %%
4084 %% Promela definition (c) 2004 William Thimbleby
4085 %%
4086 \lst@definlanguage{Promela}
4087 {morekeywords={active,assert,atomic,bit,bool,break,byte,chan,d_step,%
4088     Dproctype,do,else,empty,enabled,fi,full,goto,hidden,if,init,int,%
4089     len,mtype,nempty,never,nfull,od,of,pcvalue,printf,priority,%
4090     proctype,provided,run,short,skip,timeout,typedef,unless,unsigned,%
4091     xr,xs,true,false,inline,eval},%
4092     moredirectives={define,ifdef,ifndef,if,if,else,endif,undef,include},%
4093     moredelim=[directive]\#,%
4094     morecomment=[s]{/*}{*/},%
4095     morestring=[b]"%
4096 }[keywords,comments,strings,directives]%
4097 </lang3>

```

2.64 PSTricks

PSTricks is a \TeX macro package bundle. Herbert Voss provided the following definition.

```

4098 <*lang3>
4099 %%
4100 %% PSTricks definition (c) 2006 Herbert Voss
4101 %%
4102 \lst@definlanguage{PSTricks}%
4103 {morekeywords={%
4104     begin,end,definecolor,multido,%
4105     KillGlue,DontKillGlue,pslbrace,bsrbrace,psscalebox,psset,pstVerb,pstverb,%
4106     pst@def,,psframebox,psclip,endclip,endsppicture,psframe,%
4107     % pspicture,%
4108     multirput,multips,Rput,rput,uput,cput,lput,%

```

```

4109     newrgbcolor,newgray,newcmykcolor,
4110 %%
4111 %% pstricks-add
4112     psStep,psgraph,psbrace,psPrintValue,
4113 %%
4114 %% pst-plot
4115     psvlabel,pslabel,psplot,psline,pscustom,pscurve,psccurve,%
4116     readdata,savedata,fileplot,dataplot,listplot,%
4117     psecurve,psgraph,parametricplot,%
4118     psellipse,psaxes,ncline,nccurve,psbezier,parabola,%
4119     qdisk,qline,clipbox,endspsclip,%
4120     psgrid,pscircle,pscirclebox,psdiabox,pstribox,%
4121     newpsfontdot,psdot,psdots,%
4122     pspolygon,psdiamond,psoval,pstriangle,%
4123     psarc,psarcn,psellipticarc,psellipticarcn,pswedge,psellipticwedge,
4124     pcline,pcdiag,pcdiagg,pccurve,pccurve,pcecurve,%
4125     scalebox,scaleboxto,psmathboxtrue,everypsbox,psverbboxtrue,overlaybox,%
4126     psoverlay,putoverlaybox,%
4127     newpsstyle,newpsobject,%
4128     moveto,newpath,closepath,stroke,fill,gsave,grestore,msave,mrestore,translate,scale,%
4129     swapaxes,rotate,openshadow,closedshadow,movepath,lineto,rlineto,curveto,rcurveto,%
4130     code,dim,coor,rcoor,file,arrows,setcolor,%
4131     rotateleft,rotateright,rotatedown,%
4132 %%
4133 %% pst-node
4134     nput,naput,nbput,nconut,%
4135     ncarc,nabox,ncangle,ncangles,nclloop,ncdiag,ncdiagg,ncarcbox,nctbar,%
4136     cnodeput,nccircle,%
4137     pnode,rnode,Rnode,Cnode,cnode,fnode,%
4138     circlenode,ovalnode,trinode,dianode,%
4139     psmatrix,endspmatrix,psspan,%
4140 %%
4141 %% pst-tree
4142     pstree,Tcircle,TCircle,Ttri,Tn,TC,Tc,Tfan,TR,Tr,Tdia,Toval,Tdot,Tp,Tf,%
4143     skiplevel,skiplevels,endskiplevels,tSPACE,tlput,%
4144 %%
4145 %% pst-text
4146     pscharpath,pstextpath,
4147 %%
4148 %% pst-barcode
4149     psbarcode,
4150 %%
4151 %% pst-coil
4152     psboxfill,pscoil,psCoil,pszigzag,nccoil,
4153     psshadow,pstilt,psTilt,ThreeDput,
4154 %%
4155 %% pst-gr3d
4156     PstGridThreeDNodeProcessor,%
4157 %%
4158 %% pst-vue3d

```

```

4159 PstGridThreeD,
4160 AxesThreeD,LineThreeD,DieThreeD,FrameThreeD,SphereCircleThreeD,SphereMeridienThreeD,
4161 QuadrillageThreeD,TetraedreThreeD,PyramideThreeD,ConeThreeD,CylindreThreeD,
4162 DodecahedronThreeD,ConeThreeD,SphereThreeD,SphereInverseThreeD,DemiSphereThreeD,
4163 SphereCreuseThreeD,SphereCircledThreeD,PortionSphereThreeD,pNodeThreeD,CubeThreeD,%
4164 %%
4165 %% pst-3dplot
4166 pstThreeDCoor,pstThreeDDot,pstThreeDTriangle,pstThreeDCircle,pstPlanePut,%
4167 pstThreeDBox,pstThreeDEllipse,pstThreeDLine,pstThreeDPut,%
4168 pstThreeDNode,pstThreeDSquare,psplotThreeD,parametricplotThreeD,fileplotThreeD,%
4169 dataplotThreeD,pstScalePoints,%
4170 %%
4171 %% pst-circ
4172 resistor,battery,Ucc,Icc,capacitor,coil,diode,Zener,LED,lamp,switch,wire,tension,
4173 circledipole,multidipole,OA,transistor,Tswitch,potentiometer,transformer,
4174 optoCoupler,logic,
4175 %%
4176 %% pst-eucl
4177 pstTriangle,pstMediatorAB,pstInterLL,pstMiddleAB,pstProjection,pstCircleOA,pstLineAB,%
4178 %%
4179 %% pst-func
4180 psBessel,psPolynomial,psFourier,psGaussI,psGauss,psSi,psSi,psCi,psCi,%
4181 %%
4182 %% pst-infixplot
4183 psPlot,
4184 %%
4185 %% pst-ob3d
4186 PstDie,PstCube,
4187 %%
4188 %% pst-poly
4189 PstPolygon,pspolygonbox,
4190 %%
4191 %% pst-bar
4192 psbarchart,readpsbardata,psbarscale,newpsbarstyle,%
4193 %%
4194 %% pst-lens
4195 PstLens,%
4196 %%
4197 %% pst-geo
4198 WorldMap,WorldMapII,WorldMapThreeD,WorldMapThreeDII,pnodeMap,MapPut,%
4199 %%
4200 %% pst-autoseg
4201 asr,firstnode,merge,assoc,labelmerge,%
4202 %%
4203 %% gastex
4204 node,imark,fmark,rmark,drawqbpedge,drawedge,drawloop,%
4205 %%
4206 %% pst-labo
4207 Distillation,Ballon,
4208 %%

```

```

4209 %% pst-optic
4210     lens,Transform,%
4211 %%
4212 %% pst-light3d
4213     PstLightThreeDText,%
4214 %%
4215 %% calendrier
4216     Calendrier,%
4217 %%
4218 %% pst-osci
4219     Oscillo%
4220 },%
4221     sensitive,%
4222     alsoother={0123456789$_},%
4223     morecomment=[1]\% %
4224 }[keywords,comments]%
4225 </lang3>

```

2.65 Python

Michael Weber sent me the definition. He got data from MARK LUTZ: **Programming Python**; O'Reilly 1996; ISBN 1-56592-197-6. Stephen Kelly reported some problems that indicated that the comment definitions needed to be moved after the string definitions to work correctly.

In August 2013 Alexis Dimitriadis reworked the definition by supplying the builtins.

```

4226 <*lang1>
4227 %%
4228 %% Python definition (c) 1998 Michael Weber
4229 %% Additional definitions (2013) Alexis Dimitriadis
4230 %%
4231 \lst@definlanguage{Python}%
4232     {morekeywords={access,and,break,class,continue,def,del,elif,else,%
4233         except,exec,finally,for,from,global,if,import,in,is,lambda,not,%
4234         or,pass,print,raise,return,try,while},%

```

Python has a long list of builtin-in functions (<http://docs.python.org/2/library/functions.html>) and it is a good idea to make them visible in printed code

```

4235 % Built-ins
4236     morekeywords=[2]{abs,all,any,basestring,bin,bool,bytearray,callable,chr,
4237         classmethod,cmp,compile,complex,delattr,dict,dir,divmod,enumerate,eval,
4238         execfile,file,filter,float,format,frozenset,getattr,globals,hasattr,hash,
4239         help,hex,id,input,int,isinstance,issubclass,iter,len,list,locals,long,map,
4240         max,memoryview,min,next,object,oct,open,ord,pow,property,range,raw_input,
4241         reduce,reload,repr,reversed,round,set,setattr,slice,sorted,staticmethod,str,
4242         sum,super,tuple,type,unicr,unicode,vars,xrange,zip,apply,buffer,coerce,
4243         intern},

```

```

4244 sensitive=true,%
4245 morecomment=[l]\#,%
4246 morestring=[b]',%
4247 morestring=[b]" ,%

```

According to PEP (Python Enhancement Proposals) comment should be distinguished from documentation strings, so we define

```

4248 morecomment=[s]{'''}{'''},% used for documentation text (multiline strings)
4249 morecomment=[s]{"""}{"""},% added by Philipp Matthias Hahn

```

Jürgen Dietel provided an example with a wrong representation of documentation strings, so the two lines above got changed from `morestring` → `morecomment`.

Python now supports so called *raw strings* and also Unicode strings. Here is the definition of these strings:

```

4250 morestring=[s]{r'}{'},% 'raw' strings
4251 morestring=[s]{r"}{"},%
4252 morestring=[s]{r'''}{'''},%
4253 morestring=[s]{r"""}{"""},%
4254 morestring=[s]{u'}{'},% unicode strings
4255 morestring=[s]{u"}{"},%
4256 morestring=[s]{u'''}{'''},%
4257 morestring=[s]{u"""}{"""}%
4258 }%

```

Philipp Matthias Hahn added the third comment. eRreuR found a bug using Python and Nicolas Markey informed me about the corresponding thread on `fr.comp.text.tex` and provided the fix—adding `[b]` to both `morestring` declarations.

```

4259 </lang1>

```

Alexis Dimitriadis also proposes the following configuration for printing Python code which simulates colorizing the code as it's done by the IDLE GUI:

```

4260 <*python-prf>
4261 \usepackage{xcolor}
4262 \usepackage{textcomp}
4263
4264 %% Actual colors from idlelib/config-highlight.def --> corrected to 'web-safe'
4265 %% strings = #00aa00 / 0,170,0 (a darker green)
4266 %% builtins = #900090 / 144,0,144 (purple-ish)
4267 %% keywords = #FF7700 / 255,119,0 (quite close to plain 'orange')
4268 %\definecolor{IDLEorange}{RGB}{255,119,0} % pretty close to real orange
4269 %\definecolor{IDLEpurple}{RGB}{144,0,144}
4270 %\definecolor{IDLEgreen}{RGB}{0,170,0}
4271 %\definecolor{IDLEred}{RGB}{221,0,0}
4272 %% Corrected to 'web-safe'
4273 %\definecolor{orange2}{RGB}{255,102,0}
4274 \definecolor{purple2}{RGB}{153,0,153} % there's actually no standard purple
4275 \definecolor{green2}{RGB}{0,153,0} % a darker green
4276 %\definecolor{red2}{RGB}{221,0,0}
4277

```

```

4278 % Except for green and purple, the other colors are pretty good in standard
4279 % hue
4280 \lstdefinestyle{python-idle-code}{%
4281   language=Python,           % the language
4282   basicstyle=\normalsize\ttfamily, % size of the fonts for the code
4283   % Color settings to match IDLE style
4284   keywordstyle=\color{orange}, % core keywords
4285   keywordstyle={\color{purple2}}, % built-ins
4286   stringstyle=\color{green2},
4287   commentstyle=\color{red},
4288   upquote=true,             % requires textcomp
4289 }
4290 % Unimplemented IDLE syntax: function/class names being defined should be
4291 % blue

This code is provided in the file listings-python.prf, see section 2.4.1 (Prefer-
ences) of the listings documentation.
4292 </python-prf>

```

2.66 Rexx

Patrick TJ McPhee provided this definition.

```

4293 <*lang2>
4294 %%
4295 %% classic rexx listings definition
4296 %% by Patrick TJ McPhee <ptjm@interlog.com>
4297 %%
4298 \lst@definlanguage{Rexx}
4299 {morekeywords={address,arg,call,do,drop,else,end,exit,if,iterate,%
4300               interpret,leave,nop,numeric,options,otherwise,parse,%
4301               procedure,pull,push,queue,return,say,signal,then,to,%
4302               trace,when},%
4303   sensitive=false,%
4304   morecomment=[n]{/*}{*/},%
4305   morestring=[d]{'},%
4306   morestring=[d]{"},%
4307 }[keywords,comments,strings]%
4308 </lang2>

```

2.67 Reduce

was provided by Geraint Paul Bevan.

