**First Set**

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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, id |
|  | <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\_tail> | 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 |
|  | <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 |
|  | <taskbodytail> | λ, Object, Clear, Var, Read, Say, Option, Until, Do, For, Array, If, ++, --, id |
|  | <StartProgram> | Lead, λ, Let, Array, Object, Var, Task |