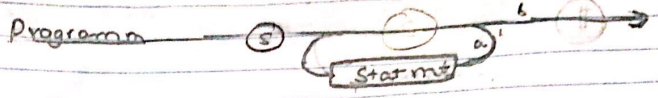
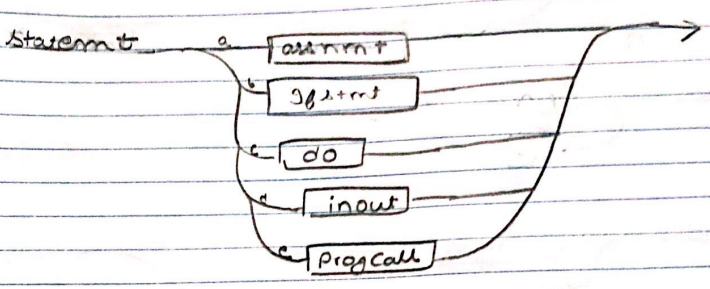
Assignment one Syntax Diagrams.

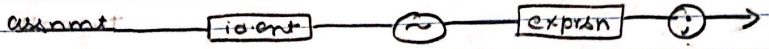
1)



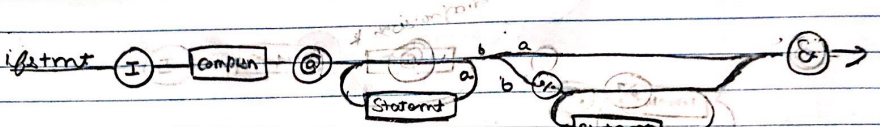
2)



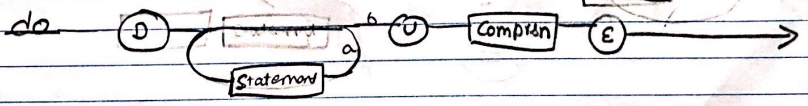
3)



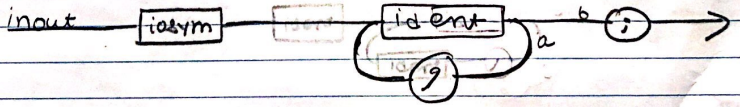
4)



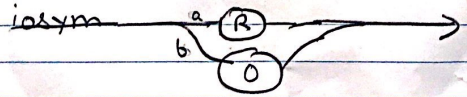
5)



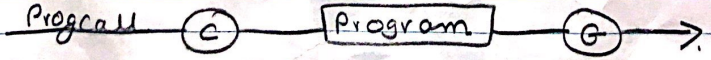
6)



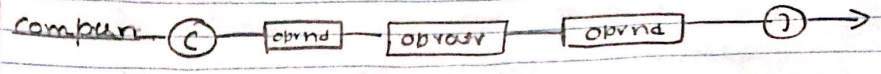
7)



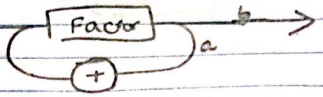
8)



