First Set

|  |  |
| --- | --- |
| <program> | Task, ., λ, Var, Let, Array, Object |
| <global> | ., λ, Var, Let, Task, Array, Object |
| <global\_choice> | λ, Var, Let, Task, Array, Object |
| <object> | λ, Object |
| <object1> | Object |
| <objdec\_choice> | λ, Object, Var |
| <dtype> | Int, Double, Char, String, Boolean |
| <var> | Var |
| <objvar> | Object |
| <varname> | id, λ |
| <varnames> | ;, λ |
| <task> | Task |
| <return> | Null, Int, Double, Char, String, Boolean |
| <tparam> | (, λ |
| <tparams> | ;, λ |
| <array> | Array |
| <type> | Var, Let |
| <init> | as, is, λ, ; |
| <ids1> | ;, λ |
| <ids2> | ;, λ |
| <ids3> | ;, λ |
| <ids4> | ;, λ |
| <ids5> | ;, λ |
| <size> | Numlit |
| <sizes> | by, λ |
| <value1> | is, λ |
| <value2> | is, λ |
| <value3> | is, λ |
| <value4> | is, λ |
| <value5> | is, λ |
| <tvalue1> | (, intlit, id, ++, -- |
| <tvalue2> | (, Doublelit, id, ++, -- |
| <tvalue3> | charlit |
| <tvalue4> | stringlit |
| <tvalue5> | boollit |
| <numvalue> | intlit, id, ++, -- |
| <Operations1> | λ, +, -, \*, /, % |
| <Op1> | λ, +, -, \*, /, % |
| <doublevalue> | Doublelit, id, ++, -- |
| <Operations2> | λ, +, -, \*, /, % |
| <Op2> | λ, +, -, \*, /, % |
| <mathOp> | +, -, \*, /, % |
| <incdec> | ++, -- |
| <relop1> | ==, !=, >, < |
| <relop2> | ==, != |
| <logop1> | &&, || |
| <logop2> | !, λ |
| <equal> | =, λ |
| <statements> | ., λ, Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For |
| <functions> | Clear, λ, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For |
| <vardec> | Var |
| <vardec\_init> | as, is, λ, ; |
| <varinit> | id |
| <input> | Read |
| <output> | Say |
| <input\_statement> | stringlit, id |
| <concat> | ,, λ |
| <concat\_value> | stringlit, id |
| <task\_id> | id |
| <param> | λ, intlit, doublelit, charlit, stringlit, boollit, id |
| <params> | ;, λ |
| <tvalue> | intlit, doublelit, charlit, stringlit, boollit, id |
| <incdecvar> | id, ++, -- |
| <element> | id |
| <subelement> | @, λ |
| <input\_id> | id |
| <arrayinit> | id |
| <multi> | [, λ |
| <index> | numlit, id |
| <cond\_loop> | ., λ, Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For |
| <control> | Skip, Stop, λ |
| <condstate> | If |
| <if2> | Or, λ |
| <if3> | Otherwise, λ |
| <conds> | (, boollit, id |
| <Ops> | λ, +, -, \*, /, % |
| <a\_null> | λ, ==, !=, >, < |
| <a1> | id, (, intlit, ++, --, charlit, doublelit, stringlit |
| <b> | λ, &&, || |
| <cvalue2> | boollit, !, λ |
| <option1> | Option |
| <option2> | Option |
| <option3> | Option |
| <state1> | State, λ |
| <state2> | State, λ |
| <state3> | State, λ |
| <default> | Default, λ |
| <loopstate> | Until, Do, For |
| <initialize> | id, λ |
| <cond> | id, λ |
| <inc\_dec> | λ, id, ++, -- |
| <taskdef> | λ, Task |
| <taskhead> | Task |
| <returntype> | Int, Double, Char, String, Null |
| <taskbody> | Start |
| <varlet> | Var, Let |
| <io\_statement> | Read, Say |
| <taskvar> | id |
| <objelement> | ++, --, id |
| <objinit> | id |
| <ids> | id, !, λ, intlit, doublelit, charlit, stringlit, boollit |
| <ids\_null> | boollit, id |
| <a> | ==, !=, >, < |
| <a2> | !, λ, boollit |
| <option> | Option |
| <varinits> | intlit, doublelit, charlit, stringlit, boollit, id |
| <conditions> | id, !, λ, intlit, doublelit, charlit, stringlit, boollit, ( |