```

4309 <*lang3>
4310 %%
4311 %% Reduce definition (c) 2002 Geraint Paul Bevan
4312 %%
4313 \lst@definlanguage{Reduce}%
4314 {morekeywords={%

```

```

4315 %% reserved identifiers
4316 abs,acos,acosh,acot,acoth,acsc,acsch,%
4317 adjprec,algebraic,algint,allbranch,allfac,and,%
4318 antisymmetric,append,arglength,array,asec,asech,%
4319 asin,asinh,atan,atan2,atanh,begin,bfspace,bye,%
4320 card_no,ceiling,clear,clearrules,coeff,coeffn,%
4321 cofactor,combineexpt,combinelogs,comment,comp,%
4322 complex,conj,cons,cont,cos,cosh,cot,coth,cramer,%
4323 cref,csc,csch,decompose,define,defn,deg,demo,den,%
4324 depend,det,df,difference,dilog,display,div,do,e,%
4325 echo,ed,editdef,ei,end,eps,eq,equal,erf,errcont,%
4326 evallhseqp,eval_mode,even,evenp,exp,expandlogs,%
4327 expr,expt,ezgcd,factor,factorial,factorize,fexpr,%
4328 first,fix,fixp,floor,for,forall,foreach,fort,%
4329 fort_width,freeof,fullroots,g,gcd,geq,go,goto,%
4330 greaterp,high_pow,hypot,i,if,ifactor,impart,in,%
4331 index,infinity,infix,input,int,integer,interpol,%
4332 intstr,k,korder,lambda,lcm,lcof,length,leq,lessp,%
4333 let,lhs,linear,linelength,lisp,list,listargp,%
4334 listargs,ln,load,load_package,log,log10,logb,%
4335 low_pow,lterm,macro,mainvar,mass,mat,match,%
4336 mateigen,matrix,max,mcd,member,memq,min,minus,mkid,%
4337 modular,msg,mshell,multiplicities,nat,neq,nero,%
4338 nextprime,nil,nodepend,noncom,nonzero,nosplit,%
4339 nospur,nullspace,num,numberp,odd,off,on,operator,%
4340 or,order,ordp,out,output,part,pause,period,pf,pi,%
4341 plus,precedence,precise,precision,pret,pri,primep,%
4342 print_precision,procedure,product,quit,quotient,%
4343 random,random_new_seed,rank,rat,ratarg,rational,%
4344 rationalize,ratpri,real,rederr,reduct,remainder,%
4345 remfac,remind,repert,repeat,rest,resultant,retry,%
4346 return,reverse,revpri,rhs,rlisp88,%
4347 root_multiplicity,round,roundall,roundbf,rounded,%
4348 saveas,savestructr,scalar,sec,sech,second,set,%
4349 setmod,setq,share,showrules,showtime,shut,sign,sin,%
4350 sinh,smacro,solve,solvesingular,spur,sqrt,structr,%
4351 sub,sum,symbolic,symmetric,t,tan,tanh,third,time,%
4352 times,tp,tra,trace,trfac,triform,trint,until,%
4353 varname,vecdim,vector,weight,when,where,while,%
4354 write,ws,wtlevel,%
4355 %% identifiers with spaces
4356 %% for all,for each,go to,such that,%
4357 },%
4358 sensitive=false,%
4359 morecomment=[l]\%,%
4360 morecomment=[s]{COMMENT}{;},%
4361 morecomment=[s]{COMMENT}{$},%
4362 morestring="%
4363 }[keywords,comments,strings]%

```

4364 $\langle /lang3 \rangle$

2.68 RSL

Thanks go to Brian Christensen.

4365 $\langle *lang3 \rangle$

```
4366 %%
4367 %% RSL definition (c) 2004 Brian Christensen
4368 %%
4369 \lst@definlanguage{RSL}%
4370 {morekeywords={Bool,Char,devt_relation,Int,Nat,Real,Text,Unit,abs,any,%
4371 as,axiom,card,case,channel,chaos,class,do,dom,elems,else,elsif,end,%
4372 extend,false,for,hd,hide,if,in,inds,initialise,int,len,let,local,%
4373 object,of,out,post,pre,read,real,rng,scheme,skip,stop,swap,%
4374 test_case,theory,then,tl,true,type,until,use,value,variable,while,%
4375 with,write},%
4376 literate=%
4377 {<}{<$}{1}%
4378 {>}{>$}{1}%
4379 {[]}{$}{1}%
4380 {}{}{}{1}%
4381 {^}{{\mbox{$\widehat{\;}$}}}{1}%
4382 {'}{{\raisebox{1ex}[1ex][0ex]{\protect\scriptsize$\prime$}}}{1}%
4383 {||}{{\mbox{$\parallel$}}}{2}%
4384 {|-}{{\vdash$}}{1}%
4385 {|=|}{{\mbox{$\lceil\!\!rceil\!\!|\!\!|\!\!|\!\!|\!\!|\lfloor\!\!rfloor$}}}{1}%
4386 {**}{{\uparrow$}}{1}%
4387 {/\}{{\wedge$}}{1}%
4388 {inter}{{\cap$}}{1}%
4389 {-\}{{\lambda$}}{1}%
4390 {->}{{\rightarrow$}}{1}%
4391 {-m->}{{\mbox{$\rightarrow \hspace{-2.5\lst@width} \_m\;\;$}}}{1}%
4392 {-~m->}{{\mbox{$\stackrel{\sim}{\rightarrow} \hspace{-2.5\lst@width} \_m\;\;$}}}{1}%
4393 {-~>}{{\mbox{$\stackrel{\sim}{\rightarrow}$}}}{1}%
4394 {-set}{{\bf{-set}}}{4}%
4395 {-list}{{\ast$}}{1}%
4396 {-inflist}{{\omega$}}{1}%
4397 {-infset}{{\bf{-infset}}}{7}%
4398 {\#}{{\circ$}}{1}%
4399 {:-}{{\raisebox{.4ex}{\tiny $\bullet$}}}{1}%
4400 {=}{{=$$}}{1}%
4401 {==}{{==$}}{2}%
4402 {=>}{{\rightarrow$}}{1}%
4403 {\ is\protect\^M}{{\;\equiv$}}{2}%
4404 {\ is\ }{{\equiv$}}{3}%
4405 {\ isin\protect\^M}{{\;\in$}}{2}%
4406 {~}{{\sim$}}{1}%
4407 {~=}{{\neq$}}{1}%
4408 {~isin}{{\notin$}}{1}%

```

4409 {+>}{\mapsto}{1}%
4410 {++}{1}%
4411 {\lceil}{\mbox{\lceil}\!{\rceil}}{1}%
4412 {\vee}{1}%
4413 {exists}{\exists}{1}%
4414 {union}{\cup}{1}%
4415 {>=}{\geq}{1}%
4416 {>}{\times}{1}%
4417 {>>}{\supset}{1}%
4418 {>>=}{\supseteq}{1}%
4419 {<=}{\leq}{1}%
4420 {<<}{\subset}{1}%
4421 {<}{\langle}{1}%
4422 {<<=}{\subseteq}{1}%
4423 {<->}{\leftrightarrow}{1}%
4424 {[=]}{\sqsubseteq}{1}%
4425 {\{=}}{\preceq}{1}%
4426 {\all\protect\^M}{\forall}{2}%
4427 {\all\ }{\forall}{3}%
4428 {!}{\dagger}{1}%
4429 {always}{\Box}{1}%
4430 {>}{\rangle}{1}%
4431 {'alpha'}{\alpha}{1}%
4432 {'beta'}{\beta}{1}%
4433 {'gamma'}{\gamma}{1}%
4434 {'delta'}{\delta}{1}%
4435 {'epsilon'}{\epsilon}{1}%
4436 {'zeta'}{\zeta}{1}%
4437 {'eta'}{\eta}{1}%
4438 {'theta'}{\theta}{1}%
4439 {'iota'}{\iota}{1}%
4440 {'kappa'}{\kappa}{1}%
4441 {'mu'}{\mu}{1}%
4442 {'nu'}{\nu}{1}%
4443 {'xi'}{\xi}{1}%
4444 {'pi'}{\pi}{1}%
4445 {'rho'}{\rho}{1}%
4446 {'sigma'}{\sigma}{1}%
4447 {'tau'}{\tau}{1}%
4448 {'upsilon'}{\upsilon}{1}%
4449 {'phi'}{\phi}{1}%
4450 {'chi'}{\chi}{1}%
4451 {'psi'}{\psi}{1}%
4452 {'omega'}{\omega}{1}%
4453 {'Gamma'}{\Gamma}{1}%
4454 {'Delta'}{\Delta}{1}%
4455 {'Theta'}{\Theta}{1}%
4456 {'Lambda'}{\Lambda}{1}%
4457 {'Xi'}{\Xi}{1}%
4458 {'Pi'}{\Pi}{1}%

```

4459 {'Sigma}{\Sigma}{1}%
4460 {'Upsilon}{\Upsilon}{1}%
4461 {'Phi}{\Phi}{1}%
4462 {'Psi}{\Psi}{1}%
4463 {'Omega}{\Omega}{1},%
4464   sensitive=true,%
4465   morecomment=[1]{--},%
4466   morecomment=[s]{/*}{*/}%
4467 }[keywords,comments]%
4468 </lang3>

```

2.69 Ruby

Christian Kaiser provided the initial definition. Xavier Noria replaced the keywords with the keywords from the at the time of writing current stable Ruby version. An erroneous string delimiter was removed following a bug reported on comp.text.tex on 2006/09/01.

Ruby supports string delimiters of the form %q!...!, where ! can be any character, or can be matched braces or parentheses or brackets. The included string definitions include most of the common variants, but are of course not comprehensive.

```

4469 <*lang2>
4470 \lst@definlanguage{Ruby}%
4471   {morekeywords={__FILE__,__LINE__,BEGIN,END,alias,and,begin,break,%
4472     case,class,def,defined?,do,else,elsif,end,ensure,false,for,%
4473     if,in,module,next,nil,not,or,redo,rescue,retry,return,self,%
4474     super,then,true,undef,unless,until,when,while,yield},%
4475   sensitive=true,%
4476   morecomment=[1]\#,%
4477   morecomment=[1]\#\#,%
4478   morecomment=[s]{=BEGIN}{=END},%
4479   morestring=[b]',%
4480   morestring=[b]" ,%
4481   morestring=[s]{\%q/}{/},%
4482   morestring=[s]{\%q!}{!},%
4483   morestring=[s]{\%q\}{\},%
4484   morestring=[s]{\%q()}{},%
4485   morestring=[s]{\%q[]}{},%
4486   morestring=[s]{\%q-}{-},%
4487   morestring=[s]{\%Q/}{/},%
4488   morestring=[s]{\%Q!}{!},%
4489   morestring=[s]{\%Q\}{\},%
4490   morestring=[s]{\%Q()}{},%
4491   morestring=[s]{\%Q[]}{},%
4492   morestring=[s]{\%Q-}{-}%
4493 }[keywords,comments,strings]%
4494 %   \begin{macrocode}
4495 </lang2>

```

2.70 Scilab

Thanks go to Jean-Philippe Grivet.

