

First Set:

for each NT X at the LHS of each BNF production rule.

(1) $X \rightarrow a$, $\text{First}(X) = \{a\}$. Do it first !

(2) $X \rightarrow \varepsilon$, $\text{First}(X) = \{ \varepsilon \}$. Do it first !

(3) $X \rightarrow YZW$, $\text{First}(X) = \text{First}(Y)$.

Moreover, if $\text{First}(Y)$ contains ε ,

then $\text{First}(X) = \text{First}(Y) - \{ \varepsilon \} \cup$

$\text{First}\{Z\}$.

Furthermore, if $\text{First}(Z)$ contains ε ,

then $\text{First}(X) = \text{First}(Y) - \{ \varepsilon \} \cup$

$\text{First}\{Z\} - \{ \varepsilon \} \cup$

$\text{First}\{W\}$.

(* Repeat until ...NT at the RHS not containing ε

according to the order appearing in RHS.)

Follow Set:

for each NT Y at the RHS of each BNF production rule.

It will never contain ε .

(1) $\text{Follow}(S) = \{\$ \}$. S is the start symbol.

(2)-(a) $X \rightarrow aYb$, $\text{Follow}(Y) = \{b\}$.

-(b) $X \rightarrow aYZ$, and $\text{First}(Z)$ does not contain ε ,

$$\text{Follow}(Y) = \underline{\text{First}}(Z).$$

(3)-(a) $\underline{X} \rightarrow aY$, $\text{Follow}(Y) = \text{Follow}(\underline{X})$.

-(b) $\underline{X} \rightarrow aYZ$, and $\text{First}(Z)$ contains ε ,

$$\text{Follow}(Y) = \text{Follow}(\underline{X}).$$