| <conds\_choice> | id, !, λ, intlit, doublelit, charlit, stringlit, boollit |
| <Start> | Task, ., λ, Var, Let, Array, Object |
| <body> | ., λ, Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For |

Follow Set

|  |  |
| --- | --- |
| <program> | $, # |
| <global> | Task |
| <global\_choice> | . |
| <object> | . |
| <object1> | . |
| <objdec\_choice> | End |
| <dtype> | End, ;, id, ., ) |
| <var> | . |
| <objvar> | . |
| <varname> | . |
| <varnames> | . |
| <task> | . |
| <return> | . |
| <tparam> | as |
| <tparams> | ) |
| <array> | . |
| <varlet> | . |
| <type> | id |
| <init> | . |
| <ids1> | as |
| <ids2> | as |
| <ids3> | as |
| <ids4> | as |
| <ids5> | as |
| <size> | as |
| <sizes> | as |
| <value1> | ;, as |
| <value2> | ;, as |
| <value3> | ;, as |
| <value4> | ;, as |
| <value5> | ;, as |
| <tvalue1> | ), ;, as, &&, ||, ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <tvalue2> | ), ;, as, &&, ||, ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <tvalue3> | ;, as, &&, ||, ), ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <tvalue4> | ;, as, &&, ||, ), ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <tvalue5> | ==, !=, >, <, ;, as, &&, ||, ), ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <numvalue> | +, -, \*, /, %, ), ;, as, &&, ||, ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <Operations1> | ), ;, as, &&, ||, ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <Op1> | ), ;, as, &&, ||, ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <doublevalue> | +, -, \*, /, %, ), ;, as, &&, ||, ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <Operations2> | ), ;, as, &&, ||, ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <Op2> | ), ;, as, &&, ||, ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <mathOp> | (, Doublelit, id, ++, --, intlit |
| <incdec> | id, +, -, \*, /, %, ), ;, as, ., &&, ||, Clear, Var, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <relop1> | intlit, id, (, ++, --, charlit, Doublelit, stringlit |
| <relop2> | !, boollit |
| <logop1> | id, !, intlit, doublelit, charlit, stringlit, boollit, ( |
| <logop2> | boollit, id, ( |
| <equal> | intlit, id, (, ++, --, charlit, Doublelit, stringlit |
| <body> | End |
| <statements> | Stop, ., End |
| <functions> | . |
| <vardec> | . |
| <vardec\_init> | . |
| <varinit> | . |
| <varinits> | . |
| <io\_statement> | . |
| <input> | . |
| <output> | . |
| <input\_statement> | . |
| <concat> | . |
| <concat\_value> | ,, . |
| <task\_id> | +, -, \*, /, %, ==, !=, >, <, &&, ||, ), ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <taskvar> | . |
| <param> | ) |
| <params> | ) |
| <tvalue> | ==, !=, >, <, ;, ), . |
| <incdecvar> | ), ., +, -, \*, /, %, ;, as, &&, ||, Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <objelement> | +, -, \*, /, %, ), ;, as, &&, ||, ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <element> | =, ++, --, +, -, \*, /, %, ), ;, as, &&, ||, ., Clear, Var, id, Array, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <subelement> | Start, ==, !=, >, <, ,, =, ++, --, +, -, \*, /, %, ), ;, as, &&, ||, ., Clear, Var, id, Array, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <input\_id> | Start, ==, !=, >, <, ,, &&, ||, ;, ), ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <objinit> | . |
| <arrayinit> | . |
| <multi> | = |
| <index> | ] |