```
4496 (*lang1)
4497 %%
4498 %% Scilab definition (c) 2002,2003 Jean-Philippe Grivet
4499 %%
4500 \lst@definlanguage{Scilab}%
4501 {morekeywords={abcd,abinv,abort,abs,acoshm,acosh,acosm,acos,addcolor,%
4502     addf,addinter,addmenu,add_edge,add_node,adj2sp,adj_lists,aff2ab,%
4503     amell,analf,analyze,ans,apropos,arc_graph,arc_number,argn,arhk,%
4504     arl2,arma2p,armac,armax1,armax,arma,arsimul,artest,articul,ascii,%
4505     asinhm,asinh,asinm,asin,atanhm,atanh,atanm,atan,augment,auread,%
4506     auwrite,balanc,balreal,bandwr,basename,bdiag,besseli,besselj,%
4507     bessell,bessely,best_match,bezout,bifish,bilin,binomial,black,%
4508     bloc2exp,bloc2ss,bode,bool2s,boolean,boucle,break,bstap,buttmg,%
4509     bvode,cainv,calerf,calfrq,call,canon,casc,case,ccontrg,cdfbet,%
4510     cdfbin,cdfchi,cdfchn,cdfcnc,cdff,cdfgam,cdfnbn,cdfnor,cdfpoi,%
4511     cdftr,ceil,center,cepstrum,chaintest,chain_struct,champ1,champ,%
4512     chart,chmod,cheb1mag,cheb2mag,check_graph,check_io,chepol,chfact,%
4513     chol,chsolve,circuit,classmarkov,clean,clearfun,clearglobal,%
4514     clear,close,cls2dls,cmb_lin,cmdred,cmoment,code2str,coeff,coffg,%
4515     coff,colcompr,colcomp,colinout,colormap,colregul,companion,comp,%
4516     cond,conj,connex,contour2di,contour2d,contourf,contour,%
4517     contract_edge,contrss,contr,cont_frm,cont_mat,convex_hull,convol,%
4518     convstr,con_nodes,copfac,copy,correl,corr,coshm,cosh,cosm,cos,%
4519     cotg,cothm,coth,covar,csim,cspect,ctr_gram,cumprod,cumsum,%
4520     curbloc,cycle_basis,czt,c_link,dasrt,dassl,datafit,date,dbphi,%
4521     dcf,ddp,debug,dec2hex,deff,definedfields,degree,delbpt,%
4522     delete_arcs,delete_nodes,delete,delip,delmenu,demos,denom,%
4523     derivative,derivat,des2ss,des2tf,determ,detr,det,dhinf,%
4524     dhnorm,diag,diary,diff,diophant,dirname,dispbpt,dispfiles,disp,%
4525     dlgamma,double,dragrect,drawaxis,drawlater,drawnow,draw,driver,%
4526     dscr,dsearch,dsimul,dtsi,dt_ility,duplicate,edge_number,%
4527     edit_curv,edit_graph_menus,edit_graph,edit,eigenmarkov,ell1mag,%
4528     elseif,else,emptystr,endfunction,end,eqfir,eqiir,equil1,equil,%
4529     ereduc,erfcx,erfc,erf,errbar,errcatch,errclear,error,eval3dp,%
4530     eval3d,eval,evans,evstr,excel2sci,execstr,exec,exists,exit,expm,%
4531     exp,external,eye,fac3d,factors,faurre,fchamp,fcontour2d,fcontour,%
4532     fec,feedback,feval,ffilt,fftshift,fft,fgrayplot,figure,fileinfo,%
4533     file,filter,findm,findobj,findx0BD,find_freq,find_path,find,%
4534     findABCD,findAC,findBD,findBDK,findR,fit_dat,fix,floor,flts,foo,%
4535     formatman,format,fort,for,fourplan,fplot2d,fplot3d1,fplot3d,%
4536     fprintf,fprintfMat,frep2tf,freq,freson,frexp,frfit,frmag,fscanf,%
4537     fscanfMat,fsfirlin,fsolve,fspecg,fstabst,fstair,ftest,ftuneq,%
4538     fullrfk,fullrf,full,fun2string,funcprot,functions,function,%
4539     funptr,fusee,gainplot,gamitg,gammaln,gamma,gcare,gcd,gcf,%
4540     genfac3d,genlib,genmarkov,gen_net,geom3d,geomean,getblocklabel,%
4541     getcolor,getcurblock,getcwd,getdate,getd,getenv,getfield,getfont,%
```

```

4542 getf,getio,getlinestyle,getmark,getpid,getcscosvars,getsymbol,%
4543 getvalue,getversion,get_function_path,get,gfare,gfrancis,girth,%
4544 givens,glever,glist,global,glue,gpeche,graduate,grand,%
4545 graphics_entities,graph_2_mat,graph_center,graph_complement,%
4546 graph_diameter,graph_power,graph_simp,graph_sum,graph_union,%
4547 graph-list,graycolormap,grayplot,graypolarplot,grep,group,%
4548 gr_menu,gschur,gsort,gspec,gstacksize,gtild,g_margin,h2norm,halt,%
4549 hamilton,hankelsv,hank,harmean,havewindow,help,hermit,hess,%
4550 hex2dec,hilb,hinf,hist3d,histplot,horner,host,hotcolormap,%
4551 householder,hrmt,htrianr,hypermat,h_cl,h_inf_st,h_inf,h_norm,%
4552 iconvert,icon_edit,ieee,if,iirgroup,iirlp,iir,ilib_build,%
4553 ilib_compile,ilib_for_link,ilib_gen_gateway,ilib_gen_loader,%
4554 ilib_gen_Make,imag,impl,imrep2ss,imult,im_inv,inistate,input,%
4555 int16,int2d,int32,int3d,int8,intc,intdec,integrate,interpLn,%
4556 interp,intersci,intersect,intg,intl,intppty,intsplin,inttrap,%
4557 inttype,int,invr,invsyslin,inv_coeff,inv,iqr,isdef,isdir,isequal,%
4558 iserror,isglobal,isinfn,isnan,isoview,isreal,is_connex,jmat,%
4559 justify,kalm,karmarkar,kernel,keyboard,knapsack,kpure,krac2,%
4560 kroneck,kron,lasterror,lattn,lattp,lcf,lcmdiag,lcm,ldivf,ldiv,%
4561 leastsq,legends,length,leqr,levin,lev,lex_sort,lft,lgfft,library,%
4562 lib,lin2mu,lincos,lindquist,lines,line_graph,linfn,linf,link,%
4563 linmeq,linpro,linsolve,linspace,lin,listfiles,list,lmisolver,%
4564 lmitool,loadmatfile,loadplots,loadwave,load_graph,load,locate,%
4565 log10,log1p,log2,logm,logspace,log,lotest,lqe,lqg2stan,lqg_ltr,%
4566 lqg,lqr,lsq,lsslist,lstcat,lstsize,ltitr,ludel,lufact,luget,%
4567 lusolve,lu,lyap,macglov,macr2lst,macrovar,macro,mad,make_graph,%
4568 make_index,manedit,man,mapsound,markp2ss,matfile2sci,matrix,%
4569 mat_2_graph,maxi,max_cap_path,max_clique,max_flow,max,mclearerr,%
4570 mclose,meanf,mean,median,meof,mese,mesh2d,mfft,mfile2sci,mgeti,%
4571 mgetl,mgetstr,mget,milk_drop,mine,mini,minreal,minss,%
4572 min_lcost_cflow,min_lcost_flow1,min_lcost_flow2,min_qcost_flow,%
4573 min_weight_tree,min,mlist,mode,modulo,moment,mopen,move,%
4574 mps2linpro,mputl,mputstr,mput,mrfit,msd,mseek,mtell,mtlb_load,%
4575 mtlb_mode,mtlb_save,mtlb_sparse,mu2lin,mulf,mvvacov,m_circle,%
4576 names,nand2mean,nanmax,nanmeanf,nanmean,nanmedian,nanmin,%
4577 nanstdev,nansum,narsimul,ndims,nearfloat,nehari,neighbors,%
4578 netclose,netwindows,netwindow,newest,newfun,nextpow2,nf3d,nfreq,%
4579 nlev,nnz,nodes_2_path,nodes_degrees,node_number,noisegen,norm,%
4580 null,numdiff,numer,nyquist,obscont1,obscont,observer,obsvss,%
4581 obsv_mat,obs_gram,odedc,odedi,odeoptions,ode_discrete,ode_root,%
4582 ode,oldload,oldsave,ones,optim,orth,param3d1,param3d,%
4583 paramfplot2d,parrot,part,pathconvert,path_2_nodes,pause,pbig,%
4584 pdiv,pen2ea,pencan,penlaur,perctl,perfect_match,pertrans,pfss,%
4585 phasemag,phc,pinv,pipe_network,playsnd,plot2d1,plot2d2,plot2d3,%
4586 plot2d4,plot2d,plot3d1,plot3d2,plot3d3,plot3d,plotframe,%
4587 plotprofile,plot_graph,plot,plzr,pmodulo,pol2des,pol2str,pol2tex,%
4588 polarplot,polar,polfact,poly,portr3d,portrait,power,ppol,prbs_a,%
4589 predecessors,predef,printf,printing,print,prod,profile,projsl,%
4590 projspec,proj,psmall,pspect,pvm_addhosts,pvm_barrier,pvm_bcast,%
4591 pvm_bufinfo,pvm_config,pvm_delhosts,pvm_error,pvm_exit,%

```

```

4592 pvm_f772sci,pvm_getinst,pvm_gettid,pvm_get_timer,pvm_gsize,%
4593 pvm_halt,pvm_joiningroup,pvm_kill,pvm_lvgroup,pvm_mytid,pvm_parent,%
4594 pvm_probe,pvm_recv,pvm_reduce,pvm_sci2f77,pvm_send,pvm_set_timer,%
4595 pvm_spawn_independent,pvm_spawn,pvm_start,pvm_tasks,%
4596 pvm_tidtohost,pvm_pwd,p_margin,qassign,qr,quapro,quart,quaskro,%
4597 quit,randpencil,rand,range,rankqr,rank,rat,rcond,rdivf,read4b,%
4598 readb,readc_,readmps,read,real,recur,reglin,regress,remezb,remez,%
4599 repfreq,replot,residu,resume,return,riccati,riccsl,ricc,ric_desc,%
4600 rlist,roots,rotate,round,routh_t,rowcompr,rowcomp,rowinout,%
4601 rowregul,rowshuff,rpem,rref,rtitr,rubberbox,salesman,savewave,%
4602 save_graph,save,scaling,scanf,schur,sci2exp,sci2for,sci2map,%
4603 sciargs,scicosim,scicos,scifunc_block,sd2sci,secto3d,select,%
4604 semidef,sensi,setbpt,seteventhandler,setfield,setmenu,%
4605 setscicosvars,set,sfact,sgrid,shortest_path,showprofile,%
4606 show_arcs,show_graph,show_nodes,sident,signm,sign,simp_mode,simp,%
4607 sincd,sinc,sinc,sinhm,sinh,sinm,sin,size,sm2des,sm2ss,smooth,%
4608 solve,sorder,sort,sound,sp2adj,spaninter,spanplus,spantwo,sparse,%
4609 spchol,spcompact,specfact,spec,speye,spget,splin,split_edge,%
4610 spones,sprand,sprintf,spzeros,sqroot,sqrtm,sqrt,squarewave,%
4611 square,srfaur,srkf,ss2des,ss2ss,ss2tf,sscansf,sskf,ssprint,ssrand,%
4612 stabil,stacksize,standard_define,standard_draw,standard_input,%
4613 standard_origin,standard_output,startup,stdevf,stdev,steadycos,%
4614 str2code,strange,strcat,strindex,strings,string,striplanks,%
4615 strong_connex,strong_con_nodes,strsubst,st_deviation,st_ility,%
4616 subf,subgraph,subplot,successors,sum,supernode,sva,svd,svplot,%
4617 sylv,sylv,sysconv,sysdiag,sysfact,syslin,syssize,systems,system,%
4618 systmat,tabul,tangent,tanhm,tanh,tanm,tan,tdinit,testmatrix,%
4619 texprint,tf2des,tf2ss,then,thrownan,timer,time_id,titlepage,%
4620 tk_getdir,tk_getfile,tlist,toeplitz,tokenpos,tokens,trace,%
4621 translatepaths,trans_closure,trans,trfmod,trianfml,tril,trimmean,%
4622 trisolve,triu,trzeros,typename,typeof,type,uicontrol,uimenu,%
4623 uint16,uint32,uint8,ui_observer,ulink,unglue,union,unique,unix_g,%
4624 unix_s,unix_w,unix_x,unix,unobs,unsetmenu,user,varargin,%
4625 varargout,variancef,variance,varn,warning,wavread,wavwrite,%
4626 wcenter,wfir,what,whereami,whereis,where,while,whos,who_user,who,%
4627 wiener,wigner>window,winsid,with_gtk,with_pvm,with_texmacs,%
4628 with_tk,writb,write4b,write,xarcs,xarc,xarrows,xaxis,xbasf,%
4629 xbasimp,xbasr,xchange,xclear,xclea,xclick,xclip,xdel,xend,xfarcs,%
4630 xfarc,xfpolys,xfpoly,xfrect,xgetech,xgetfile,xgetmouse,xget,%
4631 xgraduate,xgrid,xinfo,xinit,xlfont,xload,xname,xnumb,xpause,%
4632 xpolys,xpoly,xrects,xrect,xrpoly,xs2fig,xs2gif,xs2ppm,xs2ps,%
4633 xsave,xsegs,select,xsetech,xsetm,xset,xstringb,xstringl,xstring,%
4634 xtape,xtitle,x_choices,x_choose,x_dialog,x_matrix,x_mdialog,%
4635 x_message_modeless,x_message,yulewalk,zeropen,zeros,zgrid,zpbutt,%
4636 zpch1,zpch2,zpell,mfprintf,mfscanf,mprintf,mscanf,msprintf,%
4637 msscanf,mucomp,%
4638 ABSBLK_f,AFFICH_f,ANDLOG_f,ANIMXY_f,BIGSOM_f,CLINDUMMY_f,CLKIN_f,%
4639 CLKINV_f,CLKOUT_f,CLKOUTV_f,CLKSOM_f,CLKSOMV_f,CLKSPLIT_f,%
4640 CLOCK_f,CLR_f,CLSS_f,CONST_f,COSBLK_f,CURV_f,DELAY_f,DELAYV_f,%
4641 DEMUX_f,DLR_f,DLRADAPT_f,DLSS_f,EVENTSCOPE_f,EVTDLY_f,EVTGEN_f,%

```

```

4642     EXPBLK_f,G_make,GAIN_f,GAINBLK_f,GENERAL_f,GENERIC_f,GENSIN_f,%
4643     GENSQR_f,HALT_f,IFTHEL_f,IN_f,INTEGRAL_f,INTRP2BLK_f,INTRPLBLK_f,%
4644     INVBLK_f,LOGBLK_f,LOOKUP_f,Matplot1,Matplot,MAX_f,MCLOCK_f,%
4645     MFCLCK_f,MIN_f,MUX_f,NDcost,NEGTOPOS_f,OUT_f,POSTONEG_f,POWBLK_f,%
4646     PROD_f,QUANT_f,RAND_f,READC_f,REGISTER_f,RELAY_f,RFILE_f,%
4647     ScilabEval,Sfgrayplot,Sgrayplot,SAMPLEHOLD_f,SAT_f,SAWTOOTH_f,%
4648     SCOPE_f,SCOPXY_f,SELECT_f,SINBLK_f,SOM_f,SPLIT_f,STOP_f,SUPER_f,%
4649     TANBLK_f,TCLSS_f,TEXT_f,TIME_f,TK_EvalFile,TK_EvalStr,TK_GetVar,%
4650     TK_SetVar,TRASH_f,WFILE_f,WRITEC_f,ZCROSS_f,%
4651     \\\asn,\\helps,\\k,\\sn},%
4652     alsoletter=\\,% chmod
4653     sensitive,%
4654     morecomment=[l]//,%
4655     morestring=[b] "%,%
4656     morestring=[m] '%
4657 }[keywords,comments,strings]%
4658 </lang1>

```

2.71 SHELXL

Thanks to Aidan Philip Heerden for mailing this definition.

