

Assignment 4

Q.1 find first and follow of the following.

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a) $E \rightarrow E + T \mid T$

first

follow

$T \rightarrow T * F \mid F$

$F \rightarrow (E) \mid id$

$E \rightarrow \{ (, id \}$

$E \rightarrow \{ \$,) \}$

$E' \rightarrow \{ +, E \}$

$E' \rightarrow \{), \$ \}$

10

$E \rightarrow TE'$

$T \rightarrow \{ (, id \}$

$T \rightarrow \{ +, \$,) \}$

$E' \rightarrow +TE' \mid E$

$T' \rightarrow \{ *, E \}$

$T' \rightarrow \{ +,), \$ \}$

$T \rightarrow FT'$

$F \rightarrow \{ (, id \}$

$F \rightarrow \{ *, +,), \$ \}$

$T' \rightarrow *FT' \mid E$

$F \rightarrow (E) \mid id$

15

b) $S \rightarrow iEtS \mid iEtSeS \mid a$

$E \rightarrow b$

20

first

follow

$S \rightarrow \{ i, a \}$

$S \rightarrow \{ e, \$ \}$

$E \rightarrow \{ b \}$

$E \rightarrow \{ t \}$

25

c) $S \rightarrow AaAb \mid BbBa$

$A \rightarrow \epsilon$

$B \rightarrow \epsilon$

first

follow

30

$S \rightarrow \{ a, b \}$

$S \rightarrow \{ \$ \}$

$A \rightarrow \{ \epsilon \}$

$A \rightarrow \{ a, b \}$

$B \rightarrow \{ \epsilon \}$

$B \rightarrow \{ b, a \}$

d) $S \rightarrow (L) | a$

$L \rightarrow SL'$

$L' \rightarrow \epsilon | , SL'$

—first

$S \rightarrow \{ (, a \}$

$L \rightarrow \{ (, a \}$

$L' \rightarrow \{ \epsilon, , \}$

—follow

$S \rightarrow \{ , , , , , \$ \}$

$L \rightarrow \{) \}$

$L' \rightarrow \{) \}$

Q2 Find the number of Tokens in the given program.

a. `int main()`

`{`

`x = y + z;`

`int x, y, z;`

`printf("sum %d%d", x);`

`}`

→ There are total 26 tokens in the given program.

b. `Main()`

`A = b + + + - - - + + + = = ;`

`printf("%d%d", a, b);`

`}`

There are 18 tokens in the given program &

`"%d%d", a, b);` no matching found.