| <cond\_loop> | Loop, Until, Skip, Stop, Or, (, id, !, intlit, doublelit, charlit, stringlit, boollit, EndIf, Otherwise |
| <control> | ., EndIf |
| <condstate> | . |
| <if2> | (, Otherwise |
| <if3> | EndIf |
| <conditions> | ), ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <conds> | ), ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <conds\_choice> | ) |
| <ids> | &&, ||, ), ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <ids\_null> | ==, !=, >, <, &&, ||, ), ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <Ops> | ) |
| <a\_null> | &&, ||, ), ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <a> | &&, ||, ), ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <a1> | &&, ||, ), ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <a2> | &&, ||, ), ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <b> | ), ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <cvalue2> | &&, ||, ), ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| <option> | . |
| <option1> | . |
| <option2> | . |
| <option3> | . |
| <state1> | Start, Default |
| <state2> | Start, Default |
| <state3> | Start, Default |
| <default> | End |
| <loopstate> | . |
| <initialize> | ; |
| <cond> | ; |
| <inc\_dec> | ) |
| <taskdef> | $, # |
| <taskhead> | Int, Double, Char, String, Null |
| <returntype> | Int, Double, Char, String, Boolean |
| <taskbody> | . |
| <Start> |  |

Predict Table

|  |  |  |  |
| --- | --- | --- | --- |
| **#** | **Predict Set** |  |  |
| 1 | **First** (<global> Task Lead : Start <body> End . <taskdef>) | **First** (<global>) | ., Var, Let, Task, Array, Object |
| 2 | **First** (<global\_choice> . <global>) | **First** (<global\_choice>) | Var, Let, Task, Array, Object, . |
| 3 | (**First** (λ) – λ) **∪ Follow** (<global>) | **Follow** (<global>) | Task |
| 4 | **First** (<varlet>) | **First** (<varlet>) | Var, Let |
| 5 | **First** (<array>) | **First** (<array>) | Array |
| 6 | **First** (<task>) | **First** (<task>) | Task |
| 7 | **First** (<object>) | **First** (<object>) | Object |
| 8 | (**First** (λ) – λ) **∪ Follow** (<global\_choice>) | **Follow** (<global\_choice>) | . |
| 9 | **First** (<object1>) | **First** (<object1>) | Object |
| 10 | (**First** (λ) – λ) **∪ Follow** (<object>) | **Follow** (<object>) | . |
| 11 | **First** (Object id Start Var id as <dtype> . <objdec\_choice> End <varname>) | **First** (Object) | Object |
| 12 | **First** (<objvar> . <objdec\_choice>) | **First** (<objvar>) | Object |
| 13 | **First** (<var> . <objdec\_choice>) | **First** (<var>) | Var |
| 14 | (**First** (λ) – λ) **∪ Follow** (<objdec\_choice>) | **Follow** (<objdec\_choice>) | End |
| 15 | **First** (Int) | **First** (Int) | Int |
| 16 | **First** (Double) | **First** (Double) | Double |
| 17 | **First** (Char) | **First** (Char) | Char |
| 18 | **First** (String) | **First** (String) | String |
| 19 | **First** (Boolean) | **First** (Boolean) | Boolean |
| 20 | **First** (Var id as <dtype>) | **First** (Var) | Var |
| 21 | **First** (Object id id) | **First** (Object) | Object |
| 22 | **First** (id <varnames>) | **First** (id) | id |
| 23 | (**First** (λ) – λ) **∪ Follow** (<varname>) | **Follow** (<varname>) | . |
| 24 | **First** (; <varname>) | **First** (;) | ; |
| 25 | (**First** (λ) – λ) **∪ Follow** (<varnames>) | **Follow** (<varname>) | . |
