

Comparison of parser generators

This is a list of notable [lexer generators](#) and [parser generators](#) for various language classes.

Contents

[Regular languages](#)

[Deterministic context-free languages](#)

[Parsing expression grammars, deterministic boolean grammars](#)

[General context-free, conjunctive or boolean languages](#)

[Context-sensitive grammars](#)

[See also](#)

[References](#)

[Notes](#)

[External links](#)

Regular languages

[Regular languages](#) are a category of languages (sometimes known as [Chomsky Type 3](#)) which can be matched by a state machine (more specifically, by a [deterministic finite automaton](#) or a [nondeterministic finite automaton](#)) constructed from a [regular expression](#). In particular, a regular language can match constructs like "A follows B", "Either A or B", "A, followed by zero or more instances of B", but cannot match constructs which require consistency between non-adjacent elements, such as "some instances of A followed by the same number of instances of B", and also cannot express the concept of recursive "nesting" ("every A is eventually followed by a matching B"). A classic example of a problem which a regular grammar cannot handle is the question of whether a given string contains correctly-nested parentheses. (This is typically handled by a Chomsky Type 2 grammar, also known as a [context-free grammar](#).)

Name	Lexer algorithm	Output languages	Grammar, code	Development platform	License
Alex	DFA	Haskell	mixed	all	BSD
AnnoFlex	DFA	Java	mixed	Java Virtual Machine	BSD
AustenX	DFA	Java	separate	all	BSD
Booze-tools (https://github.com/kjosib/booze-tools)	DFA	state machine is runtime-generated or saved as JSON	mixed	Python	Public Domain
C# Flex	DFA	C#	mixed	.NET CLR	GNU GPL
C# Lex	DFA	C#	mixed	.NET CLR	?
CookCC	DFA	Java	mixed	Java Virtual Machine	Apache License 2.0
DFAlex	DFA	no code generation required	Java	Java	Apache License 2.0
Dolphin	DFA	C++	separate	all	Proprietary
flex	DFA table driven	C , C++	mixed	all	BSD
gelex	DFA	Eiffel	mixed	Eiffel	MIT
golex	DFA	Go	mixed	Go	BSD-style
gplex	DFA	C#	mixed	.NET CLR	BSD-like
JFlex	DFA	Java	mixed	Java Virtual Machine	BSD
JLex	DFA	Java	mixed	Java Virtual Machine	BSD-like
lex	DFA	C	mixed	POSIX	Proprietary, CDDL
lexertl	DFA	C++		all	GNU LGPL
LRSTAR	DFA	C++	separate	Windows	BSD
Quex	DFA direct code	C , C++	mixed	all	GNU LGPL
Ragel	DFA	C , C++ , Assembly , Objective C , D , Go , Ruby , Java , C# , OCaml , Crack , Rust , Julia	mixed	all	GNU GPL , MIT [1]
RE/flex	DFA direct code, DFA table driven, and NFA regex libraries	C++	mixed	all	BSD
re2c	DFA direct code	C	mixed	all	Public domain

Deterministic context-free languages

Context-free languages are a category of languages (sometimes known as **Chomsky Type 2**) which can be matched by a sequence of replacement rules, each of which essentially maps each non-terminal element to a sequence of terminal elements and/or other nonterminal elements. Grammars of this type can match anything that can be matched by a **regular grammar**, and furthermore, can handle the concept of recursive "nesting" ("every A is eventually followed by a matching B"), such as the question of whether a given string contains correctly-nested parentheses. The rules of Context-free grammars are purely local, however, and therefore cannot handle questions that require non-local analysis such as "Does a declaration exist for every variable that is used in a function?". To do so technically would require a more sophisticated grammar, like a Chomsky Type 1 grammar, also known as a **Context-sensitive grammar**. However, parser generators for context-free grammars often support the ability for user-written code to introduce limited amounts of context-sensitivity. (For instance, upon encountering a variable declaration, user-written code could save the name and type of the variable into an external data structure, so that these could be checked against later variable references detected by the parser.)

The **deterministic context-free languages** are a proper subset of the Context-Free languages which can be efficiently parsed by **Deterministic pushdown automata**.

