

**Class Number:** CECS 444-01

**Project Name:** Parser

**Team Name:** CMP

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**Rules:**

$\text{Oprel} = \text{opeq} \mid \text{opne} \mid \text{angle1} \mid \text{ople} \mid \text{opge} \mid \text{angle2}$

$\text{Lval} = \text{id} \mid \text{aster id} \mid \text{Aref}$

$\text{Aref} = \text{id bracket1 Expr bracket2}$

$\text{Expr} = \text{Expr Oprel Rterm}$

$\text{E} = \text{eps}$

$\text{Expr} = \text{Oprel Rterm Expr} \mid \text{eps}$

$\text{Rterm} = \text{Opadd Term Rterm} \mid \text{eps}$

$\text{R} = \text{eps}$

$\text{Term} = \text{Opmul Fact Term} \mid \text{eps}$

$\text{T} = \text{eps}$

$\text{Fact} = \text{int} \mid \text{float} \mid \text{string} \mid \text{ampersand id}$

$\text{Expr} = \text{int} \mid \text{float} \mid \text{string} \mid \text{ampersand id}$

$\text{Lval} = \text{id} \mid \text{aster id}$

$\text{Stasg} = \text{kwdvar Lval eual Expr}$

$\text{PPexpr} = \text{parens1 Expr parens2}$

$\text{Strprint} = \text{kprint parens1 Expr parens2}$

$\text{Pgm} = \text{kwdprog Vargroup kwdmain brace1 Vargroup brace2}$

$\text{Stmts} = \text{Stmt semi Stmts} \mid \text{eps}$

$\text{Stmt} = \text{Stasgn} \mid \text{Strprint}$

$\text{Pgm} = \text{kwdprog kwdmain brace1 Stmts brace2}$

There are NO Left factored rules.

**LRE elimination** was done for the non-terminal symbols: **EXPR**, **RTERM**, and **TERM**.

1.  $\text{Expr} = \text{Expr Oprel Rterm}$   
 $\text{E} = \text{eps}$   
 $\text{E} = \text{Oprel Rterm E} \mid \text{eps}$
2.  $\text{Rterm} = \text{Rterm Opadd Term} \mid \text{eps}$   
 $\text{R} = \text{eps}$   
 $\text{R} = \text{Opadd Term R} \mid \text{eps}$
3.  $\text{Term} = \text{Term Opmul Fact Term} \mid \text{eps}$   
 $\text{T} = \text{eps}$   
 $\text{T} = \text{Opmul Fact Term T} \mid \text{eps}$

**Epsilon Rules:**

1.  $\text{Stmts} = \epsilon$
2.  $\text{Idargs} = \epsilon$
3.  $\text{Varlist} = \epsilon$
4.  $\text{Vargroup} = \epsilon$
5.  $E = \epsilon$
6.  $R = \epsilon$
7.  $T = \epsilon$

**Final rules we considered for building the project: (Simple rules)**

1.  $\text{Expr} = \text{int}$
2.  $\text{Expr} = \text{float}$
3.  $\text{Expr} = \text{string}$
4.  $\text{Expr} = \text{ampersand id}$
5.  $\text{Lval} = \text{id}$
6.  $\text{Lval} = \text{aster id}$
7.  $\text{Stasgn} = \text{kwdvar Lval equal Expr}$
8.  $\text{PPexpr} = \text{parens1 Expr parens2}$
9.  $\text{Stprint} = \text{kprint parens1 Expr parens2}$
10.  $\text{Stmts} = \text{Stmt semi Stmts}$
11.  $\text{Stmts} = \epsilon$
12.  $\text{Stmt} = \text{Stasgn}$
13.  $\text{Stmt} = \text{Stprint}$
14.  $\text{Pgm} = \text{kwdprog kwdmain brace1 Stmts brace2}$
15.  $\text{Idargs} = \text{bracket1 int bracket2}$
16.  $\text{Idargs} = \epsilon$
17.  $\text{Vardecl} = \text{kint}$
18.  $\text{Vardecl} = \text{kfloat}$
19.  $\text{Vardecl} = \text{kstring}$
20.  $\text{Vardecl} = \text{id Idargs}$
21.  $\text{Vardecl} = \text{aster id}$
22.  $\text{Varlist} = \text{Vardecl semi Varlist}$
23.  $\text{Varlist} = \epsilon$
24.  $\text{Vargroup} = \text{kwdvars parens1 Varlist parens2}$
25.  $\text{Vargroup} = \epsilon$

First Sets	
1	int
2	float
3	string
4	&
5	
6	*
7	kwdvar
8	parens1
9	kprint
10	kwdvar
11	eps
12	kwdvar
13	kprint
14	kwdprog
15	kwdvars
16	eps
17	kint, kfloat, kstring, id, *
18	eps
19	kint
20	kfloat
21	kstring
22	id
23	*
24	bracket1
25	eps

Follow Set	
Expr	\$, parens2, semi
Lval	equal
Stasgn	semi
PPxpr	
Stprint	semi
Stmts	brace2
Stmt	semi
Pgm	
Idargs	semi
Vardecl	semi

Varlist	parens2
Vargroup	