| 26 | **First** (Task id <tparam> as <return>) | **First** (Task) | Task |
| 27 | **First** (Null) | **First** (Null) | Null |
| 28 | **First** (<dtype>) | **First** (<dtype>) | Int, Double, Char, String, Boolean |
| 29 | **First** ( ( Var id as <dtype> <tparams> ) ) | **First** ( ( ) | ( |
| 30 | (**First** (λ) – λ) **∪ Follow** (<tparam>) | **Follow** (<tparam>) | as |
| 31 | **First** (<tparams> ; Var id as <dtype> <tparams>) | **First** (<tparams>) | ; |
| 32 | (**First** (λ) – λ) **∪ Follow** (<tparams>) | **Follow** (<tparams>) | ) |
| 33 | **First** (Array id of <size> as <dtype>) | **First** (Array) | Array |
| 34 | **First** (<type> id <init>) | **First** (<type>) | Var, Let |
| 35 | **First** (Var) | **First** (Var) | Var |
| 36 | **First** (Let) | **First** (Let) | Let |
| 37 | **First** (<value1> <ids1> as Int) | **First** (<value1>) | is, ;, as |
| 38 | **First** (<value2> <ids2> as Double) | **First** (<value2>) | is, ;, as |
| 39 | **First** (<value3> <ids3> as Char) | **First** (<value3>) | is, ;, as |
| 40 | **First** (<value4> <ids4> as String) | **First** (<value4>) | is, ;, as |
| 41 | **First** (<value5> <ids5> as Boolean) | **First** (<value5>) | is, ;, as |
| 42 | **First** (; id <value1> <ids1>) | **First** (;) | ; |
| 43 | (**First** (λ) – λ) **∪ Follow** (<ids1>) | **Follow** (<ids1>) | as |
| 44 | **First** (; id <value2> <ids2>) | **First** (;) | ; |
| 45 | (**First** (λ) – λ) **∪ Follow** (<ids2>) | **Follow** (<ids2>) | as |
| 46 | **First** (; id <value3> <ids3>) | **First** (<value1>) | ; |
| 47 | (**First** (λ) – λ) **∪ Follow** (<ids3>) | **Follow** (<ids3>) | as |
| 48 | **First** ( ; id <value4> <ids4>) | **First** (<value1>) | ; |
| 49 | (**First** (λ) – λ) **∪ Follow** (<ids4>) | **Follow** (<ids4>) | as |
| 50 | **First** ( ; id <value5> <ids5>) | **First** (<value1>) | ; |
| 51 | (**First** (λ) – λ) **∪ Follow** (<ids5>) | **Follow** (<ids5>) | as |
| 52 | **First** (numlit <sizes>) | **First** (numlit) | numlit |
| 53 | **First** (by numlit) | **First** (by) | by |
| 54 | (**First** (λ) – λ) **∪ Follow** (<sizes>) | **Follow** (<sizes>) | as |
| 55 | **First** (is <tvalue1>) | **First** (is) | is |
| 56 | (**First** (λ) – λ) **∪ Follow** (<value1>) | **Follow** (<value1>) | ;, as |
| 57 | **First** (is <tvalue2>) | **First** (is) | is |
| 58 | (**First** (λ) – λ) **∪ Follow** (<value2>) | **Follow** (<value2>) | ;, as |
| 59 | **First** (is <tvalue3>) | **First** (is) | is |
| 60 | (**First** (λ) – λ) **∪ Follow** (<value3>) | **Follow** (<value3>) | ;, as |
| 61 | **First** (is <tvalue4>) | **First** (is) | is |
| 62 | (**First** (λ) – λ) **∪ Follow** (<value4>) | **Follow** (<value4>) | ;, as |
| 63 | **First** (is <tvalue5>) | **First** (is) | is |
| 64 | (**First** (λ) – λ) **∪ Follow** (<value5>) | **Follow** (<value5>) | ;, as |
| 65 | **First** (<numvalue> <Operations1>) | **First** (<numvalue>) | intlit, id, ++, -- |
| 66 | **First** ( ( <tvalue1> ) <Op1> ) | **First** (<tvalue1>) | ( |
| 67 | **First** (<doublevalue> <Operations2>) | **First** (<doublevalue>) | doublelit, id, ++, -- |
| 68 | **First** ( ( <tvalue2> ) <Op2>) | **First** (<tvalue2>) | ( |
| 69 | **First** (charlit) | **First** (charlit) | charlit |
| 70 | **First** (stringlit) | **First** (stringlit) | stringlit |
