

Code Specification

Función	Plantillas de Código
run[[program]]	run[[program → <i>definitions:definition*</i>]] = #SOURCE {file} CALL main HALT define[[<i>definitions_i</i>]]
define[[definition]]	define[[varDefinition → <i>name:String type:type</i>]] = #{varDefinition.scope} {name}:{MAPLType(type)} define[[structDefinition → <i>name:varType definitions:structField*</i>]] = #TYPE {name.type}: {define[[<i>definitions_i</i>]]} define[[funDefinition → <i>name:String params:definition*</i> <i>return_t:type definitions:varDefinition* sentences:sentence*</i>]] = {name}: #FUNC {name} #RET {MAPLType(return_t)} address[[<i>params_i</i>]] value[[<i>return_t</i>]] address[[<i>definitions_i</i>]] ENTER { \sum <i>definitions_i.type.size</i> } execute[[<i>sentences_i</i>]] si <i>return_t</i> == voidType RET { <i>return_t.size</i> },{ \sum <i>definitions_i.type.size</i> },{ \sum <i>params_i.type.size</i> } define[[structField → <i>name:String type:type</i>]] = {name}:{MAPLType(type)} execute[[sentence]] execute[[print → <i>expression:expression</i>]] = #LINE {end.line} value[[<i>expression</i>]] OUT< <i>expression.type</i> > execute[[printsp → <i>expression:expression</i>]] = #LINE {end.line} value[[<i>expression</i>]] OUT< <i>expression.type</i> > PUSHB 32 OUTB execute[[println → <i>expression:expression</i>]] = #LINE {end.line} value[[<i>expression</i>]] OUT< <i>expression.type</i> > PUSHB 10 OUTB execute[[read → <i>expression:expression</i>]] =

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#LINE {end.line}
address[[expression]]
IN<expression.type>
STORE<expression.type>

```

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execute[[assignment → left:expression right:expression ]] =
#LINE {end.line}
address[[left]]
value[[right]]
STORE<left.type>

```

```

execute[[return → expression:expression ]] =
#LINE {end.line}
value[[expression]]
RET {expression.type.size},{Σreturn.definition.definitionsi.type.size},{Σ
return.definition.paramsi.type.size}

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execute[[ifElse → expression:expression if_s:sentence* else_s:sentence* ]] =
#LINE {end.line}
value[[expression]]
Si else_s != null
    JZ else_{n}
Sino
    JZ end_if_else_{n}
Si if_s != null
    execute[[if_si]]
JMP end_if_else_{n}
Si else_s != null
    else_{n}:
    execute[[else_si]]
end_if_else_{n}:

```

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execute[[while → expression:expression sentence:sentence* ]] =
#LINE {end.line}
while_{n}:
value[[expression]]
JZ end_while_{n}
si sentence != null
    execute[[sentencei]]
JMP while_{n}
while_{n}:

```

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execute[[funcInvocation → name:String args:expression* ]] =
#LINE {end.line}
value[[argsi]]
CALL {name}
Si funInvocation.definition.return_t != voidType
POP<funInvocation.definition.return_t>

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value[[expression]]    value[[variable → name:String ]] =
                        address[[variable]]

```

```

LOAD<variable.type>

value[[intConstant → value:String ]] =
    PUSH {value}

value[[realConstant → value:String ]] =
    PUSHF {value}

value[[charConstant → value:String ]] =
    PUSHB {value}

value[[funcInvocationExpression → name:String params:expression* ]] =
    value[[params]]
    CALL {name}

value[[arithmeticExpression → left:expression operator:String right:expression ]] =
    value[[left]]
    value[[right]]
    si operator == "+"
        ADD<arithmeticExpression.type>
    si operator == "-"
        SUB<arithmeticExpression.type>
    si operator == "*"
        MUL<arithmeticExpression.type>
    si operator == "/"
        DIV<arithmeticExpression.type>

value[[logicalExpression → left:expression operator:String right:expression ]] =
    value[[left]]
    value[[right]]
    si operator == "&&"
        AND
    si operator == "||"
        OR

value[[unaryExpression → operator:String expr:expression ]] =
    value[[expr]]
    si operator == "!"
        NOT

value[[comparableExpression → left:expression operator:String right:expression ]] =
    value[[left]]
    value[[right]]
    si operator == ">"
        GT<comparableExpression.type>
    si operator == "<"
        LT<comparableExpression.type>
    si operator == ">="
        GE<comparableExpression.type>
    si operator == "<="
        LE<comparableExpression.type>
    si operator == "=="
        EQ<comparableExpression.type>

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```
si operator == "!="  
    NE< comparableExpression.type>
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```
value[[castExpression → type:type expr:expression ]] =  
    value[[expr]]  
    <expr.type>2<type>
```

```
value[[fieldAccessExpression → expr:expression name:String ]] =  
    address[[fieldAccessExpression]]  
    LOAD< fieldAccessExpression.type>
```

```
value[[indexExpression → expr:expression index:expression ]] =  
    address[[indexExpression]]  
    LOAD<indexExpression.type>
```

```
address[[expression]] address[[variable → name:String ]] =  
    Si variable.definition.scope == GLOBAL  
        PUSHA {variable.definition.address}  
    Sino  
        PUSHA BP  
        PUSH {variable.definition.address}  
        ADD
```

```
address[[fieldAccessExpression → expr:expression name:String ]] =  
    address[[expr]]  
    PUSH {expr.type.field(name).address}  
    ADD
```

```
address[[indexExpression → expr:expression index:expression ]] =  
    address[[expr]]  
    value[[index]]  
    PUSH {indexExpression.type.size}  
    MUL  
    ADD
```