**Attribute Grammar**

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| **Nodo** | **Predicados** | **Reglas Semánticas** |
| **program** → *instructions*:instruction\* |  |  |
| **instruction** → *definitions*:definition |  |  |
| **structField** → *name*:String *type*:type |  |  |
|  |  |  |
| **varDefinition**:definition → *name*:String *type*:type | Variables[name] == null | Variables[name] = varDefinition |
| **structDefinition**:definition → *name*:String *definitions*:structField\* |  |  |
| **funDefinition**:definition → *name*:String *params*:definition\*  *return\_t*:type *definitions*:definition\* *sentences*:sentence\* | Functions[name] == null | Functions[name] = funDefinition |
| **paramDefinition**:definition → *name*:String *type*:type |  |  |
|  |  |  |
| **intType**:type → λ |  |  |
| **realType**:type → λ |  |  |
| **charType**:type → λ |  |  |
| **varType**:type → *type*:String |  |  |
| **voidType**:type → λ |  |  |
| **arrayType**:type → *size*:intConstant *type*:type |  |  |
|  |  |  |
| **print**:sentence → *expression*:expression *lex*:String |  |  |
| **assignment**:sentence → *left*:expression *right*:expression |  |  |
| **return**:sentence → *expression*:expression |  |  |
| **read**:sentence → *expression*:expression |  |  |
| **ifElse**:sentence → *expression*:expression *if\_s*:sentence\* *else\_s*:sentence\* |  |  |
| **while**:sentence → *expression*:expression *sentence*:sentence\* |  |  |
| **funInvocation**:sentence → *name*:String  *params*:expression\* *expressions*:expression | Functions[name] != null | funInvocation.definition = functions[name] |
| **funInvocationExpression**:expression, sentence → *name*:String *params*:expression\* | Functions[name] != null | funInvocationExpression.definition = functions[name] |
|  |  |  |
| **intConstant**:expression → *value*:String |  |  |
| **realConstant**:expression → *value*:String |  |  |
| **charConstant**:expression → *value*:String |  |  |
| **voidConstant**:expression → λ |  |  |
| **variable**:expression → *name*:String | Variable[name] ¡= null | variable.definition = variables[name] |
| **binaryExpression**:expression → *left*:expression *operator*:String *right*:expression |  |  |
| **unaryExpression**:expression → *expr*:expression *operator*:String |  |  |
| **castExpression**:expression → *type*:type *expression*:expression |  |  |
| **funInvocationExpression**:expression, sentence → *name*:String *params*:expression\* |  |  |
| **funFieldAccessExpression**:expression → *expression*:expression *name*:String |  |  |
| **indexExpression**:expression → *call*:expression *index*:expression |  |  |
|  |  |  |

Recordatorio de los operadores (para cortar y pegar): ⇒ ⇔ ≠ ∅ ∈ ∉ ∪ ∩ ⊂ ⊄ ∑ ∃ ∀

**Atributos**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Categoría Sintáctica** | **Nombre del atributo** | **Tipo Java** | **Heredado/Sintetizado** | **Descripción** |
| variable | definition | DefVariable |  | Referencia a la definición de la variable |
| funInvationExpression | definition | DefFunInvocation |  | Referencia a la definición de función |
| funInva |  |  |  |  |

Map<String, varDefinition> variables;

Map<String, FunDefinition> functions;

Map<String, Definition> globals;