| 71 | **First** (boollit) | **First** (boollit) | boollit |
| 72 | **First** (intlit) | **First** (intlit) | intlit |
| 73 | **First** (<incdecvar>) | **First** (<incdecvar>) | id, ++, -- |
| 74 | **First** (<objelement>) | **First** (<objelement>) | ++, --, id |
| 75 | **First** (<mathOp> <numvalue> <Operations1>) | **First** (<mathOp>) | +, -, \*, /, % |
| 76 | (**First** (λ) – λ) **∪ Follow** (<Operations1>) | **Follow** (<Operations1>) | ), ;, as, &&, ||, ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| 77 | **First** (<Operations1>) | **First** (<Operations1>) | +, -, \*, /, % |
| 78 | **First** (<mathOp> ( <tvalue1> ) ) | **First** (<mathOp>) | +, -, \*, /, % |
| 79 | (**First** (λ) – λ) **∪ Follow** (<Op1>) | **Follow** (<Op1>) | ), ;, as, &&, ||, ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| 80 | **First** (doublelit) | **First** (doublelit) | doublelit |
| 81 | **First** (<incdecvar>) | **First** (<incdecvar>) | id, ++, -- |
| 82 | **First** (<objelement>) | **First** (<objelement>) | ++, --, id |
| 83 | **First** (<mathOp> <doublevalue> <Operations2>) | **First** (<mathOp>) | +, -, \*, /, % |
| 84 | (**First** (λ) – λ) **∪ Follow** (<Operations2>) | **Follow** (<Operations2>) | ), ;, as, &&, ||, ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| 85 | **First** (<Operations2>) | **First** (<Operations2>) | +, -, \*, /, % |
| 86 | **First** (<mathOp> ( <tvalue2> ) ) | **First** (<mathOp>) | +, -, \*, /, % |
| 87 | (**First** (λ) – λ) **∪ Follow** (<Op2>) | **Follow** (<Op2>) | ), ;, as, &&, ||, ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| 88 | **First** (+) | **First** (+) | + |
| 89 | **First** (-) | **First** (-) | - |
| 90 | **First** (\*) | **First** (\*) | \* |
| 91 | **First** (/) | **First** (/) | / |
| 92 | **First** (%) | **First**(%) | % |
| 93 | **First** (++) | **First** (++) | ++ |
| 94 | **First** (--) | **First** (--) | -- |
| 95 | **First** (==) | **First** (==) | == |
| 96 | **First** (!=) | **First** (!=) | != |
| 97 | **First** (> <equal>) | **First** (>) | > |
| 98 | **First** (< <equal>) | **First** (<) | < |
| 99 | **First** (==) | **First** (==) | == |
| 100 | **First** (!=) | **First** (!=) | != |
| 101 | **First** (&&) | **First** (&&) | && |
| 102 | **First** (||) | **First** (||) | || |
| 103 | **First** (!) | **First** (!) | ! |
| 104 | (**First** (λ) – λ) **∪ Follow** (<logop2>) | **Follow** (<logop2>) | boollit, id, ( |
| 105 | **First** (=) | **First** (=) | = |
| 106 | (**First** (λ) – λ) **∪ Follow** (<equal>) | **Follow** (<equal>) | intlit, id, (, ++, --, charlit, Doublelit, stringlit |
| 107 | **First** (<statements>) | **First** (<statements>) | ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For |
| 108 | **First** (<functions> . <statements>) | **First** (<value1>) | Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, . |
| 109 | (**First** (λ) – λ) **∪ Follow** (<statements>) | **Follow** (<statements>) | Stop, ., End |
| 110 | **First** (<vardec>) | **First** (<vardec>) | Var |
| 111 | **First** (<varinit>) | **First** (<varinit>) | id |
| 112 | **First** (<incdecvar>) | **First** (<incdecvar>) | id, ++, -- |
| 113 | **First** (<array>) | **First** (<array>) | Array |
| 114 | **First** (Clear) | **First** (Clear) | Clear |
| 115 | **First** (<arrayinit>) | **First** (<arrayinit>) | id |
