## Especificación de Código

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| **Función de Código** | **Plantillas de Código** |
| run⟦Programa⟧ | run⟦program  →  definition\*⟧ =  #SOURCE {file}  #LINE {end.line}  <call main>  <halt>  definition.forEach(definition -> execute⟦definicionesi⟧) |
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| execute⟦Sentencia⟧ | execute[[**FunctionDefiniton**:definition -> name: string params:varDefinition\* type: type? definitions:varDefinition\* statements:statement\*]] =  <name>:  int cte1 = type.size;  int cte2 = definitions.mapToInt(vardef -> vardef.type.size).sum();  int cte3 = params.mapToInt(param -> param.type.size).sum();  statements.forEach(stmt -> execute[[stmt]](cte1, cte2, cte3));  if(cte1 == 0) ret <cte1>,<cte2>,<cte3>  execute ⟦read:statement  →  expression⟧ =  #LINE {end.line}  address[[expression]]  in<expression.type>  store<expression.type>  execute ⟦print:statement → expression\*⟧ =  #LINE {end.line}  expression\*.forEach(exp → {  value[[exp]];  out <exp.type>  });  execute ⟦println:statement → expression\*⟧ =   #LINE {end.line}  expression\*.forEach(exp → {  value[[exp]]  out <exp.type>  pushb 10 //Código ASCII del salto de línea  outb  });  if(!expression){  pushb 10  outb  } execute ⟦printsp:statement → expression\*⟧ =   #LINE {end.line}  expression\*.forEach(exp → {  value[[exp]]  out <exp.type>  pushb 32 //Código ASCII del espacio  outb  });  if(!expression){  pushb 32  outb  } execute[[**return:statement** -> expression: expression?]] (cte1, cte2, cte3) =  #LINE{end.line}  if(cte1 != 0){  ret <cte1>,<cte2>,<cte3>  } |
|  | execute ⟦assignment:statement  →  left:Expresion  right:Expresion⟧ =  #LINE {end.line}  Address[[left]]  value[[right]]  **store<left.type>**  execute[[while:statement → expression statement\*]] =  #LINE {end.line}  <loop:>  value[[expression]]  <jz exit>  statement\*.forEach(stmt→ execute[[stmt]])  <jmp loop>  <exit:>  execute[[Ifelse:statement → expression tr: statement\* fs:statement\*]] =  String jzLabel = "label" + ifelseActualLabel++;  String jmpLabel = "label" + ifelseActualLabel++;  #LINE {end.line}  value[[expression]]  <jz> jzLabel  tr.forEach(stmt → execute[[stmt]])  <jmp> jmpLabel  fs.forEach(stmt → execute[[stmt]])  jmpLabel<:>  execute[[FunctionCallStatement:statement → ID expression\*]] =  #LINE {end.line}  value[[functionCallStatement]]  if(functionCallStatement.defininition.type){  pop <functionCallStatement.type>  } |
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| value⟦Expresion⟧ | value ⟦intLiteral:expression → intValue:int⟧ =  pushi{intValue}  value ⟦floatLiteral:expression → floatValue:float⟧ =  pushf{floatValue}  value ⟦charLiteral:expression → name:string⟧ =  pushb{name}  value ⟦arrayAccess:expression → expr1:expression expr2:expression⟧ =  address[[arrayAccess]]  <load>arrayAccess.type  value ⟦fieldAccess:expression → expr:expression name:string⟧ =  address[[fieldAccess]]  <load>fieldAccess.attrDefinition.type  value ⟦not:expression → expression⟧ =   value[[expression]]  <not>  value ⟦logic:expression → left:expression operator:string right:expression⟧ =  value[[left]]  value[[right]  if operator == “&&”  and  if operator == “||”  or  if operator == “>=”  ge<arithmetic.type>  if operator == “<=”  le<arithmetic.type>  if operator == “>”  gt<arithmetic.type>  if operator == “<”  lt<arithmetic.type>  if operator == “==”  eq<arithmetic.type>  if operator == “!=”  ne<arithmetic.type>  value ⟦arithmetic:expression → left:expression operator:string right:expression⟧ =  value[[left]]  value[[right]]  if operator == "+"  ADD<arithmetic.type>  if operator == "-"  SUB<arithmetic.type>  if operator == "\*"  MUL<arithmetic.type>  if operator == "/"  DIV<arithmetic.type>  If operator == “%”  MOD<arithmetic.type>  value ⟦variable:expression → name:string⟧ =  if(variable.varDefinition.scope == 1){  address[[variable]]  } else {  <push bp>  address[[variable]]  <addi>  }  <load>variable.type  value ⟦cast:expression → type expression⟧ =  value[[expression]]  if(type != expression.type) <arithmetic.type>b< type>  value ⟦functionCallExpression:expression → name:string expression\*⟧ =  expression\*.forEach(expr → value[[expr]])  <call> name  value ⟦Return:expression → exp:expression?⟧ =  if(exp){  value[[expr]]  }  <call> name  value ⟦FunctionCallStatement:expression → name:string expression\*⟧ =  expression\*.forEach(expr → value[[expr]])  <call> name |
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| address⟦expression⟧ | address ⟦intLiteral:expression → intValue:int⟧ =   error address ⟦floatLiteral:expression → floatValue:float⟧ =   error address ⟦charLiteral:expression → name:string⟧ =   error address ⟦arrayAccess:expression → expr1:expression expr2:expression⟧=   address[[expr1]]  value[[expr2]]  <pushi>arrayAccess.type.size  <muli>  <addi>  address ⟦fieldAccess:expression → expr:expression string⟧ =   address[[expr]]  <pushi>fieldAccess.attrDefinition.address  <addi>  address ⟦not:expression → expression⟧ =   error address ⟦logic:expression → left:expression operator:string right:expression⟧ =   error address ⟦arithmetic:expression → left:expression operator:string right:expression⟧ =   error address ⟦variable:expression → name:string⟧ =  if(variable.varDefinition.scope = 1){  <push> variable.varDefinition.address  } else {  <push bp>  <push>variable.varDefinition.address  <addi>  }  address ⟦cast:expression → type expression⟧ =   error address ⟦functionCallExpression:expression → name:string expression\*⟧ = |