Name	Parsing algorithm	Input grammar notation	Output languages	Grammar, code	Lexer	Development platform	IDE	License
ANTLR4	ALL(*) ^[2]	EBNF	C# , Java , Python , JavaScript , C++ , Swift , Go	mixed	generated	Java Virtual Machine	Yes	BSD
ANTLR3	LL(*)	EBNF	ActionScript , Ada95 , C , C++ , C# , Java , JavaScript , Objective-C , Perl , Python , Ruby	mixed	generated	Java Virtual Machine	Yes	BSD
APG	Recursive descent , Backtracking	ABNF	C , C++ , JavaScript , Java	separate	none	all	No	GNU GPL
AXE	Recursive descent	AXE/C++	C++17 , C++11	mixed	none	any platform with standard C++17/C++11 compiler	No	Boost
Beaver	LALR(1)	EBNF	Java	mixed	external	Java Virtual Machine	No	BSD
Bison	LALR(1) , LR(1) , IELR(1) , GLR	YACC	C , C++ , Java	mixed	external	all	No	GNU GPL with Exception
Bison++ ^[note 1]	LALR(1)	?	C++	mixed	external	POSIX	No	GNU GPL
Bisonc++	LALR(1)	?	C++	mixed	external	POSIX	No	GNU GPL
Booze-tools (https://github.com/kjosib/booze-tools)	LALR(1) or LR(1) (canonical or minimal)	BNF with macros in place of EBNF	state machine can be runtime-generated or saved as JSON	mixed, separable	included	Python	No	Public domain
BtYacc	Backtracking Bottom-up	?	C++	mixed	external	all	No	Public domain
byacc	LALR(1)	YACC	C	mixed	external	all	No	Public domain
BYACC/J	LALR(1)	YACC	C , Java	mixed	external	all	No	Public domain
CL-Yacc	LALR(1)	Lisp	Common Lisp	mixed	external	all	No	MIT
Coco/R	LL(1)	EBNF	C , C++ , C# , F# , Java , Ada , Object Pascal , Delphi , Modula-2 , Oberon , Ruby , Swift , Unicon , Visual Basic , .NET	mixed	generated	Java Virtual Machine , .NET Framework , Microsoft Windows , POSIX (depends on output language)	No	GNU GPL

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Name	<u>Parsing algorithm</u>	<u>Input grammar notation</u>	<u>Output languages</u>	<u>Grammar, code</u>	<u>Lexer</u>	<u>Development platform</u>	<u>IDE</u>	<u>License</u>
CookCC	<u>LALR(1)</u>	Java annotations	<u>Java</u>	mixed	generated	<u>Java Virtual Machine</u>	No	<u>Apache License 2.0</u>
CppCC	<u>LL(k)</u>	?	<u>C++</u>	mixed	generated	<u>POSIX</u>	No	<u>GNU GPL</u>
CSP	<u>LR(1)</u>	?	<u>C++</u>	separate	generated	<u>POSIX</u>	No	<u>Apache License 2.0</u>
CUP	<u>LALR(1)</u>	?	<u>Java</u>	mixed	external	<u>Java Virtual Machine</u>	No	<u>BSD-like</u>
Dragon	<u>LR(1), LALR(1)</u>	?	<u>C++, Java</u>	separate	generated	all	No	<u>GNU GPL</u>
eli	<u>LALR(1)</u>	?	<u>C</u>	mixed	generated	<u>POSIX</u>	No	<u>GNU GPL, GNU LGPL</u>
Epsilon Grammar Studio	<u>Recursive descent, Backtracking</u>	<u>ABNF</u>	<u>C++</u>	separate	generated	<u>Microsoft Windows</u>	Yes	<u>proprietary</u>
Essence	<u>LR(???)</u>	?	<u>Scheme 48</u>	mixed	external	all	No	<u>BSD</u>
Eto.Parse	<u>LL(k)</u>	BNF, EBNF or C#	N/A (state machine is runtime generated)	separate	internal	<u>.NET Framework</u>	No	<u>MIT</u>
eyapp	<u>LALR(1)</u>	?	<u>Perl</u>	mixed	external or generated	all	No	<u>Perl</u>
Frown	<u>LALR(k)</u>	?	<u>Haskell 98</u>	mixed	external	all	No	<u>GNU GPL</u>
geyacc	<u>LALR(1)</u>	?	<u>Eiffel</u>	mixed	external	all	No	<u>MIT</u>
<u>GOLD</u>	<u>LALR(1)</u>	BNF	x86 assembly language, ANSI C, C#, D, Java, Pascal, Object Pascal, Python, Visual Basic 6, Visual Basic .NET, Visual C++	separate	generated	<u>Microsoft Windows</u>	Yes	<u>Modified Zlib</u>
GPPG	<u>LALR(1)</u>	YACC	<u>C#</u>	separate	external	<u>Microsoft Windows</u>	Yes	<u>BSD</u>
<u>Grammatica</u>	<u>LL(k)</u>	BNF dialect	<u>C#, Java</u>	separate	generated	<u>Java Virtual Machine</u>	No	<u>BSD</u>
HiLexed	<u>LL(*)</u>	EBNF or Java	<u>Java</u>	separate	internal	<u>Java Virtual Machine</u>	No	<u>GNU LGPL</u>
Hime Parser Generator	<u>LALR(1), GLR</u>	BNF dialect	<u>C#, Java, Rust</u>	separate	generated	<u>.NET Framework, Java Virtual Machine</u>	No	<u>GNU LGPL</u>
Hyacc	<u>LR(1), LALR(1), LR(0)</u>	YACC	<u>C</u>	mixed	external	all	No	<u>GNU GPL</u>

