

Experiment No:6

AIM: To implement a program to find follow() for any given Production.

THEORY:Follow(X) to be the set of terminals that can appear immediately to the right of Non-Terminal X in some sentential form.

Algorithm:

Computation of FOLLOW

Follow (A) is defined as the collection of terminal symbols that occur directly to the right of A.

$$\text{FOLLOW}(A) = \{a \mid S \Rightarrow^* \alpha A a \beta \text{ where } \alpha, \beta \text{ can be any strings}\}$$

If S is the start symbol, $\text{FOLLOW}(S) = \{\$ \}$

If production is of form $A \rightarrow \alpha B \beta$, $\beta \neq \epsilon$.

(a) If $\text{FIRST}(\beta)$ does not contain ϵ then, $\text{FOLLOW}(B) = \{\text{FIRST}(\beta)\}$

Or

(b) If $\text{FIRST}(\beta)$ contains ϵ (i. e. , $\beta \Rightarrow^* \epsilon$), then

$$\text{FOLLOW}(B) = \text{FIRST}(\beta) - \{\epsilon\} \cup \text{FOLLOW}(A)$$

\therefore when β derives ϵ , then terminal after A will follow B.

If production is of form $A \rightarrow \alpha B$, then $\text{Follow}(B) = \{\text{FOLLOW}(A)\}$.

COMPUTING ENVIRONMENT

Platform: ubuntu

Programming Language: C / C++ / Java

Expacted Output:

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Enter the no.of productions: 8
Enter 8 productions
Production with multiple terms should be give as separate productions
E=ID
D=+$
I=FS
S=*FS
S=$
F=<E>
F=a
Find FOLLOW of -->E
FOLLOW(E) = < $ >
Do you want to continue(Press 1 to continue....)?1
Find FOLLOW of -->D
FOLLOW(D) = < >
Do you want to continue(Press 1 to continue....)?1
Find FOLLOW of -->I
FOLLOW(I) = < + $ >
Do you want to continue(Press 1 to continue....)?8
Find FOLLOW of -->FOLLOW(S) = < $ >
Do you want to continue(Press 1 to continue....)?1
Find FOLLOW of -->F
FOLLOW(F) = < * + $ >
Do you want to continue(Press 1 to continue....)?

```

Conclusion: Thus the program to find FOLLOW() is implemented.

Viva Voce Questions:

1. What is Follow()?

Answer: Follow (A) is defined as the collection of terminal symbols that occur directly to the right of A.

2. Why FOLLOW() is calculated?

Answer: FOLLOW can make a Non-terminal vanish out if needed to generate the string from the parse tree. FOLLOW sets for a given grammar so that the parser can properly apply the needed rule at the correct position.