

Instituto Tecnológico y de Estudios Superiores de Monterrey

Campus Monterrey



**Tecnológico
de Monterrey**

Desarrollo de aplicaciones avanzadas de ciencias computacionales (Gpo 503)

BabyDuck - entrega #0

Jose Carlos Zertuche de la Cruz - A01198177

Martes 22 de abril del 2025

Expresiones regulares

Token	Expresión regular
PROGRAM	program
VAR	var
VOID	void
MAIN	main
END	end
IF	if
ELSE	else
WHILE	while
DO	do
PRINT	print
ID	[a-zA-Z_][a-zA-Z0-9_]*
CTE_FLOAT	[0-9]+\.[0-9]+
CTE_INT	[0-9]+
CTE_STRING	"([-~] \\["\\ntbr])"
NEQ	!=
GT	>
LT	<
PLUS	+
MINUS	-
TIMES	*
DIV	/

Expresiones regulares	
ASSIGN	=
SEMI	;
COLON	:
COMA	,
LPAREN	(
RPAREN)
LBRACE	{
RBRACE	}
COMMENT	// [^] [^\\n]*

Listar todos los Tokens que serán reconocidos por el lenguaje

Palabras reservadas

- PROGRAM
- VAR
- VOID
- MAIN
- END
- IF
- ELSE
- WHILE
- DO
- PRINT
- ID

Identificador

- ID

Constantes

- CTE_INT
- CTE_FLOAT
- CTE_STRING

Operadores

- NEQ
- GT
- LT
- PLUS
- MINUS
- TIMES
- DIV
- ASSIGN

Símbolos

- SEMI
- COLON
- COMA
- LPAREN
- RPAREN
- LBRACE
- COMMENT

Context Free Grammar (hechas a mano al menos para esta primera entrega)

$\langle \text{programa} \rangle \rightarrow \text{program id}; \langle \text{DEC_VAR} \rangle \langle \text{DEC_FUN} \rangle \text{main } \langle \text{BODY} \rangle \text{end}$
 $\langle \text{DEC_VAR} \rangle \rightarrow \epsilon$
 $\langle \text{DEC_VAR} \rangle \rightarrow \langle \text{VARS} \rangle$
 $\langle \text{VARS} \rangle \rightarrow \text{var } \langle \text{LIST_VAR} \rangle$
 $\langle \text{LIST_VAR} \rangle \rightarrow \langle \text{list_id} \rangle : \langle \text{TYPE} \rangle ; \langle \text{extra_var} \rangle$
 $\langle \text{extra_var} \rangle \rightarrow \epsilon$
 $\langle \text{extra_var} \rangle \rightarrow \langle \text{LIST_VAR} \rangle$
 $\langle \text{list_id} \rangle \rightarrow \text{id}$
 $\langle \text{list_id} \rangle \rightarrow \text{id}, \langle \text{list_id} \rangle$
 $\langle \text{TYPE} \rangle \rightarrow \text{int}$
 $\langle \text{TYPE} \rangle \rightarrow \text{float}$
 $\langle \text{DEC_FUN} \rangle \rightarrow \epsilon$
 $\langle \text{DEC_FUN} \rangle \rightarrow \langle \text{FUNCS} \rangle$
 $\langle \text{DEC_FUN} \rangle \rightarrow \langle \text{DEC_FUN} \rangle \langle \text{FUNCS} \rangle$
 $\langle \text{FUNCS} \rangle \rightarrow \text{void id } (\langle \text{PARAM} \rangle) [\langle \text{DEC_VAR} \rangle \langle \text{BODY} \rangle] ;$
 $\langle \text{PARAM} \rangle \rightarrow \epsilon$
 $\langle \text{PARAM} \rangle \rightarrow \text{id} : \langle \text{TYPE} \rangle \langle \text{extra_param} \rangle$
 $\langle \text{extra_param} \rangle \rightarrow \epsilon$
 $\langle \text{extra_param} \rangle \rightarrow , \langle \text{PARAM} \rangle$