| 116 | **First** (<io\_statement>) | **First** (<io\_statement>) | Read, Say |
| 117 | **First** (<taskvar>) | **First** (<taskvar>) | id |
| 118 | **First** (<objvar>) | **First** (<objvar>) | Object |
| 119 | **First** (<objinit> | **First** (<objinit>) | id |
| 120 | **First** (<condstate>) | **First** (<condstate>) | If |
| 121 | **First** (<loopstate>) | **First** (<loopstate>) | Until, Do, For |
| 122 | **First** (<option>) | **First** (<option>) | Option |
| 123 | (**First** (λ) – λ) **∪ Follow** (<functions>) | **Follow** (<functions>) | . |
| 124 | **First** (Var id <vardec\_init>) | **First** (<vardec\_init>) | Var |
| 125 | **First** (<init>) | **First** (<init>) | as, is, ; |
| 126 | **First** (as <dtype>) | **First** (as) | as |
| 127 | **First** (id = <varinits>) | **First** (id) | id |
| 128 | **First** (<tvalue>) | **First** (<tvalue>) | intlit, doublelit, charlit, stringlit, boollit, id |
| 129 | **First** (<task\_id>) | **First** (<task\_id>) | id |
| 130 | **First** (<input>) | **First** (<input>) | Read |
| 131 | **First** (<output>) | **First** (<output>) | Say |
| 132 | **First** (Read id) | **First** (Read) | Read |
| 133 | **First** (Say <input\_statement>) | **First** (Say) | Say |
| 134 | **First** (stringlit <concat>) | **First** (stringlit) | stringlit |
| 135 | **First** (<input\_id> <concat>) | **First** (<input\_id>) | id |
| 136 | **First** (, <concat\_value> <concat>) | **First** (,) | , |
| 137 | (**First** (λ) – λ) **∪ Follow** (<concat>) | **Follow** (<concat>) | . |
| 138 | **First** (stringlit) | **First** (stringlit) | stringlit |
| 139 | **First** (<input\_id>) | **First** (<input\_id>) | id |
| 140 | **First** (id ( <param> ) ) | **First** (id) | id |
| 141 | **First** (<task\_id>) | **First** (<task\_id>) | id |
| 142 | **First** (<tvalue> <params>) | **First** (<tvalue>) | intlit, doublelit, charlit, stringlit, boollit, id |
| 143 | (**First** (λ) – λ) **∪ Follow** (<param>) | **Follow** (<param>) | ) |
| 144 | **First** (; <param>) | **First** (;) | ; |
| 145 | (**First** (λ) – λ) **∪ Follow** (<params>) | **Follow** (<params>) | ) |
| 146 | **First** (intlit) | **First** (intlit) | intlit |
| 147 | **First** (doublelit) | **First** (doublelit) | doublelit |
| 148 | **First** (charlit) | **First** (charlit) | charlit |
| 149 | **First** (stringlit) | **First** (stringlit) | stringlit |
| 150 | **First** (boollit) | **First** (boollit) | boollit |
| 151 | **First** (<input\_id>) | **First** (<input\_id>) | id |
| 152 | **First** (<incdec> id) | **First** (<incdec>) | ++, -- |
| 153 | **First** (id <incdec>) | **First** (id) | id |
| 154 | **First** (<incdec> <element>) | **First** (<incdec>) | ++, -- |
| 155 | **First** (<element> <incdec>) | **First** (<element>) | id |
| 156 | **First** (id @ id <subelement>) | **First** (id) | id |
| 157 | **First** (@ id <subelement>) | **First** (@) | @ |
| 158 | (**First** (λ) – λ) **∪ Follow** (<subelement>) | **Follow** (<subelement>) | Start, ==, !=, >, <, ,, =, ++, --, +, -, \*, /, %, ), ;, as, &&, ||, ., Clear, Var, id, Array, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| 159 | **First** (id <subelement>) | **First** (id) | id |
| 160 | **First** (<element> = <tvalue>) | **First** (<element>) | id |