Product	<u>Parsing algorithm</u>	<u>Input grammar notation</u>	<u>Output languages</u>	<u>Grammar, code</u>	<u>Lexer</u>	<u>Development platform</u>	<u>IDE</u>	<u>License</u>
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<u>Irony</u>	<u>LALR(1)</u>	<u>C#</u>	N/A (state machine is runtime generated)	separate	internal	<u>.NET Framework</u>	Yes	<u>MIT</u>
<u>iyacc</u>	<u>LALR(1)</u>	<u>YACC</u>	<u>Icon</u>	mixed	external	all	No	<u>GNU GPL</u>
<u>jacc</u>	<u>LALR(1)</u>	<u>?</u>	<u>Java</u>	mixed	external	<u>Java Virtual Machine</u>	No	<u>BSD</u>
<u>JavaCC</u>	<u>LL(k)</u>	<u>EBNF</u>	<u>Java, C++, JavaScript (via GWT compiler)</u> ^[3]	mixed	generated	<u>Java Virtual Machine</u>	Yes	<u>BSD</u>
<u>jay</u>	<u>LALR(1)</u>	<u>YACC</u>	<u>C#, Java</u>	mixed	none	<u>Java Virtual Machine</u>	No	<u>BSD</u>
<u>JFLAP</u>	<u>LL(1), LALR(1)</u>	<u>?</u>	<u>Java</u>	<u>?</u>	<u>?</u>	<u>Java Virtual Machine</u>	Yes	<u>?</u>
<u>JetPAG</u>	<u>LL(k)</u>	<u>?</u>	<u>C++</u>	mixed	generated	all	No	<u>GNU GPL</u>
<u>JS/CC</u>	<u>LALR(1)</u>	<u>EBNF</u>	<u>JavaScript, JScript, ECMAScript</u>	mixed	internal	all	Yes	<u>BSD</u>
<u>KDevelop-PG-Qt</u>	<u>LL(1), Backtracking, Shunting yard</u>	<u>?</u>	<u>C++</u>	mixed	generated or external	all, <u>KDE</u>	No	<u>GNU LGPL</u>
<u>Kelbt</u>	<u>Backtracking LALR(1)</u>	<u>?</u>	<u>C++</u>	mixed	generated	<u>POSIX</u>	No	<u>GNU GPL</u>
<u>kmyacc</u>	<u>LALR(1)</u>	<u>?</u>	<u>C, Java, Perl, JavaScript</u>	mixed	external	all	No	<u>GNU GPL</u>
<u>Lapg</u>	<u>LALR(1)</u>	<u>?</u>	<u>C, C++, C#, Java, JavaScript</u>	mixed	generated	<u>Java Virtual Machine</u>	No	<u>GNU GPL</u>
<u>Lemon</u>	<u>LALR(1)</u>	<u>?</u>	<u>C</u>	mixed	external	all	No	<u>Public domain</u>
<u>LEPL</u>	Recursive descent	<u>Python</u>	<u>Python (no generation, library)</u>	separate	none	all	No	<u>MPL/GNU LGPL</u>
<u>Lime</u>	<u>LALR(1)</u>	<u>?</u>	<u>PHP</u>	mixed	external	all	No	<u>GNU GPL</u>
<u>LISA</u>	<u>LR(?), LL(?), LALR(?), SLR(?)</u>	<u>?</u>	<u>Java</u>	mixed	generated	<u>Java Virtual Machine</u>	Yes	<u>Public domain</u>
<u>LLgen</u>	<u>LL(1)</u>	<u>?</u>	<u>C</u>	mixed	external	<u>POSIX</u>	No	<u>BSD</u>
<u>LLnextgen</u>	<u>LL(1)</u>	<u>?</u>	<u>C</u>	mixed	external	all	No	<u>GNU GPL</u>
<u>LLLPG</u>	<u>LL(k) + syntactic and semantic predicates</u>	<u>ANTLR-like</u>	<u>C#</u>	mixed	generated (?)	<u>.NET Framework, Mono</u>	<u>Visual Studio</u>	<u>GNU LGPL</u>
<u>LPG</u>	<u>Backtracking LALR(k)</u>	<u>?</u>	<u>Java</u>	mixed	generated	<u>Java Virtual Machine</u>	No	<u>EPL</u>
<u>LRSTAR</u>	<u>LALR(1), LR(1), LR(*)</u>	<u>EBNF, Yacc-like</u>	<u>C++</u>	separate	generated	<u>Windows</u>	<u>Visual Studio</u>	<u>BSD</u>
<u>Menhir</u>	<u>LR(1)</u>	<u>?</u>	<u>OCaml</u>	mixed	generated	all	No	<u>QPL</u>
<u>ML-Yacc</u>	<u>LALR(1)</u>	<u>?</u>	<u>ML</u>	mixed	external	all	No	<u>?</u>

