**Gramática**

**S ::= Program**

1. **Program** ::= **Decl Program'**
2. **Program'** ::= **Program**
3. **Program'** ::= ε
4. **Decl** ::= **Decl' Decl**
5. **Decl'** ::= **VariableDecl**
6. **Decl'** ::= **FunctionDecl**
7. **Decl'** ::= **ConstDecl**
8. **Decl'** ::= **ClassDecl**
9. **Decl'** ::= I**nterfaceDecl**
10. **VariableDecl** ::= **VariableVariableDecl**
11. **VariableDecl** ::= **Variable**
12. **VariableDecl** ::= ε
13. **Variable** ::= **TypeA** ident
14. **TypeA** ::= **Type** **keys**
15. **keys** ::= []
16. **keys** := ε
17. **Type** ::= int
18. **Type** ::= double
19. **Type** ::= bool
20. **Type** ::= string
21. **Type** ::= ident
22. **FunctionDecl** ::= **FunctionDecl'** ident (**Formals**) **stmtBlock**
23. **FunctionDecl**' ::= **Type**
24. **FunctionDecl`:=**  void
25. **ConstDecl** ::= Static **ConstType** ident **ConstDecl**
26. **ConstDecl** ::= ε
27. **ConstDecl** ::= Static **ConstType** ident
28. **ConstType** ::= int
29. **ConstType** ::= double
30. **ConstType** ::= bool
31. **ConstType** ::= string
32. **ClassDecl** ::= class ident **extendsA** **implementA** {**Field**}
33. **extendsA** ::= extends **id**
34. **extendsA** ::= ε
35. **implementA** ::= implement **id**,
36. **implementA** ::= ε
37. **id** ::= ident **id**
38. **id** ::= ident
39. **Field** ::= **VariableDecl** **Field'**
40. **Field** ::= **FunctionDeclField'**
41. **Field** ::= **ConstDeclField'**
42. **Field** ::= ε
43. **Field'** ::= **Field**
44. **InterfaceDecl** ::= Interface ident {**Prototype**}
45. **Prototype** ::= **Prot** ident (**Formals**); **Prototype**
46. **Prototype** ::= ε
47. **Prot** ::= **Type**
48. **Prot** ::= Void
49. **Formals** ::= **Variable**, **Formals**
50. **Formals** ::= **Variable**
51. **StmtBlock** ::= {**VariableDecl ConstDecl** **Stmt**}
52. **Stmt** ::= **Expr**;
53. **Stmt** ::= I**fStmt**
54. **Stmt** ::= **WhileStmt**
55. **Stmt** ::= **ForStmt**
56. **Stmt** ::= **BreakStmt**
57. **Stmt** ::= **ReturnStmt**
58. **Stmt** ::= **PrintStmt**
59. **Stmt** ::= **StmtBlock**
60. **Stmt** ::= ε
61. **IfStmt** ::= if (**Expr**) **Stmt** **IfStmt'**
62. **IfStmt'** ::= else **stmt**
63. **IfStmt'** ::= ε
64. **WhileStmt** ::= while(**Expr**) **Stmt**
65. **ForStmt** ::= For(**Expr**; **Expr**; **Expr**) **Stmt**
66. **ReturnStmt** ::= return **Expr**:
67. **BreakStmt** ::= break;
68. **PrintStmt** ::= System.out.println(**Expr**);
69. **Expr** ::= **LValue** = **ExprExpr'**
70. **Expr** ::= **ConstantExpr'**
71. **Expr** ::= **LValueExpr'**
72. **Expr** ::= this**Expr'**
73. **Expr** ::= (**Expr'Expr**)
74. **Expr** ::= New(ident)
75. **Expr** ::= **E Expr'**
76. **E** ::= **TE'**
77. **E'** ::= /**TE'**
78. **E'** ::= -**TE'**
79. **E'** ::= ε
80. **T** ::= **FT'**
81. **T'** ::= %**FT'**
82. **T'** ::= >**FT'**
83. **T'** ::= ε
84. **F** ::= **GF'**
85. **F'** ::= >=**GF'**
86. **F'** ::= !=**GF'**
87. **F'** ::= ε
88. **G** ::= !**G**
89. **G** ::= ||**G**
90. **G** ::= -**G**
91. **G** ::= **LValue**
92. **Expr'** ::= **Expr**
93. **Expr'** ::= ε
94. **LValue** ::= ident
95. **LValue** ::= **Expr**.ident
96. **Constant** ::= int**Constant**
97. **Constant** ::= double**Constant**
98. **Constant** ::= boolean**Constant**
99. **Constant** ::= string**Constant**
100. **Constant** ::= null