```

4659 <*lang2>
4660 %%
4661 %% SHELXL definition (c) 1999 Aidan Philip Heerden
4662 %%
4663 \lst@definlanguage{SHELXL}%
4664 {morekeywords={TITL,CELL,ZERR,LATT,SYMM,SFAC,DISP,UNIT,LAUE,%
4665     REM,MORE,TIME,END,HKLF,OMIT,SHEL,BASF,TWIN,EXTI,SWAT,%
4666     MERG,SPEC,RESI,MOVE,ANIS,AFIX,HFIX,FRAG,FEND,EXYZ,EADP,%
4667     EQIV,OMIT,CONN,PART,BIND,FREE,DFIX,BUMP,SAME,SADI,CHIV,%
4668     FLAT,DELU,SIMU,DEFS,ISOR,SUMP,L.S.,CGLS,SLIM,BLOC,DAMP,%
4669     WGHT,FVAR,BOND,CONF,MPLA,RTAB,LIST,ACTA,SIZE,TEMP,WPDB,%
4670     FMAP,GRID,PLAN,MOLE},%
4671     sensitive=false,%
4672     alsoother=_% Makes the syntax highlighting ignore the underscores
4673     morecomment=[l]{! },%
4674 }%
4675 </lang2>

```

2.72 Simula

Took data from

- GÜNTHER LAMPRECHT: **Introduction to SIMULA 67**; Braunschweig; Wiesbaden: Vieweg, 1981

```

4676 <*lang3>
4677 \lst@definlanguage[IBM]{Simula}[DEC]{Simula}{-}%

```

```

4678 \lst@definlanguage[DEC]{Simula}[67]{Simula}%
4679   {morekeywords={and,eq,eqv,ge,gt,hidden,imp,le,long,lt,ne,not,%
4680     options,or,protected,short}}%
4681   }%

4682 \lst@definlanguage[CII]{Simula}[67]{Simula}%
4683   {morekeywords={and,equiv,exit,impl,not,or,stop}}%

4684 \lst@definlanguage[67]{Simula}%
4685   {morekeywords={activate,after,array,at,before,begin,boolean,%
4686     character,class,comment,delay,detach,do,else,end,external,false,%
4687     for,go,goto,if,in,inner,inspect,integer,is,label,name,new,none,%
4688     notext,otherwise,prior,procedure,qua,reactivate,real,ref,resume,%
4689     simset,simulation,step,switch,text,then,this,to,true,until,value,%
4690     virtual,when,while},%
4691   sensitive=f,%
4692   keywordcommentsemicolon={end}{else,end,otherwise,when}{comment},%
4693   morestring=[d]" ,%
4694   morestring=[d]' %
4695   }[keywords,keywordcomments,strings]%

4696 </lang3>

```

2.73 SPARQL

This definition for the SPARQL query language (SPARQL Protocol and RDF Query Language, <http://www.w3.org/TR/rdf-sparql-query/>) was provided by Christoph Kiefer.

```

4697 <*lang3>
4698 %%
4699 %% SPARQL definition (c) 2006 Christoph Kiefer
4700 %%
4701 \lst@definlanguage{SPARQL}%
4702   {morekeywords={BASE,PREFIX,SELECT,DISTINCT,CONSTRUCT,DESCRIBE,ASK,%
4703     FROM,NAMED,WHERE,ORDER,BY,ASC,DESC,LIMIT,OFFSET,OPTIONAL,%
4704     GRAPH,UNION,FILTER,a,STR,LANG,LANGMATCHES,DATATYPE,BOUND,%
4705     isIRI,isURI,isBLANK,isLITERAL,REGEX,true,false},%
4706   sensitive=false,%
4707   morecomment=[l]\#,%
4708   morestring=[d]' ,%
4709   morestring=[d]" %
4710   }[keywords,comments,strings]%

4711 </lang3>

```

2.74 SQL

Data come from Christian Haul. Neil Conway added some keywords, ditto Torsten Flatter, Robert Frank and Dirk Jesko.

```

4712 <*lang1>

```

```

4713 %%
4714 %% SQL definition (c) 1998 Christian Haul
4715 %% (c) 2002 Neil Conway
4716 %% (c) 2002 Robert Frank
4717 %% (c) 2003 Dirk Jesko
4718 %%
4719 \lst@definlanguage{SQL}%
4720 {morekeywords={ABSOLUTE,ACTION,ADD,ALLOCATE,ALTER,ARE,AS,ASSERTION,%
4721 AT,BETWEEN,BIT_LENGTH,BOTH,BY,CASCADE,CASCADED,CASE,CAST,%
4722 CATALOG,CHAR_LENGTH,CHARACTER_LENGTH,CLUSTER,COALESCE,%
4723 COLLATE,COLLATION,COLUMN,CONNECT,CONNECTION,CONSTRAINT,%
4724 CONSTRAINTS,CONVERT,CORRESPONDING,CREATE,CROSS,CURRENT_DATE,%
4725 CURRENT_TIME,CURRENT_TIMESTAMP,CURRENT_USER,DAY,DEALLOCATE,%
4726 DEC,DEFERRABLE,DEFERED,DESCRIBE,DESCRIPTOR,DIAGNOSTICS,%
4727 DISCONNECT,DOMAIN,DROP,ELSE,END,EXEC,EXCEPT,EXCEPTION,EXECUTE,%
4728 EXTERNAL,EXTRACT,FALSE,FIRST,FOREIGN,FROM,FULL,GET,GLOBAL,%
4729 GRAPHIC,HAVING,HOUR,IDENTITY,IMMEDIATE,INDEX,INITIALLY,INNER,%
4730 INPUT,INSENSITIVE,INSERT,INTO,INTERSECT,INTERVAL,%
4731 ISOLATION,JOIN,KEY,LAST,LEADING,LEFT,LEVEL,LIMIT,LOCAL,LOWER,%
4732 MATCH,MINUTE,MONTH,NAMES,NATIONAL,NATURAL,NCHAR,NEXT,NO,NOT,NULL,%
4733 NULLIF,OCTET_LENGTH,ON,ONLY,ORDER,ORDERED,OUTER,OUTPUT,OVERLAPS,%
4734 PAD,PARTIAL,POSITION,PREPARE,PRESERVE,PRIMARY,PRIOR,READ,%
4735 RELATIVE,RESTRICT,REVOKE,RIGHT,ROWS,SCROLL,SECOND,SELECT,SESSION,%
4736 SESSION_USER,SIZE,SPACE,SQLSTATE,SUBSTRING,SYSTEM_USER,%
4737 TABLE,TEMPORARY,THEN,TIMEZONE_HOUR,%
4738 TIMEZONE_MINUTE,TRAILING,TRANSACTION,TRANSLATE,TRANSLATION,TRIM,%
4739 TRUE,UNIQUE,UNKNOWN,UPPER,USAGE,USING,VALUE,VALUES,%
4740 VARGRAPHIC,VARYING,WHEN,WHERE,WRITE,YEAR,ZONE,%
4741 AND,ASC,avg,CHECK,COMMIT,count,DECODE,DESC,DISTINCT,GROUP,IN,% FF
4742 LIKE,NUMBER,ROLLBACK,SUBSTR,sum,VARCHAR2,% FF
4743 MIN,MAX,UNION,UPDATE,% RF
4744 ALL,ANY,CUBE,CUBE,DEFAULT,DELETE,EXISTS,GRANT,OR,RECURSIVE,% DJ
4745 ROLE,ROLLUP,SET,SOME,TRIGGER,VIEW},% DJ
4746 moreendkeywords={BIT,BLOB,CHAR,CHARACTER,CLOB,DATE,DECIMAL,FLOAT,% DJ
4747 INT,INTEGER,NUMERIC,SMALLINT,TIME,TIMESTAMP,VARCHAR},% moved here
4748 sensitive=false,% DJ
4749 morecomment=[l]--,%
4750 morecomment=[s]{/*}{*/},%
4751 morestring=[d]',,%
4752 morestring=[d]"%
4753 }[keywords,comments,strings]%
4754 </lang1>

```

2.75 Tcl/Tk

Tcl/Tk is a very dynamic language. A statical analysis might not be adequate. Nevertheless the following definitions produce the desired result for my programs with a minimum of “misses”.

Data come from

- WELCH, BRENT B.: **Practical Programming in Tcl and Tk**; © 1997 Prentice Hall, Inc.; ISBN 0-13-616830-2.
- OUSTERHOUT, JOHN K.: **Tcl and the Tk Toolkit**; © 1997 Addison-Wesley Publishing Company; ISBN 0-201-6337-X.

Gerd Neugebauer added support for Tcl/Tk.

```

4755 <*lang2>
4756 %%
4757 %% Tcl/Tk definition (c) Gerd Neugebauer
4758 %%
4759 \lst@definlanguage[tcl]{tcl}[] {tcl}%
4760 {morekeywords={activate,add,separator,radiobutton,checkboxbutton,%
4761     command,cascade,all,bell,bind,bindtags,button,canvas,canvasx,%
4762     canvasy,cascade,cget,checkboxbutton,config,configu,configur,%
4763     configure,clipboard,create,arc,bitmap,image,line,oval,polygon,%
4764     rectangle,text,textwindow,cursorselection,delete,destroy,end,entry,%
4765     entrycget,event,focus,font,actual,families,measure,metrics,names,%
4766     frame,get,grab,current,release,status,grid,columnconfigure,%
4767     rowconfigure,image,image,create,bitmap,photo,delete,height,types,%
4768     widt,names,index,insert,invoke,itemconfigure,label,listbox,lower,%
4769     menu,menubutton,message,move,option,add,clear,get,readfile,pack,%
4770     photo,place,radiobutton,raise,scale,scroll,scrollbar,search,see,%
4771     selection,send,stdout,stderr,tag,bind,text,tk,tkerror,%
4772     tkwait>window,variable,visibility,toplevel,unknown,update,winfo,%
4773     class,exists,ismapped,parent,reqwidth,reqheight,rootx,rooty,%
4774     width,height,wm,aspect,client,command,deiconify,focusmodel,frame,%
4775     geometry,group,iconbitmap,iconify,iconmask,iconname,iconposition,%
4776     iconwindow,maxsize,minsize,overrideredirect,positionfrom,%
4777     protocol,sizefrom,state,title,transient,withdraw,xview,yview,%
4778     yposition,%
4779     -accelerator,-activebackground,-activeborderwidth,%
4780     -activeforeground,-after,-anchor,-arrow,-arrowshape,-aspect,%
4781     -async,-background,-before,-bg,-begincrement,-bitmap,-bordermode,%
4782     -borderwidth,-button,-capstyle,-channel,-class,-closeenough,%
4783     -colormap,-column,-columnspan,-command,-confine,-container,%
4784     -count,-cursor,-data,-default,-detail,-digits,-direction,%
4785     -displayof,-disableforeground,-elementborderwidth,-expand,%
4786     -exportselection,-extend,-family,-fg,-file,-fill,-focus,-font,%
4787     -fontmap,-foreground,-format,-from,-gamma,-global,-height,%
4788     -highlightbackground,-highlightcolor,-highlightthickness,-icon,%
4789     -image,-in,-insertbackground,-insertborderwidth,-insertofftime,%
4790     -insertontime,-insertwidth,-ipadx,-ipady,-joinstyle,-jump,%
4791     -justify,-keycode,-keySYM,-label,-lastfor,-length,-maskdata,%
4792     -maskfile,-menu,-message,-mode,-offvalue,-onvalue,-orient,%
4793     -outlien,-outlinestipple,-overstrike,-override,-padx,-pady,%
4794     -pageanchor,-pageheight,-pagewidth,-pagey,-pagey,-palette,%
4795     -parent,-place,-postcommand,-relheight,-relief,-relwidth,-relx,%
4796     -rely,-repeatdelay,-repeatinterval,-resolution,-root,-rootx,%
4797     -rooty,-rotate,-row,-rowspan,-screen,-selectcolor,-selectimage,%

```