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Monkey	<u>LR(1)</u>	?	<u>Java</u>	separate	generated	<u>Java Virtual Machine</u>	No	<u>GNU GPL</u>
Msta	<u>LALR(k)</u> , <u>LR(k)</u>	<u>YACC</u> , <u>EBNF</u>	<u>C</u> , <u>C++</u>	mixed	external or generated	<u>POSIX</u> , <u>Cygwin</u>	No	<u>GNU GPL</u>
MTP (More Than Parsing)	<u>LL(1)</u>	?	<u>Java</u>	separate	generated	<u>Java Virtual Machine</u>	No	<u>GNU GPL</u>
MyParser	<u>LL(*)</u>	<u>Markdown</u>	<u>C++11</u>	separate	internal	any platform with standard C++11 compiler	No	<u>MIT License</u>
NLT	<u>GLR</u>	<u>C#/BNF-like</u>	<u>C#</u>	mixed	mixed	<u>.NET Framework</u>	No	<u>MIT</u>
ocamlyacc	<u>LALR(1)</u>	?	<u>OCaml</u>	mixed	external	all	No	<u>QPL</u>
olex	<u>LL(1)</u>	?	<u>C++</u>	mixed	generated	all	No	<u>GNU GPL</u>
parglare (http://s://github.com/igorjancovic/parglare)	Scannerless <u>LALR(1)/SLR(1)/GLR</u>	BNF-like, Python	N/A (state machine is runtime generated)	mixed	none	all	No	<u>MIT</u>
Parsec	<u>LL</u> , <u>Backtracking</u>	<u>Haskell</u>	<u>Haskell</u>	mixed	none	all	No	<u>BSD</u>
Parse::Yapp	<u>LALR(1)</u>	?	<u>Perl</u>	mixed	external	all	No	<u>GNU GPL</u>
Parser Objects	<u>LL(k)</u>	?	<u>Java</u>	mixed	?	<u>Java Virtual Machine</u>	No	<u>zlib</u>
PCCTS	<u>LL</u>	?	<u>C</u> , <u>C++</u>	?	?	all	No	?
<u>PLY</u>	<u>LALR(1)</u>	BNF	<u>Python</u>	mixed	generated	all	No	<u>MIT License</u>
PlyPlus	<u>LALR(1)</u>	EBNF	<u>Python</u>	separate	generated	all	No	<u>MIT License</u>
PRECC	<u>LL(k)</u>	?	<u>C</u>	separate	generated	<u>DOS</u> , <u>POSIX</u>	No	<u>GNU GPL</u>
QLALR	<u>LALR(1)</u>	?	<u>C++</u>	mixed	external	all	No	<u>GNU GPL</u>
RPATK	<u>Recursive descent</u> , <u>Backtracking</u>	BNF	<u>C</u> (no generation, library)	separate	none	all	No	<u>GNU GPL</u>
<u>SableCC</u>	<u>LALR(1)</u>	?	<u>C</u> , <u>C++</u> , <u>C#</u> , <u>Java</u> , <u>OCaml</u> , <u>Python</u>	separate	generated	all	No	<u>GNU LGPL</u>
SLK	<u>LL(k)</u> <u>LR(k)</u> <u>LALR(k)</u>	<u>EBNF</u>	<u>C</u> , <u>C++</u> , <u>C#</u> , <u>Java</u> , <u>JavaScript</u>	separate	external	all	No	SLK ^[4]
SP (Simple Parser)	<u>Recursive descent</u>	<u>Python</u>	<u>Python</u>	separate	generated	all	No	<u>GNU LGPL</u>
<u>Spirit</u>	<u>Recursive descent</u>	?	<u>C++</u>	mixed	internal	all	No	<u>Boost</u>
Sprache	<u>LL</u> , <u>Backtracking</u>	<u>C#</u>	interpreted	mixed	internal	<u>.NET Framework</u>	No	<u>MIT</u>
Styx	<u>LALR(1)</u>	?	<u>C</u> , <u>C++</u>	separate	generated	all	No	<u>GNU LGPL</u>
Sweet Parser	<u>LALR(1)</u>	?	<u>C++</u>	separate	generated	Microsoft Windows	No	<u>zlib</u>
Tap	<u>LL(1)</u>	?	<u>C++</u>	mixed	generated	all	No	<u>GNU GPL</u>