| 161 | **First** (id [ <index> ] <multi> = <tvalue>) | **First** (id) | id |
| 162 | **First** ( [ <index> ] ) | **First** ([) | [ |
| 163 | (**First** (λ) – λ) **∪ Follow** (<multi>) | **Follow** (<multi>) | = |
| 164 | **First** (numlit) | **First** (numlit) | numlit |
| 165 | **First** (id) | **First** (id) | id |
| 166 | **First** (<functions> . <control> . <cond\_loop>) | **First** (<functions>) | Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, . |
| 167 | (**First** (λ) – λ) **∪ Follow** (<cond\_loop>) | **Follow** (<cond\_loop>) | Loop, Until, Skip, Stop, Or, (, id, !, intlit, doublelit, charlit, stringlit, boollit, EndIf, Otherwise |
| 168 | **First** (Skip) | **First** (Skip) | Skip |
| 169 | **First** (Stop) | **First** (Stop) | Stop |
| 170 | (**First** (λ) – λ) **∪ Follow** (<control>) | **Follow** (<control>) | ., EndIf |
| 171 | **First** (If <logop2> ( <conditions> ) <cond\_loop> <if2> <if3> EndIf) | **First** (If) | If |
| 172 | **First** (Or <conditions> <cond\_loop> <if2>) | **First** (Or) | Or |
| 173 | (**First** (λ) – λ) **∪ Follow** (<if2>) | **Follow** (<if2>) | (, Otherwise |
| 174 | **First** (Otherwise <cond\_loop> <control>) | **First** (Otherwise) | Otherwise |
| 175 | (**First** (λ) – λ) **∪ Follow** (<if3>) | **Follow** (<if3>) | EndIf |
| 176 | **First** (<ids> <b>) | **First** (<ids>) | id, !, intlit, doublelit, charlit, stringlit, boollit |
| 177 | **First** (<logop2> <conds>) | **First** (<logop2>) | !, (, boollit, id |
| 178 | **First** ( ( <conds\_choice> ) <b>) | **First** (<conds\_choice>) | ( |
| 179 | **First** (<input\_id>) | **First** (<input\_id>) | id |
| 180 | **First** (boollit) | **First** (boollit) | boollit |
| 181 | **First** (<task\_id>) | **First** (<task\_id>) | id |
| 182 | **First** (<ids>) | **First** (<ids>) | id, !, intlit, doublelit, charlit, stringlit, boollit |
| 183 | **First** (<task\_id> <Ops>) | **First** (<task\_id>) | id |
| 184 | **First** (<input\_id> <a\_null>) | **First** (<input\_id>) | id |
| 185 | **First** (<logop2> <ids\_null> <a\_null>) | **First** (<logop2>) | !, boollit, id |
| 186 | **First** (<tvalue> <a>) | **First** (<tvalue>) | intlit, doublelit, charlit, stringlit, boollit, id |
| 187 | **First** (<task\_id>) | **First** (<task\_id>) | id |
| 188 | **First** (<tvalue5>) | **First** (<tvalue5>) | boollit |
| 189 | **First** (<task\_id>) | **First** (<task\_id>) | id |
| 190 | **First** (<Op1>) | **First** (<Op1>) | +, -, \*, /, % |
| 191 | **First** (<Op2>) | **First** (<Op2>) | +, -, \*, /, % |
| 192 | (**First** (λ) – λ) **∪ Follow** (<Ops>) | **Follow** (<Ops>) | ) |
| 193 | **First** (<a>) | **First** (<a>) | ==, !=, >, < |
| 194 | (**First** (λ) – λ) **∪ Follow** (<a\_null>) | **Follow** (<a\_null>) | &&, ||, ), ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| 195 | **First** (<relop1> <a1>) | **First** (<relop1>) | ==, !=, >, < |
| 196 | **First** (<relop2> <a2>) | **First** (<relop2>) | ==, != |
| 197 | **First** (id) | **First** (id) | id |
| 198 | **First** (<tvalue1>) | **First** (<tvalue1>) | (, intlit, id, ++, -- |
| 199 | **First** (<tvalue2>) | **First** (<tvalue2>) | (, Doublelit, id, ++, -- |
| 200 | **First** (<tvalue3>) | **First** (<tvalue3>) | charlit |
| 201 | **First** (<tvalue4>) | **First** (<tvalue4>) | stringlit |
| 202 | **First** (<logop2> <tvalue5>) | **First** (<tvalue5>) | !, boollit |