```

4798     -sendevent,-serial,-setgrid,-showvalue,-shrink,-side,-size,%
4799     -slant,-sliderlength,-sliderrelief,-smooth,-splinesteps,-state,%
4800     -sticky,-stipple,-style,-subsample,-subwindow,-tags,-takefocus,%
4801     -tearoff,-tearoffcommand,-text,-textvariable,-tickinterval,-time,%
4802     -title,-to,-troughcolor,-type,-underline,-use,-value,-variable,%
4803     -visual,-width,-wrap,-wraplength,-x,-xscrollcommand,-y,%
4804     -bgstipple,-fgstipple,-lmargin1,-lmargin2,-rmargin,-spacing1,%
4805     -spacing2,-spacing3,-tabs,-yscrollcommand,-zoom,%
4806     activate,add,addtag,bbox,cget,clone,configure,coords,%
4807     curselection,debug,delete,delta,deselect,dlineinfo,dtag,dump,%
4808     entrycget,entryconfigure,find,flash,fraction,get,gettext,handle,%
4809     icursor,identify,index,insert,invoke,itemcget,itemconfigure,mark,%
4810     moveto,own,post,postcascade,postscript,put,redither,ranges,%
4811     scale,select,show,tag,type,unpost,xscrollcommand,xview,%
4812     yscrollcommand,yview,yposition}%
4813 }%

4814 \lst@definlanguage[] {tcl}%
4815 {alsoletter={.:,*=&-},%
4816   morekeywords={after,append,array, names,exists, anymore, donesearch,%
4817     get,nextelement,set,size,startsearch,auto_mkindex,binary,break,%
4818     case,catch,cd,clock,close,concat,console,continue,default,else,%
4819     elseif,eof,error,eval,exec,-keepnewline,exit,expr,fblocked,%
4820     fconfigure,fcopy,file,atime,dirname,executable,exists,extension,%
4821     isdirectory,isfile,join,lstat,mtime,owned,readable,readlink,%
4822     rootname,size,stat,tail,type,writable,-permissions,-group,-owner,%
4823     -archive,-hidden,-readonly,-system,-creator,-type,-force,%
4824     fileevent,flush,for,foreach,format,gets,glob,global,history,if,%
4825     incr,info,argsbody,cmdcount,commands,complete,default,exists,%
4826     globals,level,library,locals,patchlevel,procs,script,tclversion,%
4827     vars,interp,join,lappend,lindex,linsert,list,llength,lrange,%
4828     lreplace,lsearch,-exact,-regexp,-glob,lsort,-ascii,-integer,%
4829     -real,-dictionary,-increasing,-decreasing,-index,-command,load,%
4830     namespace,open,package,forget,ifneeded,provide,require,unknown,%
4831     vcompare,versions,vsatisfies,pid,proc,puts,-nonewline,pwd,read,%
4832     regexp,-indices,regsub,-all,-nocasereaname,return,scan,seek,set,%
4833     socket,source,split,string,compare,first,index,last,length,match,%
4834     range,tolower,toupper,trim,trimleft,trimright,subst,switch,tell,%
4835     time,trace,variable,vdelete,vinfo,unknown,unset,uplevel,upvar,%
4836     vwait,while,acos,asin,atan,atan2,ceil,cos,cosh,exp,floor,fmod,%
4837     hypot,log,log10,pow,sin,sinh,sqrt,tan,tanh,abs,double,int,round%
4838   },%
4839   morestring=[d] ,%
4840   morecomment=[f] \#,%
4841   morecomment=[l] {;\#},%
4842   morecomment=[l] {[\#},%
4843   morecomment=[l] {\{\#}%
4844 } [keywords,comments,strings]%

```

And after receiving a bug report from Vitaly A. Repin I converted the version 0.21 contents of MoreSelectCharTable to version 1.0.

4845 \langle /lang2

2.76 Statistical languages

These languages have been added by Winfried Theis. Robert Denham contributed the additional string delimiter '.

4846 \langle *lang3

```
4847 \lst@definlanguage{S} [] {R}{-}
4848 \lst@definlanguage[PLUS]{S} [] {R}{-}
4849 \lst@definlanguage{R}%
4850 {keywords={abbreviate,abline,abs,acos,acosh,action,add1,add,%
4851     aggregate,alias,Alias,alist,all,anova,any,aov,aperm,append,apply,%
4852     approx,approxfun,apropos,Arg,args,array,arrows,as,asin,asinh,%
4853     atan,atan2,atanh,attach,attr,attributes,autoload,autoloader,ave,%
4854     axis,backsolve,barplot,basename,besselI,besselJ,besselK,besselY,%
4855     beta,binomial,body,box,boxplot,break,browser,bug,builtins,bxp,by,%
4856     c,C,call,Call,case,cat,category,cbind,ceiling,character,char,%
4857     charmatch,check,chol,chol2inv,choose,chull,class,close,cm,codes,%
4858     coef,coefficients,co,col,colnames,colors,colours,commandArgs,%
4859     comment,complete,complex,conflicts,Conj,contents,contour,%
4860     contrasts,contr,control,helmert,contrib,convolve,cooks,coords,%
4861     distance,coplot,cor,cos,cosh,count,fields,cov,covratio,wt,CRAN,%
4862     create,crossprod,cummax,cummin,cumprod,cumsum,curve,cut,cycle,D,%
4863     data,dataentry,date,dbeta,dbinom,dcauchy,dchisq,de,debug,%
4864     debugger,Defunct,default,delay,delete,deltat,demo,de,density,%
4865     deparse,dependencies,Deprecated,deriv,description,detach,%
4866     dev2bitmap,dev,cur,deviance,off,prev,,dexp,df,dfbetas,dffits,%
4867     dgamma,dgeom,dget,dhyper,diag,diff,digamma,dim,dimnames,dir,%
4868     dirname,dlnorm,dlogis,dnbinom,dnchisq,dnorm,do,dotplot,double,%
4869     download,dpois,dput,drop,drop1,dsignrank,dt,dummy,dump,dunif,%
4870     duplicated,dweibull,dwilcox,dyn,edit,eff,effects,eigen,else,%
4871     emacs,end,environment,env,erase,eval,equal,evalq,example,exists,%
4872     exit,exp,expand,expression,External,extract,extractAIC,factor,%
4873     fail,family,fft,file,filled,find,fitted,fivenum,fix,floor,for,%
4874     For,formals,format,formatC,formula,Fortran,forwardsolve,frame,%
4875     frequency,ftable,ftable2table,function,gamma,Gamma,gammaCody,%
4876     gaussian,gc,gcinfo,gctorture,get,getenv,geterrmessage,getOption,%
4877     getwd,gl,glm,globalenv,gnome,GNOME,graphics,gray,grep,greyscale,grid,%
4878     gsub,hasTsp,had,heat,help,hist,home,hsv,httpClient,I,identify,if,%
4879     ifelse,Im,image,\%in\%,index,influence,measures,inherits,install,%
4880     installed,integer,interaction,interactive,Internal,intersect,%
4881     inverse,invisible,IQR,is,jitter,kappa,kronecker,labels,lapply,%
4882     layout,lbeta,lchoose,lcm,legend,length,levels,lgamma,library,%
4883     licence,license,lines,list,lm,load,local,locator,log,log10,logip,%
4884     log2,logical,loglin,lower,lowess,ls,lsfit,lsf,ls,machine,Machine,%
4885     mad,mahalanobis,make,link,margin,match,Math,matlines,mat,matplot,%
4886     matpoints,matrix,max,mean,median,memory,menu,merge,methods,min,%
4887     missing,Mod,mode,model,response,mosaicplot,mtext,mvfft,na,nan,%
4888     names,omit,nargs,nchar,ncol,NCOL,new,next,NextMethod,nextn,%
```

```

4889     nlevels,nlm,noquote,NotYetImplemented,NotYetUsed,nrow,NROW,null,%
4890     numeric,\%o\%,objects,offset,old,on,Ops,optim,optimise,optimize,%
4891     options,or,order,ordered,outer,package,packages,page,pairlist,%
4892     pairs,palette,panel,par,parent,parse,paste,path,pbeta,pbinom,%
4893     pcauchy,pchisq,pentagamma,persp,pexp,pf,pgamma,pgeom,phyper,pico,%
4894     pictex,piechart,Platform,plnorm,plogis,plot,pmatch,pmax,pmin,%
4895     pnbinom,pnchisq,pnorm,points,poisson,poly,polygon,polyroot,pos,%
4896     postscript,power,ppoints,ppois,predict,preplot,pretty,Primitive,%
4897     print,prmatrix,proc,prod,profile,proj,prompt,prop,provide,%
4898     psignrank,ps,pt,ptukey,punif,pweibull,pwilcox,q,qbeta,qbinom,%
4899     qcauchy,qchisq,qexp,qf,qgamma,qgeom,qhyper,qlnorm,qlogis,qnbinom,%
4900     qnchisq,qnorm,qpois,qqline,qqnorm,qqplot,qr,Q,qty,qy,qsignrank,%
4901     qt,qtukey,quantile,quasi,quit,qunif,quote,qweibull,qwilcox,%
4902     rainbow,range,rank,rbeta,rbind,rbinom,rcauchy,rchisq,Re,read,csv,%
4903     csv2,fwf,readline,socket,real,Recall,rect,reformulate,regexpr,%
4904     relevel,remove,rep,repeat,replace,replications,report,require,%
4905     resid,residuals,restart,return,rev,rexpr,rf,rgamma,rgb,rgeom,R,%
4906     rhyper,rle,rlnorm,rlogis,rm,rnbinom,RNGkind,rnorm,round,row,%
4907     rownames,rowsum,rpois,rsignrank,rstandard,rstudent,rt,rug,runif,%
4908     rweibull,rwilcox,sample,sapply,save,scale,scan,scan,screen,sd,se,%
4909     search,searchpaths,segments,seq,sequence,setdiff,setequal,set,%
4910     setwd,show,sign,signif,sin,single,sinh,sink,solve,sort,source,%
4911     spline,splinefun,split,sqrt,stars,start,stat,stem,step,stop,%
4912     storage,strsrheight,stripplot,strsplit,structure,strwidth,sub,%
4913     subset,substitute,substr,substring,sum,summary,sunflowerplot,svd,%
4914     sweep,switch,symbol,symbols,symnum,sys,status,system,t,table,%
4915     tabulate,tan,tanh,tapply,tempfile,terms,terrain,tetragamma,text,%
4916     time,title,topo,trace,traceback,transform,tri,trigamma,trunc,try,%
4917     ts,tsp,typeof,unclass,undebug,undoc,union,unique,uniroot,unix,%
4918     unlink,unlist,unname,untrace,update,upper,url,UseMethod,var,%
4919     variable,vector,Version,vi,warning,warnings,weighted,weights,%
4920     which,while>window,write,\%x\%,x11,X11,xedit,xemacs,xinch,xor,%
4921     xpdrows,xy,xyinch,yinch,zapsmall,zip},%
4922     otherkeywords={!,!=,~, $,*,\&,\%/\%,\%*\%,\%\%,<-,<<-,_,/},%
4923     alsoother={._$},%
4924     sensitive,%
4925     morecomment=[l]\#,%
4926     morestring=[d]" ,%
4927     morestring=[d]'% 2001 Robert Denham
4928 }%

```

Benjamin Janson got a prockeywords undefined error, which was removed by Heiko Oberdiek.

```

4929 \lst@definelanguage{SAS}%
4930 {procnamekeys={proc},%
4931     morekeywords={DATA,AND,OR,NOT,EQ,GT,LT,GE,LE,NE,INFILE,INPUT,DO,BY,%
4932     TO,SIN,COS,OUTPUT,END,PLOT,RUN,LIBNAME,VAR,TITLE,FIRSTOBS,OBS,%
4933     DELIMITER,DLM,EOF,ABS,DIM,HBOUND,LBOUND,MAX,MIN,MOD,SIGN,SQRT,%
4934     CEIL,FLOOR,FUZZ,INT,ROUND,TRUNC,DIGAMMA,ERF,ERFC,EXP,GAMMA,%
4935     LGAMMA,LOG,LOG2,LOG10,ARCOS,ARSIN,ATAN,COSH,SINH,TANH,TAN,%

```

```

4936     POISSON,PROBBETA,PROBBNML,PROBCHI,PROBF,PROBGAM,PROBHYPR,%
4937     PROBNEGB,PROBNORM,PROBT,BETAINV,CINV,FINV,GAMINV,PROBIT,TINV,CSS,%
4938     CV,KURTOSIS,MEAN,NMISS,RANGE,SKEWNESS,STD,STDERR,SUM,USS,NORMAL,%
4939     RANBIN,RANCAU,RANEXP,RANGAM,RANNOR,RANPOI,RANTBL,RANTRI,RANUNI,%
4940     UNIFORM,IF,THEN,ELSE,WHILE,UNTIL,DROP,KEEP,LABEL,DEFAULT,ARRAY,%
4941     MERGE,CARDS,CARDS4,PUT,SET,UPDATE,ABORT,DELETE,DISPLAY,LIST,%
4942     LOSTCARD,MISSING,STOP,WHERE,ARRAY,DROP,KEEP,WINDOW,LENGTH,RENAME,%
4943     RETAIN,MEANS,UNIVARIATE,SUMMARY,TABULATE,CORR,FREQ,FOOTNOTE,NOTE,%
4944     SHOW},%
4945     otherkeywords={!,!=,~, $,*,\&,-,/,<,>=,=<,>},%
4946     morestring=[d]'%
4947     }[keywords,comments,strings,procnames]%
4948 </lang3>

```

2.77 TeX

I extracted the data from `plain.tex`, `latex.ltx`, and `size10.clo`. Dr. Peter Leibner reported that some keywords are missing and also added a couple.