Product	<u>Parsing algorithm</u>	<u>Input grammar notation</u>	<u>Output languages</u>	<u>Grammar, code</u>	<u>Lexer</u>	<u>Development platform</u>	<u>IDE</u>	<u>License</u>
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TextTransformer	<u>LL(k)</u>	?	<u>C++</u>	mixed	generated	<u>Microsoft Windows</u>	Yes	<u>Proprietary</u>
TinyPG	<u>LL(1)</u>	?	<u>C#, Visual Basic</u>	?	?	<u>Microsoft Windows</u>	Yes	CPOL 1.0
<u>Toy Parser Generator</u>	<u>Recursive descent</u>	?	<u>Python</u>	mixed	generated	all	No	<u>GNU LGPL</u>
TP Yacc	<u>LALR(1)</u>	?	<u>Turbo Pascal</u>	mixed	external	all	Yes	<u>GNU GPL</u>
UltraGram	<u>LALR(1), LR(1), GLR</u>	<u>BNF</u>	C++, Java, C#, Visual Basic .NET	separate	external	Microsoft Windows	Yes	<u>Public domain</u>
<u>UniCC (https://github.com/phorward/unicc)</u>	<u>LALR(1)</u>	<u>EBNF</u>	<u>C, C++, Python, JavaScript, JSON, XML</u>	mixed	generated	<u>POSIX</u>	No	<u>BSD</u>
<u>UrchinCC</u>	<u>LL(1)</u>	?	Java	?	generated	Java Virtual Machine	No	?
Whale	LR(?), some conjunctive stuff, see Whale Calf	?	<u>C++</u>	mixed	external	all	No	<u>Proprietary</u>
wisent	<u>LALR(1)</u>	?	<u>C++, Java</u>	mixed	external	all	No	<u>GNU GPL</u>
<u>Yacc AT&T/Sun</u>	<u>LALR(1)</u>	YACC	<u>C</u>	mixed	external	<u>POSIX</u>	No	<u>CPL & CDDL</u>
Yacc++	<u>LR(1), LALR(1)</u>	YACC	<u>C++, C#</u>	mixed	generated or external	all	No	<u>Proprietary</u>
Yapps	<u>LL(1)</u>	?	<u>Python</u>	mixed	generated	all	No	<u>MIT</u>
yecc	<u>LALR(1)</u>	?	<u>Erlang</u>	separate	generated	all	No	<u>Erlang</u>
<u>Visual BNF</u>	<u>LR(1), LALR(1)</u>	?	<u>C#</u>	separate	generated	<u>.NET Framework</u>	Yes	<u>Proprietary</u>
YooParse	<u>LR(1), LALR(1)</u>	?	<u>C++</u>	mixed	external	all	No	<u>MIT</u>
<u>Parse (https://github.com/MathiasVP/Parse/)</u>	<u>LR(1)</u>	BNF in C++ types	?	?	none	C++11 compliant compiler	No	<u>MIT</u>
<u>GGLL (https://github.com/tassotirap/GGLL.UI)</u>	<u>LL(1)</u>	Graph	<u>Java</u>	mixed	generated	<u>Windows</u>	Yes	<u>MIT</u>
Product	<u>Parsing algorithm</u>	<u>Input grammar notation</u>	<u>Output languages</u>	<u>Grammar, code</u>	<u>Lexer</u>	<u>Development platform</u>	<u>IDE</u>	<u>License</u>

