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| --- | --- |
| Non-Terminal Symbol | First Set |
| <program> | Lead, λ, Let, Array, Object, Var, Task |
| <global> | λ, Let, Array, Object, Var, Task |
| <datatype> | Int, Double, Char, String, Boolean |
| <let\_global> | Let |
| <values> | intlit, doublelit, stringlit, charlit, boollit |
| <vardec> | Var |
| <vardtype> | Int, Double, Char, String, Boolean |
| <varinitINT> | is, λ |
| <varinitDOUBLE> | is, λ |
| <varinitCHAR> | is, λ |
| <varinitSTRING> | is, λ |
| <varinitBOOLEAN> | is, λ |
| <vartailINT> | ;, λ |
| <vartailDOUBLE> | ;, λ |
| <vartailCHAR> | ;, λ |
| <vartailSTRING> | ;, λ |
| <vartailBOOLEAN> | ;, λ |
| <valueCHAR> | charlit, id |
| <valueSTRING> | stringlit, id |
| <valueBOOLEAN> | boollit, id |
| <id\_tail> | (, λ, @, [ |
| <ids\_tail> | λ, @, [ |
| <id\_choices> | @, [ |
| <task\_param> | λ, intlit, doublelit, stringlit, charlit, boollit, id |
| <task\_param\_tail> | ;, λ |
| <add\_min> | +, - |
| <index\_value> | id, intlit |
| <index\_tail> | [ |
| <elements> | id |
| <elements\_tail> | @, λ |
| <array> | Array |
| <size\_tail> | by, λ |
| <task> | Task |
| <return\_type> | Null, Int, Double, Char, String, Boolean |
| <parameters> | (, λ |
| <param\_tail> | ;, λ |
| <object> | Object |
| <object\_elem> | Var, Object |
| <object\_elem\_tail> | λ, Var, Object |
| <object\_var> | id, λ |
| <object\_var\_tail> | ;, λ |
| <statements> | λ, Object, Clear, Var, Read, Say, Option, Until, Do, For, Array, If, ++, --, id |
| <functions> | Object, Clear, Var, Read, Say, Option, Until, Do, For, Array, If, ++, --, id |
| <io\_statement> | Read, Say |
| <output\_statement> | stringlit, @, [ |
| <concat> | ,, λ |
| <pre\_incdec> | ++, -- |
| <option> | Option |
| <optionINT> | intlit |
| <optionCHAR> | charlit |
| <optionSTRING> | stringlit |
| <stateINT> | State, λ |
| <stateCHAR> | State, λ |
| <stateSTRING> | State, λ |
| <default> | Default, λ |
| <conditions> | (, id, intlit, doublelit, stringlit, charlit, boollit, !, λ |
| <condition\_choices> | id, intlit, doublelit, stringlit, charlit, boollit |
| <condition\_ids> | (, @, [ |
| <logOp\_tail> | λ, &&, || |
| <logOp\_choices> | (, boollit, !, λ |
| <relOp> | ==, !=, >, >=, <, <= |
| <logOp> | &&, || |
| <negate> | !, λ |
| <IfOtherwise> | If |
| <or> | Or, λ |
| <otherwise> | Otherwise, λ |
| <cond\_loop> | λ, Object, Clear, Var, Read, Say, Option, Until, Do, For, Array, If, ++, --, id |
| <control> | Skip, Stop, λ |
| <loopstate> | Until, Do, For |
| <initialize> | id, λ |
| <init\_choices> | intlit, id |
| <cond> | λ, intlit, id |
| <incdecvar> | id, ++, -- |
| <id\_stmt> | id |
| <id\_stmt\_tail> | =, (, λ, @, [ |
| <initvalues> | charlit, stringlit, boollit, (, intlit, doublelit, id, ++, -- |
| <mathopINT> | (, intlit, id, ++, -- |
| <mathopDOUBLE> | (, doublelit, id, ++, -- |
| <mathopNUM> | (, intlit, doublelit, id, ++, -- |
| <intvalue> | intlit, id, ++, -- |
| <doublevalue> | doublelit, id, ++, -- |
| <numvalue> | intlit, doublelit, id, ++, -- |
| <exprID> | id, ++, -- |
| <mathopINT\_tail> | λ, +, -, \*, /, % |
| <mathopDOUBLE\_tail> | λ, +, -, \*, /, % |
| <mathopNUM\_tail> | λ, +, -, \*, /, % |
| <operators> | +, -, \*, /, % |
| <incdec> | ++, -- |
| <incdec\_null> | λ, ++, -- |
| <taskdef> | Task, λ |
| <return\_id> | Int, Double, Char, String, Boolean, Null |
| <taskbody> | Start |
| <taskbodytail> | ., λ, Object, Clear, Var, Read, Say, Option, Until, Do, For, Array, If, ++, --, id |
| <returnINT> | intlit, id |
| <returnDOUBLE> | doublelit, id |
| <returnCHAR> | charlit, id |
| <returnSTRING> | stringlit, id |
| <returnBOOLEAN> | boollit, id |
| <returntail> | (, λ, id |
| <global\_choice> | Let, Array, Object, Var, Task |
| <value> | intlit, doublelit, stringlit, charlit, boollit, id |
| <index> | id, intlit |
| <indexop> | +, - |
| <option\_choices> | intlit, stringlit, charlit |
| <StartProgram> | Lead, λ, Let, Array, Object, Var, Task |