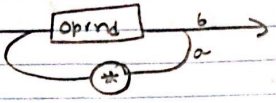
9) compun



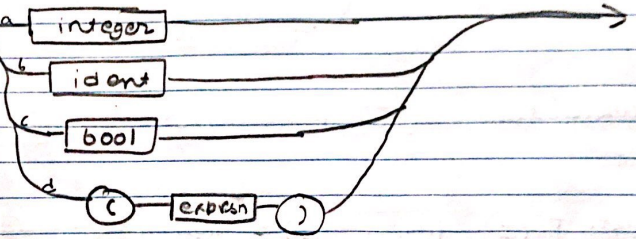
10) Expresn



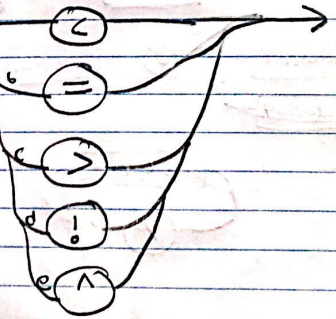
11) Factor



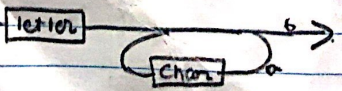
12) oprnd



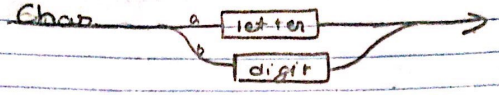
13) oprotr



1) ident

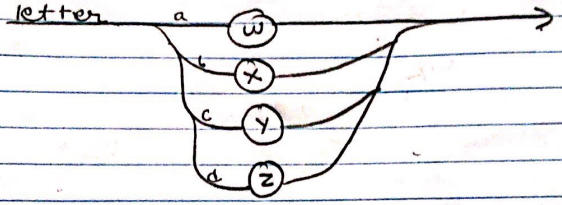


15) Char

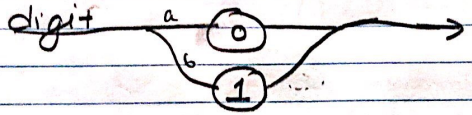


16) integer

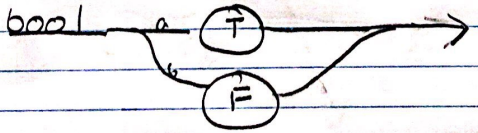
17) letter



18) digit



19) bool



20) Start

PROOFS

1) Case 2

Programm Follow(Programm) ∩ First(q)

Follow(Programm) ∩ First(Statemt)

{G, $} ∩ first(assignmt) ∩ first(ifstmt) ∩ first(do) ∩ first(inout) ∩ first(progcall)

{G, $} ∩ first(ident) ∩ {I} ∩ {D} ∩ first(labsym) ∩ {C}

{G, $} ∩ first(letter) ∩ {I} ∩ {D} ∩ {R, O} ∩ {C}

{G, $} ∩ {W, X, Y, Z} ∩ {I} ∩ {D} ∩ {R, O} ∩ {C} = ∅

2) **Statemt** case 1

First(a) ∩ First(b) ∩ First(c) ∩ First(d) ∩ First(e)

First(assignmnt) ∩ first(ifstmt) ∩ first(do) ∩ first(inout) ∩ first(progcall)

First(ident) ∩ {I} ∩ {D} ∩ first(labsym) ∩ {C}

First{letter} ∩ {I} ∩ {D} ∩ {R, O} ∩ {C}

{W, X, Y, Z} ∩ {I} ∩ {D} ∩ {R, O} ∩ {C} = ∅

3) **assnmt**, no proof because there are no decision points

4) **ifstmt** case 1

first(statmt) ∩ {%} ∩ {&}

{W, X, Y, Z, I, D, R, O, C} ∩ {%} ∩ {&} = ∅

5) **do** case 1

first(statmt) ∩ {U}

[first(assignmt) ∩ first(ifstmt) ∩ first(d) ∩ first(inout) ∩ first(progcall)] ∩ {U}

{W, X, Y, Z, I, D, R, O, C} ∩ {U} = ∅

6) **Aoput** case 1

first (a) ∩ first (b)

{ ; } ∩ { ; } = ∅

7) **SoSym** case 1

first (a) ∩ first (b)

{ R } ∩ { 0 } = ∅

8) **Progcall**

Proof not needed because there are no decision points

9) **Compsn**

Proof not needed because there are no decision points

10) **Exprsn** case 2

First (a) ∩ follow (exprsn)

{ + } ∩ { ; ,) } = ∅

11) **Factor** case 2

First (a) ∩ follow (factor)

{ * } ∩ { + , ; ,) } = ∅

12) **oprnd** Case 1

first (a) ∩ first (b) ∩ first (c) ∩ first (d)

first (integer) ∩ first (ident) ∩ first (bool) ∩ { (} ∩

first (digit) ∩ first (letter) ∩ { T, F } ∩ { (}

$\{0, 1\} \cap \{w, x, y, z\} \cap \{T, F\} \cap \{(\} = 0$

13) oprat r case 1

first(a) ∩ first(b) ∩ first(c) ∩ first(d) ∩ first(e)
$\{<\} \cap \{=\} \cap \{>\} \cap \{!\} \cap \{\wedge\} = 0$

14) ident case 2

First(a) ∩ follow(ident)
{Char} ∩ follow(ident)
$\{w, x, y, z, 0, 1\} \cap$ follow(ident)
$\{w, x, y, z, 0, 1\} \cap \{\sim, ;,), <, =, >, !, \wedge, *, +\} = 0$

15) Char case 1
First(a) ∩ first(b)
first(letter) ∩ first(digit)
$\{w, x, y, z\} \cap \{0, 1\} = 0$

16) Integer case 2
first(a) ∩ follow(integer)
first(digit) ∩ follow(integer)
$\{0, 1\} \cap \{), !, \wedge, <, =, >, *, +, ;\} = 0$

17) letter case 1

first(a) ∩ first(b) ∩ first(c) ∩ first(d)
$\{w\} \cap \{x\} \cap \{y\}, \{z\} = 0$

18) Digit case 1

first(a) ∩ first(b)
{0} ∩ {1} = ∅

19) bool case 1

first(a) ∩ first(b)
{T} ∩ {F}

20) Start

No proof needed, there are no decision points