Parsing expression grammars, deterministic boolean grammars

Name	Parsing algorithm	Output languages	Grammar, code	Development platform	License
Arpeggio (https://github.com/igordejanovic/Arpeggio)	PEG parser interpreter, Packrat	Python (no generation, interpreted)	mixed	all	MIT
AustenX	Packrat (modified)	Java	separate	all	BSD
Aurochs	Packrat	C , OCaml , Java	mixed	all	GNU GPL
BNFlite (https://github.com/r35382/bnflite)	Recursive descent	C++	mixed	all	MIT
Canopy (http://canopy.jcoglan.com/)	Packrat	Java , JavaScript , Python , Ruby	separate	all	GNU GPL
CL-peg	Packrat	Common Lisp	mixed	all	MIT
Drat!	Packrat	D	mixed	all	GNU GPL
Frisby	Packrat	Haskell	mixed	all	BSD
grammar::peg	Packrat	Tcl	mixed	all	BSD
Grako	Packrat + Cut + Left Recursion	Python / C++ (beta)	separate	all	BSD
IronMeta	Packrat	C#	mixed	Microsoft Windows	BSD
Katahdin	Packrat (modified), mutating interpreter	C#	mixed	all	Public domain
Laja	2-phase scannerless top-down backtracking + runtime support	Java	separate	all	GNU GPL
lars::Parser (https://github.com/TheLartians/Parser)	Packrat (supporting left-recursion and grammar ambiguity)	C++	identical	all	BSD
LPeg	Parsing Machine	Lua	mixed	all	MIT
lug (https://github.com/jwtowner/lug)	Parsing Machine	C++17	mixed	all	MIT
Mouse	Recursive descent	Java	separate	Java Virtual Machine	Apache License 2.0
Narwhal	Packrat	C	mixed	POSIX , Microsoft Windows	BSD
Nearley (http://nearley.js.org/)	Earley	JavaScript	mixed	all	MIT
Nemerle.Peg	Recursive descent + Pratt	Nemerle	separate	all	BSD
neotoma	Packrat	Erlang	separate	all	MIT
NPEG	Recursive descent	C#	mixed	all	MIT
OMeta	Packrat (modified, partial memoization)	JavaScript , Squeak , Python	mixed	all	MIT
PackCC	Packrat (modified)	C	mixed	all	MIT
Packrat	Packrat	Scheme	mixed	all	MIT
Pappy	Packrat	Haskell	mixed	all	BSD
parboiled	Recursive descent	Java , Scala	mixed	Java Virtual Machine	Apache License 2.0
Lambda PEG	Recursive descent	Java	mixed	Java Virtual Machine	Apache License 2.0
parsepp	Recursive descent	C++	mixed	all	Public domain
Parsnip	Packrat	C++	mixed	Microsoft Windows	GNU GPL

Name	Parsing algorithm	Output languages	Grammar, code	Development platform	License
peg	Recursive descent	<u>C</u>	mixed	all	<u>MIT</u>
<u>PEG.js (https://pegjs.org/)</u>	Packrat (partial memoization)	<u>JavaScript</u>	mixed	all	<u>MIT</u>
peg-parser	PEG parser interpreter	<u>Dylan</u>	separate	all	
Pegasus	Recursive descent / Packrat (selectively)	<u>C#</u>	mixed	<u>Microsoft Windows</u>	<u>MIT</u>
pegc	Recursive descent	<u>C</u>	mixed	all	<u>Public domain</u>
<u>pest (https://github.com/dra-gostis/pest)</u>	Recursive descent	<u>Rust</u>	separate	all	<u>MPL</u>
PetitParser	Packrat	<u>Smalltalk</u> , <u>Java</u> , <u>Dart</u>	mixed	all	<u>MIT</u>
<u>PEGTL (https://github.com/taocpp/PEGTL)</u>	Recursive descent	<u>C++11</u>	mixed	all	<u>MIT</u>
<u>PGE</u>	Hybrid recursive descent / operator precedence ^[5]	<u>Parrot bytecode</u>	mixed	<u>Parrot virtual machine</u>	Artistic 2.0
<u>PyPy rlib</u>	Packrat	<u>Python</u>	mixed	all	<u>MIT</u>
pyPEG	PEG parser interpreter, Packrat	<u>Python</u>	mixed	all	<u>GNU GPL</u>
<u>Rats! (https://cs.nyu.edu/rgrimm/xtc/rats-intro.html)</u>	Packrat	<u>Java</u>	mixed	<u>Java Virtual Machine</u>	<u>GNU LGPL</u>
Spirit2	Recursive descent	<u>C++</u>	mixed	all	<u>Boost</u>
<u>textX (https://github.com/textX/textX)</u>	PEG parser interpreter, Packrat	<u>Python</u> (no generation, interpreted)	separate	all	<u>MIT</u>
Treetop	Recursive descent	<u>Ruby</u>	mixed	all	<u>MIT</u>
Yard	Recursive descent	<u>C++</u>	mixed	all	<u>MIT or Public domain</u>
Waxeye	Parsing Machine	<u>C</u> , <u>Java</u> , <u>JavaScript</u> , <u>Python</u> , <u>Racket</u> , <u>Ruby</u>	separate	all	<u>MIT</u>
PHP PEG	? (PEG Parser?)	<u>PHP</u>	mixed	all	<u>BSD</u>