| 203 | **First** (<cvalue2>) | **First** (<cvalue2>) | boollit, ! |
| 204 | **First** (<logop1> <conditions>) | **First** (<logop1>) | &&, || |
| 205 | (**First** (λ) – λ) **∪ Follow** (<b>) | **Follow** (<b>) | ), ., Clear, Var, id, Array, ++, --, Read, Say, Object, If, Option, Until, Do, For, (, Otherwise |
| 206 | **First** (<logop2> boollit) | **First** (<logop2>) | !, boollit |
| 207 | **First** (<option1>) | **First** (<option1>) | Option |
| 208 | **First** (<option2>) | **First** (<option2>) | Option |
| 209 | **First** (<option3>) | **First** (<option3>) | Option |
| 210 | **First** (Option <input\_id> Start State intlit : <statements> Stop . <state1> <default> End) | **First** (Option) | Option |
| 211 | **First** (Option <input\_id> Start State charlit : <statements> Stop . <state2> <default> End) | **First** (Option) | Option |
| 212 | **First** (Option <input\_id> Start State stringlit : <statements> Stop . <state3> <default> End) | **First** (Option) | Option |
| 213 | **First** (State intlit : <statements> Stop . <state1>) | **First** (State) | State |
| 214 | (**First** (λ) – λ) **∪ Follow** (<state1>) | **Follow** (<state1>) | Start, Default |
| 215 | **First** (State charlit : <statements> Stop . <state2>) | **First** (State) | State |
| 216 | (**First** (λ) – λ) **∪ Follow** (<state2>) | **Follow** (<state2>) | Start, Default |
| 217 | **First** (State stringlit : <statements> Stop . <state3>) | **First** (State) | State |
| 218 | (**First** (λ) – λ) **∪ Follow** (<state3>) | **Follow** (<state3>) | Start, Default |
| 219 | **First** (Default : <statements>) | **First** (Default) | Default |
| 220 | (**First** (λ) – λ) **∪ Follow** (<default>) | **Follow** (<default>) | End |
| 221 | **First** (Until ( <conditions> ) <cond\_loop> Loop) | **First** (Until) | Until |
| 222 | **First** (Do <cond\_loop> Until ( <conditions> ) ) | **First** (Do) | Do |
| 223 | **First** (For ( <initialize> ; <cond> ; <inc\_dec> ) <cond\_loop> Loop) | **First** (For) | For |
| 224 | **First** (id = intlit) | **First** (id) | id |
| 225 | (**First** (λ) – λ) **∪ Follow** (<initialize>) | **Follow** (<initialize>) | ; |
| 226 | **First** (id <relop1> intlit) | **First** (id) | id |
| 227 | (**First** (λ) – λ) **∪ Follow** (<cond>) | **Follow** (<cond>) | ; |
| 228 | **First** (<incdecvar>) | **First** (<incdecvar>) | id, ++, -- |
| 229 | (**First** (λ) – λ) **∪ Follow** (<inc\_dec>) | **Follow** (<inc\_dec>) | ) |
| 230 | **First** (<taskhead> <returntype> <dtype> End . <taskdef>) | **First** (<taskhead>) | Task |
| 231 | (**First** (λ) – λ) **∪ Follow** (<taskdef>) | **Follow** (<taskdef>) | $, # |
| 232 | **First** (Task id <tparam> as) | **First** (Task) | Task |
| 233 | **First** (Int <taskbody> . Response intlit .) | **First** (Int) | Int |
| 234 | **First** (Double <taskbody> . Response doublelit .) | **First** (Double) | Double |
| 235 | **First** (Char <taskbody> . Response charlit .) | **First** (Char) | Char |
| 236 | **First** (String <taskbody> . Response stringlit .) | **First** (String) | String |
| 237 | **First** (Null <taskbody> .) | **First** (Null) | Null |
| 238 | **First** (Start <statements>) | **First** (Start) | Start |
| 239 | **First** (<program> #) | **First** (<program>) | Task, ., Var, Let, Array, Object |