$\langle \text{BODY} \rangle \rightarrow \{ \langle \text{DEC_STMT} \rangle \}$
 $\langle \text{DEC_STMT} \rangle \rightarrow \epsilon$
 $\langle \text{DEC_STMT} \rangle \rightarrow \langle \text{STATEMENT} \rangle \langle \text{DEC_STMT} \rangle$
 $\langle \text{STATEMENT} \rangle \rightarrow \langle \text{ASSIGN} \rangle$
 $\langle \text{STATEMENT} \rangle \rightarrow \langle \text{CONDITION} \rangle$
 $\langle \text{STATEMENT} \rangle \rightarrow \langle \text{CYCLE} \rangle$
 $\langle \text{STATEMENT} \rangle \rightarrow \langle \text{F_call} \rangle$
 $\langle \text{STATEMENT} \rangle \rightarrow \langle \text{Print} \rangle$
 $\langle \text{ASSIGN} \rangle \rightarrow \text{id} = \langle \text{EXPRESION} \rangle ;$
 $\langle \text{EXPRESION} \rangle \rightarrow \langle \text{EXP} \rangle \langle \text{sig_elem_exp} \rangle$
 $\langle \text{sig_elem_exp} \rangle \rightarrow \epsilon$
 $\langle \text{sig_elem_exp} \rangle \rightarrow \langle \text{opt_oper} \rangle \langle \text{EXP} \rangle$
 $\langle \text{opt_oper} \rangle \rightarrow >$
 $\langle \text{opt_oper} \rangle \rightarrow <$
 $\langle \text{opt_oper} \rangle \rightarrow !=$

$\langle \text{EXP} \rangle \rightarrow \langle \text{LIST_EXP} \rangle$

$\langle \text{LIST_EXP} \rangle \rightarrow \langle \text{TERMINO} \rangle$

$\langle \text{LIST_EXP} \rangle \rightarrow \langle \text{TERMINO} \rangle \langle \text{opt_sumres} \rangle \langle \text{LIST_EXP} \rangle$

$\langle \text{opt_sumres} \rangle \rightarrow +$

$\langle \text{opt_sumres} \rangle \rightarrow -$

$\langle \text{TERMINO} \rangle \rightarrow \langle \text{LIST_TERM} \rangle$

$\langle \text{LIST_TERM} \rangle \rightarrow \langle \text{FACTOR} \rangle$

$\langle \text{LIST_TERM} \rangle \rightarrow \langle \text{FACTOR} \rangle \langle \text{opt_divmul} \rangle \langle \text{LIST_TERM} \rangle$

$\langle \text{opt_divmul} \rangle \rightarrow *$

$\langle \text{opt_divmul} \rangle \rightarrow /$

$\langle \text{FACTOR} \rangle \rightarrow (\langle \text{EXPRESION} \rangle)$

$\langle \text{FACTOR} \rangle \rightarrow \langle \text{fct_prim} \rangle \langle \text{fct_seg} \rangle$

$\langle \text{fct_prim} \rangle \rightarrow \epsilon$

$\langle \text{fct_prim} \rangle \rightarrow \langle \text{opt_sumres} \rangle$

$\langle \text{fct_seg} \rangle \rightarrow \text{id}$

$\langle \text{fct_seg} \rangle \rightarrow \langle \text{CTE} \rangle$

$\langle \text{CTE} \rangle \rightarrow \text{cte_int}$

$\langle \text{CTE} \rangle \rightarrow \text{cte_float}$

$\langle \text{CONDITION} \rangle \rightarrow \text{if} (\langle \text{EXPRESION} \rangle) \langle \text{BODY} \rangle \langle \text{else_stmt} \rangle ;$

$\langle \text{else_stmt} \rangle \rightarrow \epsilon$

$\langle \text{else_stmt} \rangle \rightarrow \text{else} \langle \text{BODY} \rangle$

$\langle \text{CYCLE} \rangle \rightarrow \text{while} (\langle \text{EXPRESION} \rangle) \text{do} \langle \text{BODY} \rangle ;$

$\langle \text{F_call} \rangle \rightarrow \text{id} (\langle \text{F_call_exp} \rangle) ;$

$\langle \text{F_call_exp} \rangle \rightarrow \epsilon$

$\langle \text{F_call_exp} \rangle \rightarrow \langle \text{EXPRESION} \rangle$

$\langle \text{F_call_exp} \rangle \rightarrow \langle \text{EXPRESION} \rangle , \langle \text{F_call_exp} \rangle$

$\langle \text{Print} \rangle \rightarrow \text{print} (\langle \text{print_param} \rangle) ;$

$\langle \text{print_param} \rangle \rightarrow \langle \text{EXPRESION} \rangle$

$\langle \text{print_param} \rangle \rightarrow \langle \text{EXPRESION} \rangle \langle \text{extra_print_param} \rangle$

$\langle \text{print_param} \rangle \rightarrow \text{cte.string}$

$\langle \text{print_param} \rangle \rightarrow \text{cte.string} \langle \text{extra_print_param} \rangle$

$\langle \text{extra_print_param} \rangle \rightarrow \epsilon$

$\langle \text{extra_print_param} \rangle \rightarrow , \langle \text{print_param} \rangle \langle \text{extra_print_param} \rangle$

estará de mas?