```

4949 <*lang3>
4950 \lst@definlanguage[AllLaTeX]{TeX}[LaTeX]{TeX}%
4951 {moretexcs={AtBeginDocument,AtBeginDvi,AtEndDocument,AtEndOfClass,%
4952     AtEndOfPackage,ClassError,ClassInfo,ClassWarning,%
4953     ClassWarningNoLine,CurrentOption,DeclareErrorFont,%
4954     DeclareFixedFont,DeclareFontEncoding,DeclareFontEncodingDefaults,%
4955     DeclareFontFamily,DeclareFontShape,DeclareFontSubstitution,%
4956     DeclareMathAccent,DeclareMathAlphabet,DeclareMathAlphabet,%
4957     DeclareMathDelimiter,DeclareMathRadical,DeclareMathSizes,%
4958     DeclareMathSymbol,DeclareMathVersion,DeclareOldFontCommand,%
4959     DeclareOption,DeclarePreloadSizes,DeclareRobustCommand,%
4960     DeclareSizeFunction,DeclareSymbolFont,DeclareSymbolFontAlphabet,%
4961     DeclareTextAccent,DeclareTextAccentDefault,DeclareTextCommand,%
4962     DeclareTextCommandDefault,DeclareTextComposite,%
4963     DeclareTextCompositeCommand,DeclareTextFontCommand,%
4964     DeclareTextSymbol,DeclareTextSymbolDefault,ExecuteOptions,%
4965     GenericError,GenericInfo,GenericWarning,IfFileExists,%
4966     InputIfFileExists,LoadClass,LoadClassWithOptions,MessageBreak,%
4967     OptionNotUsed,PackageError,PackageInfo,PackageWarning,%
4968     PackageWarningNoLine,PassOptionsToClass,PassOptionsToPackage,%
4969     ProcessOptionsProvidesClass,ProvidesFile,ProvidesFile,%
4970     ProvidesPackage,ProvideTextCommand,RequirePackage,%
4971     RequirePackageWithOptions,SetMathAlphabet,SetSymbolFont,%
4972     TextSymbolUnavailable,UseTextAccent,UseTextSymbol},%
4973     morekeywords={array,center,displaymath,document,enumerate,eqnarray,%
4974     equation,flushleft,flushright,itemize,list,lrbox,math,minipage,%
4975     picture,sloppypar,tabbing,tabular,trivlist,verbatim}}%
4976 }%
4977 \lst@definlanguage[LaTeX]{TeX}[common]{TeX}%
4978 {moretexcs={a,AA,aa,addcontentsline,addpenalty,addtocontents,%

```

4979 addtocounter, addtolength, addtoversion, addvspace, alph, Alph, and, %
4980 arabic, array, arraycolsep, arrayrulewidth, arraystretch, author, %
4981 baselinestretch, begin, bezier, bfseries, bibcite, bibdata, bibitem, %
4982 bibliography, bibliographystyle, bibstyle, bigskip, boldmath, %
4983 botfigrule, bottomfraction, Box, caption, center, CheckCommand, circle, %
4984 citation, cite, cleardoublepage, clearpage, cline, columnsep, %
4985 columnseprule, columnwidth, contentsline, dashbox, date, dblfigrule, %
4986 dblfloatpagefraction, dblfloatsep, dbltextfloatsep, dbltopfraction, %
4987 defaultsciptratio, defaultscriptscriptratio, depth, Diamond, %
4988 displaymath, document, documentclass, documentstyle, doublerulesep, %
4989 em, emph, endarray, endcenter, enddisplaymath, enddocument, %
4990 endenumerate, endeqnarray, endequation, endflushleft, endflushright, %
4991 enditemize, endlist, endlrbox, endmath, endminipage, endpicture, %
4992 endsloppypar, endtabbing, endtabular, endtrivlist, endverbatim, %
4993 enlargethispage, ensuremath, enumerate, eqnarray, equation, %
4994 evensidemargin, extracolsep, fbox, fboxrule, fboxsep, filecontents, %
4995 fill, floatpagefraction, floatsep, flushbottom, flushleft, flushright, %
4996 fnsymbol, fontencoding, fontfamily, fontseries, fontshape, fontsize, %
4997 fontsubfuzz, footnotemark, footnotesep, footnotetext, footskip, frac, %
4998 frame, framebox, fussy, glossary, headheight, headsep, height, hline, %
4999 hspace, I, include, includeonly, index, inputlineno, intextsep, %
5000 itemindent, itemize, itemsep, iterate, itshape, Join, kill, label, %
5001 labelsep, labelwidth, LaTeX, LaTeXE, leadsto, lefteqn, leftmargin, %
5002 leftmargini, leftmarginii, leftmarginiii, leftmarginiv, leftmarginv, %
5003 leftmarginvi, leftmark, lhd, lim, linebreak, linespread, linethickness, %
5004 linewidth, list, listfiles, listfiles, listparindent, lrbox, %
5005 makeatletter, makeatother, makebox, makeglossary, makeindex, %
5006 makelabel, MakeLowercase, MakeUppercase, marginpar, marginparpush, %
5007 marginparsep, marginparwidth, markboth, markright, math, mathbf, %
5008 mathellipsis, mathgroup, mathit, mathrm, mathsf, mathsterling, mathtt, %
5009 mathunderscore, mathversion, mbox, mdseries, mho, minipage, %
5010 multicolumn, multipt, NeedsTeXFormat, newcommand, newcounter, %
5011 newenvironment, newfont, newhelp, newlabel, newlength, newline, %
5012 newmathalphabet, newpage, newsavebox, newtheorem, nobreakspace, %
5013 nobreakspace, nocite, nocorr, nocorrlist, nofiles, nolinebreak, %
5014 nonumber, nopagebreak, normalcolor, normalfont, normalmarginpar, %
5015 numberline, obeycr, oddsidemargin, oldstylenums, onecolumn, oval, %
5016 pagebreak, pagenumbering, pageref, pagestyle, paperheight, paperwidth, %
5017 paragraphmark, parbox, parsep, partopsep, picture, poptabs, pounds, %
5018 protect, pushtabs, put, qbezier, qbeziermax, r, raggedleft, raisebox, %
5019 ref, refstepcounter, renewcommand, renewenvironment, restorecr, %
5020 reversemarginpar, rhd, rightmargin, rightmark, rmfamily, roman, Roman, %
5021 rootbox, rule, samepage, sbox, scshape, secdef, section, sectionmark, %
5022 selectfont, setcounter, settodepth, settowidth, sffamily, %
5023 shortstack, showoutput, showoverfull, sloppy, sloppypar, slshape, %
5024 smallskip, sqsubset, sqsupset, SS, stackrel, stepcounter, stop, stretch, %
5025 subparagraphmark, subsectionmark, subsubsectionmark, sum, %
5026 suppressfloats, symbol, tabbing, tabbingsep, tabcolsep, tabular, %
5027 tabularnewline, textasciicircum, textasciitilde, textbackslash, %
5028 textbar, textbf, textbraceleft, textbraceright, textbullet, %

```

5029   textcircled, textcompwordmark, textdagger, textdaggerdbl, textdollar, %
5030   textellipsis, textemdash, textendash, textexclamdown, textfloatsep, %
5031   textfraction, textgreater, textheight, textit, textless, textmd, %
5032   textnormal, textparagraph, textperiodcentered, textquestiondown, %
5033   textquotedblleft, textquotedblright, textquoteleft, textquoteright, %
5034   textregistered, textrm, textsc, textsection, textsf, textsl, %
5035   textsterling, textsuperscript, texttrademark, texttt, textunderscore, %
5036   textup, textvisiblespace, textwidth, thanks, thefootnote, thempfn, %
5037   thempfn, thempfootnote, thepage, thepage, thicklines, thinlines, %
5038   thispagestyle, title, today, topfigrule, topfraction, topmargin, %
5039   topsep, totalheight, tracingfonts, trivlist, ttfamily, twocolumn, %
5040   typein, typeout, unboldmath, unitlength, unlhd, unrhd, upshape, usebox, %
5041   usecounter, usefont, usepackage, value, vector, verb, verbatim, vline, %
5042   vspace, width, %
5043   normalsize, small, footnotesize, scriptsize, tiny, large, Large, LARGE, %
5044   huge, Huge}%
5045 }%

5046 \lst@definlanguage[plain]{TeX}[common]{TeX}%
5047   {moretexcs={advancepageno, beginsection, bf, bffam, bye, cal, cleartabs, %
5048     columns, dosupereject, endinsert, eqalign, eqalignno, fiverm, fivebf, %
5049     fivei, fivesy, folio, footline, hang, headline, it, itemitem, itfam, %
5050     leqalignno, magnification, makefootline, makeheadline, midinsert, mit, %
5051     mscount, nopagenumbers, normalbottom, of, oldstyle, pagebody, %
5052     pagecontents, pageinsert, pageno, plainoutput, preloaded, proclaim, rm, %
5053     settabs, sevenbf, seveni, sevensy, sevenrm, sl, slfam, supereject, %
5054     tabalign, tabs, tabsdone, tabsyet, tenbf, tenex, teni, tenit, tenrm, %
5055     tensl, tensy, tentt, textindent, topglue, topins, topinsert, tt, ttfam, %
5056     ttragedright, vfootnote}%
5057 }%

```

The following language is only a helper.

```

5058 \lst@definlanguage[common]{TeX}[primitive]{TeX}
5059   {moretexcs={active, acute, ae, AE, aleph, allocationnumber, allowbreak, %
5060     alpha, amalg, angle, approx, arccos, arcsin, arctan, arg, arrowvert, %
5061     Arrowvert, ast, asymp, b, backslash, bar, beta, bgroup, big, Big, bigbreak, %
5062     bigcap, bigcirc, bigcup, bigg, Bigg, biggl, Biggl, biggm, Biggm, biggr, %
5063     Biggr, bigl, Bigl, bigm, Bigm, bigodot, bigoplus, bigotimes, bigr, Bigr, %
5064     bigskip, bigskipamount, bigscup, bigtriangledown, bigtriangleup, %
5065     biguplus, bigvee, bigwedge, bmod, bordermatrix, bot, bowtie, brace, %
5066     bracehd, bracehu, bracehd, bracehu, bracevert, brack, break, breve, %
5067     buildrel, bullet, c, cap, cases, cdot, cdotp, cdots, centering, %
5068     centerline, check, chi, choose, circ, clubsuit, colon, cong, coprod, %
5069     copyright, cos, cosh, cot, coth, csc, cup, d, dag, dagger, dashv, ddag, %
5070     ddagger, ddot, ddots, deg, delta, Delta, det, diamond, diamondsuit, dim, %
5071     displaylines, div, do, dospecials, dot, doteq, dotfill, dots, downarrow, %
5072     Downarrow, downbracefill, egroup, eject, ell, empty, emptyset, endgraf, %
5073     endline, enskip, enspace, epsilon, equiv, eta, exists, exp, filbreak, %
5074     flat, fmtname, fmtversion, footins, footnote, footnoterule, forall, %
5075     frenchspacing, frown, gamma, Gamma, gcd, ge, geq, gets, gg, goodbreak, %
5076     grave, H, hat, hbar, heartsuit, hglue, hideskip, hidewidth, hom, %

```