General context-free, conjunctive or boolean languages

Name	Parsing algorithm	Input grammar notation	Output languages	Grammar, code	Lexer	Development platform	IDE	License
ACCENT	<u>Earley</u>	YACC variant	<u>C</u>	mixed	external	all	No	<u>GNU GPL</u>
APaGeD	<u>GLR</u> , <u>LALR(1)</u> , <u>LL(k)</u>	?	<u>D</u>	mixed	generated	all	No	<u>Artistic</u>
<u>Bison</u>	<u>LALR(1)</u> , <u>LR(1)</u> , <u>IELR(1)</u> , <u>GLR</u>	YACC	<u>C</u> , <u>C++</u> , <u>Java</u> , <u>XML</u>	mixed (except XML)	external	all	No	<u>GNU GPL</u>
DMS Software Reengineering Toolkit	<u>GLR</u>	?	<u>Parlanse</u>	mixed	generated	<u>Microsoft Windows</u>	No	<u>Proprietary</u>
DParser	<u>Scannerless GLR</u>	?	<u>C</u>	mixed	<u>scannerless</u>	<u>POSIX</u>	No	<u>BSD</u>
Dypgen	<u>runtime-extensible GLR</u>	?	<u>OCaml</u>	mixed	generated	all	No	<u>CeCILL-B</u>
E3	<u>Earley</u>	?	<u>OCaml</u>	mixed	external, or scannerless	all	No	?
Elkhound	<u>GLR</u>	?	<u>C++</u> , <u>OCaml</u>	mixed	external	all	No	<u>BSD</u>
eu.h8me.Parsing	<u>GLR</u>	?	N/A (state machine is runtime generated)	separate	external	<u>.NET Framework</u>	No	<u>BSD</u>
GDK	<u>LALR(1)</u> , <u>GLR</u>	?	<u>C</u> , <u>Lex</u> , <u>Haskell</u> , <u>HTML</u> , <u>Java</u> , <u>Object Pascal</u> , <u>Yacc</u>	mixed	generated	<u>POSIX</u>	No	<u>MIT</u>
Happy	<u>LALR</u> , <u>GLR</u>	?	<u>Haskell</u>	mixed	external	all	No	<u>BSD</u>
Hime Parser Generator	<u>GLR</u>	?	<u>C#</u> , <u>Java</u> , <u>Rust</u>	separate	generated	<u>.NET Framework</u> , <u>Java Virtual Machine</u>	No	<u>GNU LGPL</u>
IronText Library	<u>LALR(1)</u> , <u>GLR</u>	<u>C#</u>	<u>C#</u>	mixed	generated or external	<u>.NET Framework</u>	No	<u>Apache License 2.0</u>
Jison	<u>LALR(1)</u> , <u>LR(0)</u> , <u>SLR(1)</u>	YACC	<u>JavaScript</u> , <u>C#</u> , <u>PHP</u>	mixed	generated	all	No	<u>MIT</u>
Syntax	<u>LALR(1)</u> , <u>LR(0)</u> , <u>SLR(1)</u> , <u>CLR(1)</u> , <u>LL(1)</u>	JSON/YACC	<u>JavaScript</u> , <u>Python</u> , <u>PHP</u> , <u>Ruby</u> , <u>C#</u> , <u>Rust</u> , <u>Java</u>	mixed	generated	all	No	<u>MIT</u>
Laja	Scannerless, two phase	Laja	<u>Java</u>	separate	<u>scannerless</u>	all	No	<u>GNU GPL</u>
ModelCC	<u>Earley</u>	Annotated class model	<u>Java</u>	generated	generated	all	No	<u>BSD</u>
parglare (http://github.com/igorjejanovic/parglare)	<u>Scannerless LR/GLR</u>	BNF-like	Python interpreted, automata run-time generated	mixed	<u>scannerless</u>	all	No	<u>MIT</u>
P1 (https://github.com/tomjridge/p1)	Combinators	BNF-like	<u>OCaml</u>	mixed	external, or scannerless	all	No	?
P3 (https://github.com/tomjridge/p3)	Earley/combinators	BNF-like	<u>OCaml</u>	mixed	external, or scannerless	all	No	?

