***First Set***

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| --- | --- |
| Non-Terminal Symbol | First Set |
| <program> | Lead, λ, Let, Var, Task, Array, Object |
| <global> | λ, Let, Var, Task, Array, Object |
| <dtype> | Int, Double, Char, String, Boolean |
| <object> | Object |
| <objdec\_choice> | λ, Object, Var |
| <var> | Var |
| <objvar> | Object |
| <varname> | id, λ |
| <varnames> | ;, λ |
| <task> | Task |
| <return> | Null, Int, Double, Char, String, Boolean |
| <tparam> | (, λ |
| <tparams> | ;, λ |
| <array> | Array |
| <size> | intlit |
| <sizes> | by, λ |
| <varlet> | Let, Var |
| <varINT> | Int |
| <initINT> | is, λ |
| <varDOUBLE> | Double |
| <initDOUBLE> | is, λ |
| <varCHAR> | Char |
| <initCHAR> | is, λ |
| <varSTRING> | String |
| <initSTRING> | is, λ |
| <varBOOLEAN> | Boolean |
| <initBOOLEAN> | is, λ |
| <ids1> | ;, λ |
| <ids2> | ;, λ |
| <ids3> | ;, λ |
| <ids4> | ;, λ |
| <ids5> | ;, λ |
| <ids1\_tail> | is |
| <ids2\_tail> | is |
| <ids3\_tail> | is |
| <ids4\_tail> | is |
| <ids5\_tail> | is |
| <value1> | (, intlit, <numelement> |
| <value2> | (, doublelit, <numelement> |
| <value3> | charlit |
| <value4> | stringlit |
| <value5> | boollit |
| <numvalue> | intlit, <numelement> |
| <Operations1> | λ, +, -, \*, /, % |
| <OpInt> | (, intlit, <numelement> |
| <Op1> | λ, +, -, \*, /, % |
| <doublevalue> | doublelit, <numelement> |
| <Operations2> | λ, +, -, \*, /, % |
| <OpDouble> | (, doublelit, <numelement> |
| <Op2> | λ, +, -, \*, /, % |
| <mathOp> | +, -, \*, /, % |
| <incdec> | ++, -- |
| <relop1> | ==, !=, >, <, >=, <= |
| <logop1> | &&, || |
| <logop2> | !, λ |
| <statements> | λ, Var, Clear, id, Int, Char, Boolean, Double, String, ++, --, Object, Until, Do, For, Array, If, Read, Say, Option |
| <functions> | Var, Clear, id, Int, Char, Boolean, Double, String, ++, --, Object, Until, Do, For, Array, If, Read, Say, Option |
| <id\_choices> | [ |
| <subelement\_choice> | =, ++, -- |
| <varinitINT> | Int |
| <varinitDOUBLE> | Double |
| <varinitCHAR> | Char |
| <varinitSTRING> | String |
| <varinitBOOLEAN> | Boolean |
| <INT> | intlit, id, (, ++, -- |
| <intchoices> | λ, @, ++, --, ( |
| <intchoice2> | ( |
| <incdec\_null> | λ, ++, -- |
| <DOUBLE> | doublelit, id, (, ++, -- |
| <doublechoices> | λ, @, ++, --, ( |
| <doublechoice2> | ( |
| <task\_id> | id |
| <param> | λ, intlit, doublelit, charlit, stringlit, boollit, id |
| <params> | ;, λ |
| <value> | intlit, doublelit, charlit, stringlit, boollit, id |
| <input> | Read |
| <output> | Say |
| <input\_statement> | stringlit, id |
| <concat> | ,, λ |
| <concat\_value> | stringlit, id |
| <incdecvar> | id, ++, -- |
| <subelement> | @, λ |
| <input\_id> | id |
| <multi> | [, λ |
| <index> | intlit, id, λ |
| <IfOtherwise> | If |
| <or> | Or, λ |
| <otherwise> | Otherwise, λ |
| <cond\_loop> | λ, Var, Clear, id, Int, Char, Boolean, Double, String, ++, --, Object, Until, Do, For, Array, If, Read, Say, Option |
| <control> | Skip, Stop, λ |
| <multiconds> | ( |
| <idschoice> | intlit, doublelit, charlit, stringlit, !, λ, id, boollit |
| <idschoice1> | id, boollit |
| <idsbody> | (, λ, @ |
| <condsTail> | λ, &&, ||, >=, <=, <, >, ==, != |
| <logOps> | λ, &&, || |
| <relopNum> | >=, <=, <, > |
| <relopText> | ==, != |
| <numval> | intlit, doublelit, id |
| <option> | Option |
| <optiontail1> | intlit |
| <optiontail2> | charlit |
| <optiontail3> | stringlit |
| <state1> | State, λ |
| <state2> | State, λ |
| <state3> | State, λ |
| <default> | Default, λ |
| <loopstate> | Until, Do, For |
| <initialize> | id, λ |
| <cond> | id, λ |
| <taskdef> | Task, λ |
| <returntype> | Int, Double, Char, String, Boolean, Null |
| <taskbody> | Start |
| <taskbodytail> | ., λ, Var, Clear, id, Int, Char, Boolean, Double, String, ++, --, Object, Until, Do, For, Array, If, Read, Say, Option |
| <returnINT> | intlit, id |
| <returnDOUBLE> | doublelit, id |
| <returnCHAR> | charlit, id |
| <returnSTRING> | stringlit, id |
| <returnBOOLEAN> | boollit, id |
| <returntail> | (, λ, @ |
| <global\_choice> | Let, Var, Task, Array, Object |
| <vardec> | Int, Char, Boolean, Double, String |
| <varinit> | Int, Char, Boolean, Double, String |
| <intchoice1> | @, λ, ++, -- |
| <doublechoice1> | @, λ, ++, -- |
| <CHAR> | charlit, id |
| <STRING> | stringlit, id |
| <BOOLEAN> | boollit, id |
| <io\_statement> | Read, Say |
| <relOps> | >=, <=, <, >, ==, != |
| <ids> | id, !, λ, boollit |
| <ids\_null> | boollit, id |
| <optiontails> | intlit, stringlit, charlit |
| <conditionschoice> | intlit, doublelit, charlit, stringlit, !, λ, id, boollit, ( |
| <conditions> | intlit, doublelit, charlit, stringlit, !, λ, id, boollit, ( |
| <StartProgram> | Lead, λ, Let, Var, Task, Array, Object |
| <body> | λ, Var, Clear, id, Int, Char, Boolean, Double, String, ++, --, Object, Until, Do, For, Array, If, Read, Say, Option |