```

5077 hookleftarrow,hookrightarrow,hphantom,hrulefill,i,ialign,iff,Im,%
5078 imath,in,inf,infty,int,interdisplaylinepenalty,%
5079 interfootnotelinepenalty,intop,iota,item,j,jmath,joinrel,jot,%
5080 kappa,ker,l,L,lambda,Lambda,land,langle,lbrace,lbrack,lceil,%
5081 ldotp,ldots,le,leavevmode,leftarrow,Leftarrow,leftarrowfill,%
5082 leftharpoonup,leftharpoonup,leftline,leftrightharpoon,%
5083 Leftrightarrow,leq,lfloor,lg,lgroup,lhook,lim,liminf,limsup,line,%
5084 ll,llap,lmoustache,ln,lnot,log,longleftarrow,Longleftarrow,%
5085 longleftrightarrow,Longleftrightarrow,longmapsto,longrightarrow,%
5086 Longrightarrow,loop,lor,lq,magstep,magstep,magstephalf,mapsto,%
5087 mapstochar,mathhexbox,mathpalette,mathstrut,matrix,max,maxdimen,%
5088 medbreak,medskip,medskipamount,mid,min,models,mp,mu,multispan,%
5089 nabla,narrower,natural,ne,narrow,neg,negthinspace,neq,newbox,%
5090 newcount,newdimen,newfam,newif,newinsert,newlanguage,newmuskip,%
5091 newread,newskip,newtoks,newwrite,next,ni,nobreak,nointerlineskip,%
5092 nonfrenchspacing,normalbaselines,normalbaselineskip,%
5093 normallineskip,normallineskiplimit,not,notin,nu,null,narrow,o,0,%
5094 oalign,obeylines,obeyspaces,odot,oe,OE,offinterlineskip,oint,%
5095 ointop,omega,Omega,ominus,oalign,openup,oplus,oslash,otimes,%
5096 overbrace,overleftarrow,overrightarrow,owns,P,parallel,partial,%
5097 perp,phantom,phi,Phi,pi,Pi,pm,pmatrix,pmod,Pr,prec,preceq,prime,%
5098 prod,propto,psi,Psi,qquad,quad,raggedbottom,raggedright,rangle,%
5099 rbrace,rbrack,rceil,Re,relbar,Relbar,removelastskip,repeat,%
5100 rfloor,rgroup,rho,rhook,rightarrow,Rightarrow,rightarrowfill,%
5101 rightharpoonup,rightharpoonup,rightharpoons,rightline,rlap,%
5102 rmoustache,root,rq,S,sb,searrow,sec,setminus,sharp,showhyphens,%
5103 sigma,Sigma,sim,simeq,sin,sinh,skew,slash,smallbreak,smallint,%
5104 smallskip,smallskipamount,smash,smile,sp,space,spadesuit,sqcap,%
5105 sqcup,sqrt,sqsubsetq,sqsupsetq,ss,star,strut,strutbox,subset,%
5106 subseteq,succ,succeq,sum,sup,supset,supseteq,surd,swarrow,t,tan,%
5107 tanh,tau,TeX,theta,Theta,thinspace,tilde,times,to,top,tracingall,%
5108 triangle,triangleleft,triangleright,u,underbar,underbrace,%
5109 uparrow,Uparrow,upbracefill,updownarrow,Updownarrow,uplus,%
5110 upsi,Upsilon,v,varepsilon,varphi,varpi,varrho,varsigma,%
5111 vartheta,vdash,vdots,vec,vee,vert,Vert,vglue,vphantom,wedge,%
5112 widehat,widetilde,wlog,wp,wr,xi,Xi,zeta}%
5113 }%

```

Herbert Voss pointed to a typo: the \TeX primitive is `lineskiplimit` instead of `lineskiplimits`.

```

5114 \lst@definlanguage[primitive]{TeX}%
5115 {moretexcs={above,abovedisplaysshortskip,abovedisplayskip,aftergroup,%
5116 abovewithdelims,accent,adjdemerits,advance,afterassignment,atop,%
5117 atopwithdelims,badness,baselineskip,batchmode,begingroup,%
5118 belowdisplaysshortskip,belowdisplayskip,binoppenalty,botmark,box,%
5119 boxmaxdepth,brokenpenalty,catcode,char,chardef,cleaders,closein,%
5120 closeout,clubpenalty,copy,count,countdef,cr,crcr,csname,day,%
5121 deadcycles,def,defaultthyphenchar,defaultskewchar,delcode,%
5122 delimiter,delimiterfactor,delimitershortfall,dimen,dimendef,%
5123 discretionary,displayindent,displaylimits,displaystyle,%

```

```

5124 displaywidowpenalty,displaywidth,divide,doublehyphendemerits,dp,%
5125 edef,else,emergencystretch,end,endcsname,endgroup,endinginput,%
5126 endlineschar,eqno,errhelp,errmsg,errmsg,errmsg,errmsg,%
5127 errorstopmode,escapechar,everycr,everydisplay,everyhbox,everyjob,%
5128 everymath,everypar,everyvbox,exhyphenpenalty,expandafter,fam,fi,%
5129 finalhyphendemerits,firstmark,floatingskip,font,fontdimen,%
5130 fontname,futurelet,gdef,global,globaldefs,halign,hangafter,%
5131 hangingindent,hbadness,hbox,hfil,hfill,hfilneg,hfuzz,hoffset,%
5132 holdinginserts,hrule,hsize,hskip,hss,ht,hyphenation,hyphenchar,%
5133 hyphenpenalty,if,ifcase,ifcat,ifdim,ifeof,iffalse,ifhbox,ifhmode,%
5134 ifinner,ifmode,ifnum,ifodd,iftrue,ifvbox,ifvmode,ifvoid,ifx,%
5135 ignorespaces,immediate,indent,input,insert,insertpenalties,%
5136 interlinepenalty,jobname,kern,language,lastbox,lastkern,%
5137 lastpenalty,lastskip,lccode,leaders,left,lefthyphenmin,leftskip,%
5138 leqno,let,limits,linepenalty,lineskip,lineskiplimit,long,%
5139 looseness,lower,lowercase,mag,mark,mathaccent,mathbin,mathchar,%
5140 mathchardef,mathchoice,mathclose,mathcode,mathinner,mathop,%
5141 mathopen,mathord,mathpunct,mathrel,mathsurround,maxdeadcycles,%
5142 maxdepth,meaning,medmuskip,message,mkern,month,movelf,%
5143 moveright,mskip,multiply,muskip,muskipdef,newlinechar,noalign,%
5144 noboundary,noexpand,noindent,nolimits,nonscript,nonstopmode,%
5145 nulldelimiterspace,nullfont,number,omit,openin,openout,or,outer,%
5146 output,outputpenalty,over,overfullrule,overline,overwithdelims,%
5147 pagedepth,pagefillstretch,pagefillstretch,pagefilstretch,%
5148 pagegoal,pageshrink,pagewidth,pagetotal,par,parfillskip,%
5149 parindent,parshape,parskip,patterns,pausing,penalty,%
5150 postdisplaypenalty,predisplaypenalty,predisplaysize,pretolerance,%
5151 prevdepth,prevgraf,radical,raise,read,relax,relpenalty,right,%
5152 righthyphenmin,rightskip,romannumeral,scriptfont,%
5153 scriptscriptfont,scriptscriptstyle,scriptspace,scriptstyle,%
5154 scrollmode,setbox,setlanguage,sfcode,shipout,show,showbox,%
5155 showboxbreadth,showboxdepth,showlists,showthe,skewchar,skip,%
5156 skipdef,spacefactor,spaceskip,span,special,splitbotmark,%
5157 splitfirstmark,splitmaxdepth,splittopskip,string,tabskip,%
5158 textfont,textstyle,the,thickmuskip,thinmuskip,time,toks,toksdef,%
5159 tolerance,topmark,topskip,tracingcommands,tracinglostchars,%
5160 tracingmacros,tracingonline,tracingoutput,tracingpages,%
5161 tracingparagraphs,tracingrestores,tracingstats,uccode,uchyph,%
5162 underline,unhbox,unhcopy,unkern,unpenalty,unskip,unvbox,unvcopy,%
5163 uppercase,vadjust,valign,vbadness,vbox,vcenter,vfil,vfill,%
5164 vfilneg,vfuzz,voffset,vrule,vsize,vskip,vsplit,vss,vtop,wd,%
5165 widowpenalty,write,xdef,xleaders,xspaceskip,year},%
5166 sensitive,%
5167 alsoother={0123456789$_},%$ to make Emacs fontlocking happy
5168 morecomment=[1]\%%
5169 }[keywords,tex,comments]%
5170 </lang3>

```

2.78 VBScript

Sonja Weidmann VBScript sent me this language definition.

```
5171 (*lang2)
5172 %%
5173 %% VBScript definition (c) 2000 Sonja Weidmann
5174 %%
5175 \lst@definlanguage{VBScript}%
5176 {morekeywords={Call,Case,Const,Dim,Do,Each,Else,End,Erase,Error,Exit,%
5177     Explicit,For,Function,If,Loop,Next,On,Option,Private,Public,%
5178     Randomize,ReDim,Rem,Select,Set,Sub,Then,Wend,While,Abs,Array,Asc,%
5179     Atn,CBool,CByte,CCur,CDate,CDBl,Chr,CInt,CLng,Cos,CreateObject,%
5180     CSng,CStr,Date,DateAdd,DateDiff,DatePart,DateSerial,DateValue,%
5181     Day,Exp,Filter,Fix,FormatCurrency,FormatDateTime,FormatNumber,%
5182     FormatPercent,GetObject,Hex,Hour,InputBox,InStr,InStrRev,Int,%
5183     IsArray,IsDate,IsEmpty,IsNull,IsNumeric,IsObject,Join,LBound,%
5184     LCase,Left,Len,LoadPicture,Log,LTrim,Mid,Minute,Month,MonthName,%
5185     MsgBox,Now,Oct,Replace,RGB,Right,Rnd,Round,RTrim,ScriptEngine,%
5186     ScriptEngineBuildVersion,ScriptEngineMajorVersion,%
5187     ScriptEngineMinorVersion,Second,Sgn,Sin,Space,Split,Sqr,StrComp,%
5188     StrReverse,String,Tan,Time,TimeSerial,TimeValue,Trim,TypeName,%
5189     UBound,UCase,VarType,Weekday,WeekdayName,Year, And,Eqv,Imp,Is,%
5190     Mod,Not,Or,Xor,Add,BuildPath,Clear,Close,Copy,CopyFile,%
5191     CopyFolder,CreateFolder,CreateTextFile,Delete,DeleteFile,%
5192     DeleteFolder,Dictionary,Drive,DriveExists,Drives,Err,Exists,File,%
5193     FileExists,FileSystemObject,Files,Folder,FolderExists,Folders,%
5194     GetAbsolutePathName,GetBaseName,GetDrive,GetDriveName,%
5195     GetExtensionName,GetFile,GetFileName,GetFolder,%
5196     GetParentFolderName,GetSpecialFolder,GetTempName,Items,Keys,Move,%
5197     MoveFile,MoveFolder,OpenAsTextStream,OpenTextFile,Raise,Read,%
5198     ReadAll,ReadLine,Remove,RemoveAll,Skip,SkipLine,TextStream,Write,%
5199     WriteBlankLines,WriteLine,Alias,Archive,CDROM,Compressed,%
5200     Directory,Fixed,ForAppending,ForReading,ForWriting,Hidden,Normal,%
5201     RAMDisk,ReadOnly,Remote,Removable,System,SystemFolder,%
5202     TemporaryFolder,TristateFalse,TristateTrue,TristateUseDefault,%
5203     Unknown,Volume,WindowsFolder,vbAbortRetryIgnore,%
5204     vbApplicationModal,vbArray,vbBinaryCompare,vbBlack,vbBlue,%
5205     vbBoolean,vbByte,vbCr,vbCrLf,vbCritical,vbCurrency,vbCyan,%
5206     vbDataObject,vbDate,vbDecimal,vbDefaultButton1,vbDefaultButton2,%
5207     vbDefaultButton3,vbDefaultButton4,vbDouble,vbEmpty,vbError,%
5208     vbExclamation,vbFirstFourDays,vbFirstFullWeek,vbFirstJan1,%
5209     vbFormFeed,vbFriday,vbGeneralDate,vbGreen,vbInformation,%
5210     vbInteger,vbLf,vbLong,vbLongDate,vbLongTime,vbMagenta,vbMonday,%
5211     vbNewLine,vbNull,vbNullChar,vbNullString,vbOKC,ancel,vbOKOnly,%
5212     vbObject,vbObjectError,vbQuestion,vbRed,vbRetryCancel,vbSaturday,%
5213     vbShortDate,vbShortTime,vbSingle,vbString,vbSunday,vbSystemModal,%
5214     vbTab,vbTextCompare,vbThursday,vbTuesday,vbUseSystem,%
5215     vbUseSystemDayOfWeek,vbVariant,vbVerticalTab,vbWednesday,vbWhite,%
5216     vbYellow,vbYesNo,vbYesNoCancel},%
```

```

5217     sensitive=f,%
5218     morecomment=[1]’,%
5219     morestring=[d]”%
5220 }[keywords,comments,strings]%
5221 </lang2>

```

2.79 Verilog

Thanks to Cameron H. G. Wright for providing the definition. After a bug report by George M. Georgiou I changed the declaration of directives to use normal keywords.

