

Gramática Linguagem NOVA (EBNF)

<program>::

<function> <main>

<function>:: <function_declaration> <function>

| empty

<main>:: PR_VOID PR_MAIN AB_PAR FEC_PAR <scope>

<function_declaration>::

<type_or_void> ID AB_PAR <parameters> FEC_PAR <scope>

<type_or_void>::

TYPE_VALUE |

PR_VOID

<parameters>::

empty

| TYPE_VALUE ID

| SP TYPE_VALUE ID <parameters>

<scope>:: AB_CH <commands> FEC_CH SP

<commands>::

<declaration> <commands>

| <attribution> <commands>

| <printout> <commands>

| <readin> <commands>

| <function_call> <commands>

| <ifelse> <commands>

| <while> <commands>

| <for> <commands>

| <shoot>

| empty

<declaration>::

TYPE_VALUE ID SP

| TYPE_VALUE ID VECTOR_AUX CTE_INT SP

| TYPE_VALUE <attribution>

<attribution>::

ID OP_ATR <value> SP

| ID VECTOR_AUX CTE_INT OP_ATR <value> SP

<printout>::
PR_IO AB_PAR <msg> FEC_PAR SP

<msg>::
CTE_STR
| CTE_STR OP_AD <msg>

<readin>::
PR_IO AB_PAR ID FEC_PAR SP

<function_call>::
ID AB_PAR <parameters_call> FEC_PAR SP

<parameters_call>::
ID
| CTE_STR
| CTE_FLOAT
| CTE_INT
| SP <parameters_call>
| empty

<value>:: <array>
| <expression>

<array>:: AB_CH <elements> FEC_CH
| AB_CH FEC_CH

<elements>::
ID
| CTE_STR
| CTE_FLOAT
| CTE_INT
| SP <elements>

<expression>::
<eq_expression> OP_AND <logical_expression>
| <eq_expression> OP_OR <logical_expression>
| <eq_expression>

<eq_expression>::
<comparative_exp> OP_REL2 <eq_expression>
| <comparative_exp>

<comparative_exp>::
<add_exp> OP_REL1 <comparative_exp>
| <add_exp>

```

<add_exp>::
    <mult_exp> OP_AD <add_exp>
    | <mult_exp>

<mult_exp>::
    <neg_exp> OP_MULT <mult_exp>
    | <neg_exp>

<neg_exp>::
    OP_NOT <exp_aux>
    | <exp_aux>

<exp_aux>::
    AB_PAR <atom_exp> FEC_PAR
    | <atom_exp>

<atom_exp>::
    ID
    | CTE_INT
    | CTE_FLOAT
    | CTE_STR
    | BOOL_VALUE

<ifelse>::    PR_IF AB_PAR <expression> FEC_PAR AB_CH <commands> FEC_CH
<else> SP

<else>::      PR_ELSE AB_CH <commands> FEC_CH
    | empty

<while>::     PR_WHILE AB_PAR <expression> FEC_PAR <scope>

<for>::       PR_FOR AB_PAR <for_steps> FEC_PAR <scope>

<for_steps>::
    PR_INT ID OP_ATR CTE_INT SP ID OP_REL1 CTE_INT SP ID OP_ATR ID
    OP_AD CTE_INT

<shoot>::     PR_SHOOT ID
    | PR_SHOOT CTE_INT
    | PR_SHOOT CTE_FLOAT
    | PR_SHOOT CTE_STR
    | PR_SHOOT BOOL_VALUE
    | PR_SHOOT

```

Gramática Linguagem NOVA em LL(1) (EBNF)

<program>::

- | PR_VOID <program_aux>
- | TYPE_VALUE <function_declaration> <program>
- | empty

<program_aux>::

- PR_MAIN AB_PAR FEC_PAR <scope>
- | <function_declaration> <program>

<function_declaration>::

- ID AB_PAR <parameters> FEC_PAR <scope>

<parameters>::

- empty
- | TYPE_VALUE ID
- | SP TYPE_VALUE ID <parameters>

<scope>:: AB_CH <commands> FEC_CH SP

<commands>::

- TYPE_VALUE ID <declaration> <commands>
- | ID <attribution_or_function_call> <commands>
- | PR_IO AB_PAR <printout_or_readin> <commands>
- | PR_IF <ifelse> <commands>
- | PR_WHILE <while> <commands>
- | PR_FOR <for> <commands>
- | PR_SHOOT <shoot> SP
- | empty

<declaration>::

- SP
- | VECTOR_AUX CTE_INT <declaration_aux>
- | VECTOR_AUX ID <declaration_aux>
- | <attribution>

<declaration_aux>::

- SP
- | <attribution>

<attribution>::

OP_ATR <value> SP

<attribution_or_function_call>::

<attribution>

| VECTOR_AUX CTE_INT <attribution>

| VECTOR_AUX ID <attribution>

| AB_PAR <parameters_call> FEC_PAR SP

<printout_or_readin>::

ID FEC_PAR SP

| <msg> FEC_PAR SP

<msg>::

CTE_STR

| CTE_STR OP_AD <msg>

<parameters_call>::

ID <parameters_call>

| CTE_STR <parameters_call>

| CTE_FLOAT <parameters_call>

| CTE_INT <parameters_call>

| SP <parameters_call>

| empty

<value>:: AB_CH <array>

| <expression>

<array>:: <elements> FEC_CH

| FEC_CH

<elements>::

ID

| CTE_STR

| CTE_FLOAT

| CTE_INT

| SP <elements>

| empty

<expression>::

<eq_expression> <expression_aux>

<expression_aux>::

OP_AND <expression>

| OP_OR <expression>

| empty

<eq_expression>::
 <comparative_exp> <eq_expression_aux>

<eq_expression_aux>::
 OP_REL2 <eq_expression>
 | empty

<comparative_exp>::
 <add_exp> <comparative_exp_aux>

<comparative_exp_aux>::
 OP_REL1 <comparative_exp>
 | empty

<add_exp>::
 <mult_exp> <add_exp_aux>

<add_exp_aux>::
 OP_AD <add_exp>
 | empty

<mult_exp>::
 <neg_exp> <mult_exp_aux>

<mult_exp_aux>::
 OP_MULT <mult_exp>
 | empty

<neg_exp>::
 OP_NOT <exp_aux>
 | <exp_aux>

<exp_aux>::
 AB_PAR <atom_exp> FEC_PAR
 | <atom_exp>

<atom_exp>::
 ID
 | CTE_INT
 | CTE_FLOAT
 | CTE_STR
 | BOOL_VALUE
 | ID AB_PAR <parameters_call> FEC_PAR

<ifelse>:: AB_PAR <expression> FEC_PAR AB_CH <commands> FEC_CH <else> SP

<else>:: PR_ELSE AB_CH <commands> FEC_CH
 | empty

<while>:: AB_PAR <expression> FEC_PAR <scope>

<for>:: AB_PAR <for_steps> FEC_PAR <scope>

<for_steps>::
 TYPE_VALUE ID OP_ATR CTE_INT SP ID OP_REL1 CTE_INT SP ID
 OP_ATR ID OP_AD CTE_INT
 | TYPE_VALUE ID OP_ATR CTE_INT SP ID OP_REL1 ID SP ID OP_ATR ID
 OP_AD CTE_INT

<shoot>:: ID
 | CTE_INT
 | CTE_FLOAT
 | CTE_STR
 | BOOL_VALUE