Name	Parsing algorithm	Input grammar notation	Output languages	Grammar, code	Lexer	Development platform	IDE	License
P4 (https://github.com/tomjridge/p4)	Earley/combinators, infinitary CFGs	BNF-like	OCaml	mixed	external, or scannerless	all	No	?
Scannerless Boolean Parser	Scannerless GLR (Boolean grammars)	?	<u>Haskell</u> , <u>Java</u>	separate	scannerless	<u>Java Virtual Machine</u>	No	<u>BSD</u>
SDF/SGLR	Scannerless GLR	<u>SDF</u>	<u>C</u> , <u>Java</u>	separate	scannerless	all	Yes	<u>BSD</u>
SmaCC	<u>GLR(1)</u> , <u>LALR(1)</u> , <u>LR(1)</u>	?	<u>Smalltalk</u>	mixed	internal	all	Yes	<u>MIT</u>
SPARK	<u>Earley</u>	?	<u>Python</u>	mixed	external	all	No	<u>MIT</u>
Tom (https://www.cs.cmu.edu/Groups/Al/areas/nlp/parsing/tom/0.html)	<u>GLR</u>	?	<u>C</u>	generated	none	all	No	"No licensing or copyright restrictions"
UltraGram (http://ultragram.com)	<u>LALR</u> , <u>LR</u> , <u>GLR</u>	?	<u>C++</u> , <u>C#</u> , <u>Java</u> , <u>Visual Basic</u> <u>.NET</u>	separate	generated	<u>Microsoft Windows</u>	Yes	<u>Proprietary</u>
Wormhole	<u>Pruning</u> , <u>LR</u> , <u>GLR</u> , <u>Scannerless GLR</u>	?	<u>C</u> , <u>Python</u>	mixed	scannerless	<u>Microsoft Windows</u>	No	<u>MIT</u>
Whale Calf	General tabular, <u>SLL(k)</u> , Linear normal form (Conjunctive grammars), <u>LR</u> , Binary normal form (Boolean grammars)	?	<u>C++</u>	separate	external	all	No	<u>Proprietary</u>
yaep	<u>Earley</u>	yacc like	<u>C</u>	mixed	external	all	No	LGPL
Zecc	Recursive Pattern Matching	Zecc/Zacc	Linkable Library	mixed	scannerless	<u>macOS</u>	Yes	Proprietary

Context-sensitive grammars

Name	Parsing algorithm	Input grammar notation	Boolean grammar capabilities	Development platform	License
<u>LuZc</u> ^{[6][7]}	delta chain	modular	Conjunctive, not complimentary	POSIX	proprietary
bnf2xml (http://sourceforge.net/p/bnf2xml/)	recursive descent (is a text filter output is xml)	simple bnf grammar (input matching), output is xml	?	beta, and not a full-fledged EBNF parser	GNU GPLv2

See also

- Compiler-compiler
- List of lexer generators

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- "Building parsers for the web with JavaCC & GWT (Part one)" (<http://consoliii.blogspot.co.uk/2014/04/creating-gwt-compatible-parser-using.html>). Chris Ainsley. Retrieved 2014-05-04.
- <http://www.slkpg2.com/license.txt>

5. "Parrot: Grammar Engine" (https://parrot.github.com/html/docs/book/pct/ch04_pge.pod.html). The Parrot Foundation. 2011. "PGE rules provide the full power of recursive descent parsing and operator precedence parsing."
6. "LuZ: A context sensitive parser" (<https://web.archive.org/web/20161017051112/http://qyxz.netau.net/>). 2016–10–17. Archived from [the original \(http://qyxz.netau.net/\)](http://qyxz.netau.net/) on 2016–10–17. Retrieved 2018–10–17.
7. "LuZc – A conjunctive context–sensitive parser" (<http://luzc.zohosites.com/>). *luzc.zohosites.com*. Retrieved 2018–10–17.

Notes

1. Bison 1.19 fork

External links

- [The Catalog of Compiler Construction Tools \(http://catalog.compilertools.net/lexparse.html\)](http://catalog.compilertools.net/lexparse.html)
 - [Open Source Parser Generators in Java \(http://java-source.net/open-source/parser-generators\)](http://java-source.net/open-source/parser-generators)
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