```

5222 <*lang3>
5223 %%
5224 %% Verilog definition (c) 2003 Cameron H. G. Wright <c.h.g.wright@ieee.org>
5225 %% Based on the IEEE 1364-2001 Verilog HDL standard
5226 %% Ref: S. Palnitkar, "Verilog HDL: A Guide to Digital Design and Synthesis,"
5227 %% Prentice Hall, 2003. ISBN: 0-13-044911-3
5228 %%
5229 \lst@definlanguage{Verilog}%
5230 {morekeywords={% reserved keywords
5231     always,and,assign,automatic,begin,buf,bufif0,bufif1,case,casex,%
5232     casez,cell,cmos,config,deassign,default,defparam,design,disable,%
5233     edge,else,end,endcase,endconfig,endfunction,endgenerate,%
5234     endmodule,endprimitive,endspecify,endtable,endtask,event,for,%
5235     force,forever,fork,function,generate,genvar,highz0,highz1,if,%
5236     ifnone,inclDir,include,initial,inout,input,instance,integer,join,%
5237     large,liblist,library,localparam,macromodule,medium,module,nand,%
5238     negedge,nmos,nor,noshowcancelled,not,notif0,notif1,or,output,%
5239     parameter,pmos,posedge,primitive,pull0,pull1,pulldown,pullup,%
5240     pulsestyle_oneevent,pulsestyle_ondetect,rcmos,real,realtime,reg,%
5241     release,repeat,rnmos,rpmos,rtran,rtranif0,rtranif1,scalared,%
5242     showcancelled,signed,small,specify,specparam,strong0,strong1,%
5243     supply0,supply1,table,task,time,tran,tranif0,tranif1,tri,tri0,%
5244     tri1,triand,trior,triereg,unsigned,use,vectorred,wait,wand,weak0,%
5245     weak1,while,wire,wor,xnor,xor},%
5246 morekeywords=[2]{% system tasks and functions
5247     $bitstoreal,$countdrivers,$display,$fclose,$fdisplay,$fmonitor,%
5248     $fopen,$fstrobe,$fwrite,$finish,$getpattern,$history,$incsave,%
5249     $input,$itor,$key,$list,$log,$monitor,$monitoroff,$monitoron,%
5250     $nokey},%
5251 morekeywords=[3]{% compiler directives
5252     ‘accelerate,‘autoexpand_vectornets,‘celldefine,‘default_nettype,%
5253     ‘define,‘else,‘elsif,‘endcelldefine,‘endif,‘endprotect,%
5254     ‘endprotected,‘expand_vectornets,‘ifdef,‘ifndef,‘include,%
5255     ‘no_accelerate,‘noexpand_vectornets,‘noremove_gatenames,%
5256     ‘nounconnected_drive,‘protect,‘protected,‘remove_gatenames,%
5257     ‘remove_netnames,‘resetall,‘timescale,‘unconnected_drive},%
5258 alsoletter=‘,%

```

```

5259     sensitive,%
5260     morecomment=[s]{/*}{*/},%
5261     morecomment=[l]//,% nonstandard
5262     morestring=[b]"%
5263   }[keywords,comments,strings]%
5264 </lang3>

```

2.80 VHDL

This language is due to Kai WollenweberVHDL. I've done conversion to version 0.19 only. Gaurav Aggarwal reported that VHDL is case insensitive and Arnaud Tisserand added three keywords.

```

5265 <*lang1>
5266 %%
5267 %% VHDL definition (c) 1997 Kai Wollenweber
5268 %%
5269 \lst@definlanguage{VHDL}%
5270 {morekeywords={ALL,ARCHITECTURE,ABS,AND,ASSERT,ARRAY,AFTER,ALIAS,%
5271     ACCESS,ATTRIBUTE,BEGIN,BODY,BUS,BLOCK,BUFFER,CONSTANT,CASE,%
5272     COMPONENT,CONFIGURATION,DOWNTO,ELSE,ELSIF,END,ENTITY,EXIT,%
5273     FUNCTION,FOR,FILE,GENERIC,GENERATE,GUARDED,GROUP,IF,IN,INOUT,IS,%
5274     INERTIAL,IMPURE,LIBRARY,LOOP,LABEL,LITERAL,LINKAGE,MAP,MOD,NOT,%
5275     NOR,NAND,NULL,NEXT,NEW,OUT,OF,OR,OTHERS,ON,OPEN,PROCESS,PORT,%
5276     PACKAGE,PURE,PROCEDURE,POSTPONED,RANGE,REM,ROL,ROR,REPORT,RECORD,%
5277     RETURN,REGISTER,REJECT,SIGNAL,SUBTYPE,SLL,SRL,SLA,SRA,SEVERITY,%
5278     SELECT,THEN,TYPE,TRANSPORT,TO,USE,UNITS,UNTIL,VARIABLE,WHEN,WAIT,%
5279     WHILE,XOR,XNOR,%
5280     DISCONNECT,ELIF,WITH},% Arnaud Tisserand
5281     sensitive=f,% 1998 Gaurav Aggarwal
5282     morecomment=[l]--,%
5283     morestring=[d]{"}%
5284   }[keywords,comments,strings]%

```

The VHDL-AMS dialect has been added by Steffen Klupsch.

```

5285 %%
5286 %% VHDL-AMS definition (c) Steffen Klupsch
5287 %%
5288 \lst@definlanguage[AMS]{VHDL}[] {VHDL}%
5289 {morekeywords={ACROSS,ARRAY,BREAK,DISCONNECT,NATURE,NOISE,PORT,%
5290     PROCEDURAL,QUANTITY,SHARED,SPECTRUM,SUBNATURE,TERMINAL,THROUGH,%
5291     TOLERANCE,UNAFFECTED,UNITS}}
5292 </lang1>

```

2.81 VRML

This language is due to Oliver Baum VRML.

```

5293 <*lang2>

```

```

5294 %%
5295 %% VRML definition (c) 2001 Oliver Baum
5296 %%
5297 \lst@definlanguage[97]{VRML}
5298 {morekeywords={DEF,EXTERNPROTO,FALSE,IS,NULL,PROTO,ROUTE,TO,TRUE,USE,%
5299     eventIn,eventOut,exposedField,field,Introduction,Anchor,%
5300     Appearance,AudioClip,Background,Billboard,Box,Collision,Color,%
5301     ColorInterpolator,Cone,Coordinate,CoordinateInterpolator,%
5302     Cylinder,CylinderSensor,DirectionalLight,ElevationGrid,Extrusion,%
5303     Fog,FontStyle,Group,ImageTexture,IndexedFaceSet,IndexedLineSet,%
5304     Inline,LOD,Material,MovieTexture,NavigationInfo,Normal,%
5305     NormalInterpolator,OrientationInterpolator,PixelTexture,%
5306     PlaneSensor,PointLight,PointSet,PositionInterpolator,%
5307     ProximitySensor,ScalarInterpolator,Script,Shape,Sound,Sphere,%
5308     SphereSensor,SpotLight,Switch,Text,TextureCoordinate,%
5309     TextureTransform,TimeSensor,TouchSensor,Transform,Viewpoint,%
5310     VisibilitySensor,WorldInfo},%
5311     morecomment=[l]\#,% bug: starts comment in the first column
5312     morestring=[b]"%
5313 }[keywords,comments,strings]
5314 </lang2>

```

2.82 XML et al

Bernhard Walle provided the following two definitions.

```

5315 <*lang1>
5316 \lst@definlanguage{XSLT}[] {XML}%
5317 {morekeywords={%
5318     % main elements
5319     xsl:stylesheet,xsl:transform,%
5320     % childs of the main element
5321     xsl:apply-imports,xsl:attribute-set,xsl:decimal-format,xsl:import,%
5322     xsl:include,xsl:key,xsl:namespace-alias,xsl:output,xsl:param,%
5323     xsl:preserve-space,xsl:strip-space,xsl:template,xsl:variable,%
5324     % 21 directives
5325     xsl:apply-imports,xsl:apply-templates,xsl:attribute,%
5326     xsl:call-template,xsl:choose,xsl:comment,xsl:copy,xsl:copy-of,%
5327     xsl:element,xsl:fallback,xsl:for-each,xsl:if,xsl:message,%
5328     xsl:number,xsl:otherwise,xsl:processing-instruction,xsl:text,%
5329     xsl:value-of,xsl:variable,xsl:when,xsl:with-param},%
5330     alsodigit={-},%
5331 }%
5332 \lst@definlanguage{Ant}[] {XML}%
5333 {morekeywords={%
5334     project,target,patternset,include,exclude,excludesfile,includesfile,filterset,%
5335     filter,filtersfile,libfileset,custom,classpath,fileset,none,depend,mapper,%
5336     filename,not,date,contains,selector,depth,or,and,present,majority,size,dirset,%
5337     filelist,pathelement,path,param,filterreader,extension,filterchain,linecontainsregexp,%

```

```

5338     regexp,classconstants,headfilter,tabstospaces,striplinebreaks,tailfilter,stripjavacomments
5339     expandproperties,linecontains,replacetokens,token,striplinecomments,comment,prefixlines,%
5340     classfileset,rootfileset,root,description,xmlcatalog,entity,dtd,substitution,%
5341     extensionSet,propertyfile,entry,vsscheckin,sql,transaction,cvspass,csc,%
5342     dirname,wlrun,wlclasspath,p4label,replaceregexp,get,jjtree,sleep,jarlib,%
5343     dependset,targetfileset,srcfileset,srcfilelist,targetfilelist,zip,zipgroupfileset,zipfiles
5344     patch,jspc,webapp,style,test,arg,jvmarg,sysproperty,testlet,env,tstamp,%
5345     format,unwar,vsshhistory,icontract,cvschangelog,user,p4submit,ccmcheckin,%
5346     p4change,bzip2,vssadd,javadoc,bottom,source,doctitle,header,excludepackage,bootclasspath,%
5347     doclet,taglet,packageset,sourcepath,link,footer,package,group,title,tag,%
5348     translate,signjar,vajload,vajproject,jarlib,extensionset,WsdlToDotnet,buildnumber,%
5349     jpcovmerge,tomcat,ejbjar,weblogictoplink,jboss,borland,weblogic,iplanet,jonas,%
5350     support,websphere,wasclasspath,war,manifest,attribute,section,metainf,lib,%
5351     classes,webinf,rename,sequential,serverdeploy,generic,property,move,%
5352     copydir,cccheckin,wljspc,fixcrlf,sosget,pathconvert,map,record,p4sync,exec,%
5353     p4edit,maudit,rulespath,searchpath,antlr,netrexxc,jpcovreport,reference,filters,%
5354     coveragepath,execon,targetfile,srcfile,ccmcheckout,ant,xmlvalidate,xslt,%
5355     iplanet,ccmcheckintask,gzip,native2ascii,starteam,ear,archives,input,%
5356     rmic,extdirs,compilerarg,checksum,mail,bcc,message,cc,to,from,loadfile,vsscheckout,%
5357     stylebook,soscheckin,mimemail,stlabel,gunzip,concat,cab,touch,parallel,splash,%
5358     antcall,cccheckout,typedef,p4have,xmlproperty,copy,tomcat,antstructure,cccreatetask,%
5359     rpm,delete,replace,replacefilter,replac token,replacevalue,mmetrics,waitfor,isfalse,%
5360     equals,available,filepath,os,filesmatch,istrue,isset,socket,http,uptodate,srcfiles,%
5361     untar,loadproperties,echoproperties,vajexport,stcheckout,bunzip2,copyfile,vsscreate,%
5362     ejbc,unjar,tomcat,wsdltodotnet,mkdir,condition,cvs,commandline,marker,argument,%
5363     tempfile,junitreport,report,taskdef,echo,ccupdate,java,renameext,vsslabel,basename,%
5364     javadoc2,vsscpc,tar,tarfileset,tomcat,vajimport,setproxy,wlstop,p4counter,ilasm,%
5365     soscheckout,apply,ccuncheckout,jarlib,location,url,cvstagdiff,jlink,mergefiles,%
5366     addfiles,javacc,pvcs,pvcsproject,jarlib,options,depends,chmod,jar,sound,fail,%
5367     success,mparse,blgenclient,genkey,dname,javah,class,ccmreconfigure,unzip,javac,%
5368     src,p4add,soslabel,jpcovreport,triggers,method,vssget,deltree,ddcreator},
5369     deletekeywords={default},%
5370 }

```

5371 </lang1>

This is my first attempt to support XML. It is from 2000/07/18.

5372 <*lang1>

```

5373 \lst@definlanguage{XML}%
5374 {keywords={,CDATA,DOCTYPE,ATTLIST,termdef,ELEMENT,EMPTY,ANY,ID,%
5375     IDREF,IDREFS,ENTITY,ENTITIES,NMTOKEN,NMTOKENS,NOTATION,%
5376     INCLUDE,IGNORE,SYSTEM,PUBLIC,NDATA,PUBLIC,%
5377     PCDATA,REQUIRED,IMPLIED,FIXED,%%% preceded by #
5378     xml,xml:space,xml:lang,version,standalone,default,preserve},%
5379     alsoother=$,%
5380     alsoletter=:,%
5381     tag>**[s]<>,%
5382     morestring=[d]" ,% ??? doubled
5383     morestring=[d]' ,% ??? doubled
5384     MoreSelectCharTable=%

```

```

5385 \lst@CArgX--\relax\lst@DefDelimB{}{}%
5386     {\ifnum\lst@mode=\lst@tagmode\else
5387       \expandafter\@gobblethree
5388       \fi}%
5389     \lst@BeginComment\lst@commentmode{\lst@commentstyle}}%
5390 \lst@CArgX--\relax\lst@DefDelimE{}{}{}%
5391     \lst@EndComment\lst@commentmode
5392 \lst@CArgX[CDATA[\relax\lst@CDef{}]%
5393     {\ifnum\lst@mode=\lst@tagmode
5394       \expandafter\lst@BeginCDATA
5395       \else \expandafter\lst@CArgEmpty
5396       \fi}%
5397     \@empty
5398 \lst@CArgX]\relax\lst@CDef{}%
5399     {\ifnum\lst@mode=\lst@GPmode
5400       \expandafter\lst@EndComment
5401       \else \expandafter\lst@CArgEmpty
5402       \fi}%
5403     \@empty
5404 }[keywords,comments,strings,html]%

```

And after receiving a bug report from Michael Niedermair I converted the version 0.21 contents of MoreSelectCharTable to version 1.0.

```
5405 </lang1>
```