INICIO ::= PROGRAM

PROGRAM ::= MAIN

| MAIN CMTS

| CMTS MAIN

| CMTS MAIN CMTS

MAIN ::= reservada\_void reservada\_main open\_pare close\_pare open\_brace STMSLIST close\_brace

CMTS ::= CMTS CMT

| CMT

CMT ::= multi\_comentario

| comentario

STMS::= PRINT\_STMT

| DECLARATION\_STMT

| IF\_STM

| SWITCH\_STMT

| FOR\_STMT

| WHILE\_STMT

| DO\_STMT

| ASIG

| CMT

| L

| G\_PIE

| G\_BAR

| DEF\_GLOBAL

STMSLIST ::= STMSLIST STMS

| STMS

DECLARATION\_STMT ::= TIPOS\_DATOS id punto\_coma

| TIPOS\_DATOS id igual ME punto\_coma

TIPOS\_DATOS ::= reservada\_int

| reservada\_string

| reservada\_double

| reservada\_char

| reservada\_bool

ME ::= ME E

| E

E::= E Simbolo\_mas E

| E Simbolo\_menos E

| E Simbolo\_multi E

| E Simbolo\_divi E

| numero

PRINT\_STMT::= reservada\_console dot reservada\_write open\_pare ARGS close\_pare punto\_coma

ARGS ::= ARGS ARG

| ARG

ARG ::= ARG Simbolo\_mas id

| ARG Simbolo\_mas string\_literal

| id

| string\_literal

IF\_STM ::= IF\_S0

| IF\_S0 reservada\_else IF\_S0

IF\_S0 ::= reservada\_if open\_pare R close\_pare open\_brace STMSLIST close\_brace

//---> Operadores Relacionales

R::= R mayor R

| R menor R

| R mayor\_igual R

| R menor\_igual R

| R igual\_relacional R

| R distinto R

| numero

| id

//---> Operadores logicos

L::= L and L

| L or L

| not L

| numero

| id

FOR\_STMT ::= reservada\_for open\_pare reservada\_int id igual numero punto\_coma R punto\_coma UPDATE close\_pare open\_brace STMSLIST close\_brace

UPDATE ::= id Simbolo\_mas Simbolo\_mas

WHILE\_STMT ::= reservada\_while open\_pare R close\_pare open\_brace STMSLIST close\_brace

DO\_STMT ::= reservada\_do open\_brace STMSLIST close\_brace reservada\_while open\_pare R close\_pare punto\_coma

SWITCH\_STMT ::= reservada\_switch open\_pare id close\_pare open\_brace CASE\_LIST DEFAULT\_CASE close\_brace

CASE\_LIST ::= CASE\_LIST CASE\_STATEMENT

| CASE\_STATEMENT

CASE\_STATEMENT ::= reservada\_case numero dos\_puntos STMSLIST reservada\_break punto\_coma

| reservada\_case numero dos\_puntos STMSLIST

DEFAULT\_CASE ::= reservada\_default dos\_puntos STMSLIST

ASIG ::= id igual ME punto\_coma

// ---> Gramaticas para funciones y grafica jfreechart titulo, ejex valores

// ---> Grafica Pie

G\_PIE ::= reservada\_void reservada\_graficapie open\_pare close\_pare open\_brace STMSLIST\_PIE close\_brace

TITULO\_PIE ::= reservada\_string reservada\_titulo igual string\_literal punto\_coma

| reservada\_string reservada\_titulo igual id punto\_coma

| reservada\_string reservada\_titulo igual JSON\_VAL punto\_coma

EJEX ::= reservada\_string open\_square\_brackets close\_square\_brackets reservada\_ejex igual open\_brace ARGS\_EJEX close\_brace punto\_coma

ARG\_EJEX ::= DATO coma

| id

| string\_literal

| JSON\_VAL

DATO ::= string\_literal

| id

| JSON\_VAL

ARGS\_EJEX ::= ARGS\_EJEX ARG\_EJEX

| ARG\_EJEX

VALOR ::= reservada\_double open\_square\_brackets close\_square\_brackets reservada\_valores igual open\_brace ARGS\_VALOR close\_brace punto\_coma

ARG\_VALOR ::= DATO\_VALOR

| id

| numero

| JSON\_VAL

DATO\_VALOR ::= numero

| id

| JSON\_VAL

ARGS\_VALOR ::= ARGS\_VALOR ARG\_VALOR

| ARG\_VALOR

STMS\_PIE ::= TITULO\_PIE

| EJEX

| VALOR

STMSLIST\_PIE ::= STMSLIST\_PIE STMS\_PIE

| STMS\_PIE

// ---> Grafica barras

G\_BAR ::= reservada\_void reservada\_graficabarras open\_pare close\_pare open\_brace STMSLIST\_BAR close\_brace

TITULO\_BAR ::= reservada\_string reservada\_titulo igual string\_literal punto\_coma

| reservada\_string reservada\_titulo igual id punto\_coma

| reservada\_string reservada\_titulo igual JSON\_VAL punto\_coma

TITULO\_X ::= reservada\_string reservada\_titulox igual string\_literal punto\_coma

| reservada\_string reservada\_titulox igual id punto\_coma

| reservada\_string reservada\_titulox igual JSON\_VAL punto\_coma

TITULO\_Y ::= reservada\_string reservada\_tituloy igual string\_literal punto\_coma

| reservada\_string reservada\_tituloy igual id punto\_coma

| reservada\_string reservada\_tituloy igual JSON\_VAL punto\_coma

EJEX\_BAR ::= reservada\_string open\_square\_brackets close\_square\_brackets reservada\_ejex igual open\_brace ARGS\_EJEX\_BAR close\_brace punto\_coma

ARG\_EJEX\_BAR ::= DATO\_BAR coma

| id

| string\_literal

| JSON\_VAL

DATO\_BAR ::= string\_literal

| id

| JSON\_VAL

ARGS\_EJEX\_BAR ::= ARGS\_EJEX\_BAR ARG\_EJEX\_BAR

| ARG\_EJEX\_BAR

VALOR\_BAR ::= reservada\_double open\_square\_brackets close\_square\_brackets reservada\_valores igual open\_brace ARGS\_VALOR\_BAR close\_brace punto\_coma

ARG\_VALOR\_BAR ::= DATO\_VALOR\_BAR coma

| id

| numero

| JSON\_VAL

DATO\_VALOR\_BAR ::= numero

| id

| JSON\_VAL

ARGS\_VALOR\_BAR ::= ARGS\_VALOR\_BARARG\_VALOR\_BAR

| ARG\_VALOR\_BAR

STMS\_BAR ::= TITULO\_BAR

| TITULO\_X

| TITULO\_Y

| EJEX\_BAR

| VALOR\_BAR

;

STMSLIST\_BAR ::= STMSLIST\_BAR STMS\_BAR

| STMS\_BAR

;

// ---> Definir Globales

DEF\_GLOBAL ::= reservada\_void reservada\_definirglobales open\_pare close\_pare open\_brace DEF\_LIST close\_brace

DEF\_VAR ::= TD\_DEF idigual VAL\_DEFpunto\_coma

TD\_DEF ::= reservada\_string

| reservada\_double

VAL\_DEF ::= string\_literal

| numero

| JSON\_VAL

DEF\_LIST ::= DEF\_LIST DEF\_VAR

| DEF\_VAR

;

// Obtiene los dato cargados del JSOn

JSON\_VAL ::= dollar open\_brace reservada\_newvalor coma string\_literal coma string\_literal close\_brace