

$(p, e, e), (q, S)$
 $(q, e, S), (q, ABa)$
 $(q, e, A), (q, aa)$
 $(q, e, A), (q, e)$
 $(q, e, B), (q, bb)$
 $(q, e, a), (q, e)$
 $(q, e, b), (q, e)$

$((p, e, e), (q, S))$
 $((q, a, e), (q, e))$
 $((q, b, e), (q, e))$
 $((q, e, S), (q, ABa))$

$((q, e, S), (q, ABa))$
 $((q, e, S), (q, ABa))$
 $((q, e, A), (q, e))$
 $((q, e, B), (q, bb))$
 $((q, e, a), (q, e))$

1. $((p, e, e), (q, S))$
2. $((q, a, e), (q, e))$
3. $((q, b, e), (q, e))$
4. $((q, e, S), (q, ABa))$
5. $((q, e, S), (q, ABa))$
6. $((q, e, S), (q, ABa))$
7. $((q, e, B), (q, bb))$
8. $((q, e, A), (q, e))$
9. $((q, e, a), (q, e))$

FIRST

$$\text{First}(S) = \text{First}(A)$$

\cup
 Since $A \rightarrow e$
 $\text{First}(B)$

$$\text{First}(A) = \{a, e\}$$

$$\text{First}(B) = \{b\}$$

FOLLOWS

$$\text{Follows}(S) \rightarrow \{\$ \}$$

$$\text{Follows}(A) \rightarrow \{b\} \quad \text{First}(B) =$$

$$\text{Follows}(B) \rightarrow \{a\}$$

Grammar G: $S \rightarrow \underline{A}B\underline{a}$; $A \rightarrow aa \mid e$; $B \rightarrow \underline{b}b$

Deterministic Look-ahead transitions:

1. $((p, e, e), (q, S))$
2. $((q, a, e), (\underline{q}_a, e))$
3. $((q, b, e), (\underline{q}_b, e))$
4. $((\underline{q}_a, e, A), (q, aa))$ // since a is in FIRST of A
5. $((\underline{q}_a, e, \$), (q, \underline{A}B\underline{a}))$ // since a is in FIRST of S
6. $((\underline{q}_b, e, S), (q, \underline{A}B\underline{a}))$ // since b is in FIRST of S
7. $((\underline{q}_b, e, B), (q, bb))$ // since b is in FIRST of B
8. $((\underline{q}_b, e, A), (q, e))$ // since b is in FOLLOWS of A
9. $((q, \$, e), (q_\$, e))$

$$\text{FIRST}(S) = \text{FIRST}(A) \cup \text{FIRST}(B) = \{a, b\}$$

$$\text{FIRST}(A) = \{a\} \cup \{e\} = \{a, e\}$$

$$\text{FIRST}(B) = \{b\}$$

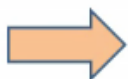
$$\text{FOLLOWS}(S) = \{\$ \}$$

$$\text{FOLLOWS}(A) = \text{FIRST}(B) = \{b\}$$

$$\text{FOLLOWS}(B) = \{a\}$$

Click to add text

$E \rightarrow T$
 $E \rightarrow E + T$
 $T \rightarrow T * F$
 $T \rightarrow F$
 $F \rightarrow (E)$
 $F \rightarrow id$
 $F \rightarrow id(E)$



$E \rightarrow TE'$
 $E' \rightarrow +TE'$
 $E' \rightarrow e$
 $T \rightarrow FT'$
 $T' \rightarrow *FT'$
 $T' \rightarrow e$
 $F \rightarrow (E)$
 $F \rightarrow idA$
 $A \rightarrow e$
 $A \rightarrow (E)$

left factoring

(Never contains null)

NT
E

First
FIRST(T)
FIRST(F) =
{ '(', id }

Follows
{ \$,) }

E'

{ +, e }

{ \$,) }

T

{ '(', id }

{ \$, T,) }

Since $E' \rightarrow e$
& FIRST(e) = FIRST(E)

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

T'

{ *, e }

{), +, \$ }

F

{ (, id }

First(T')
{ *,), +, \$ }

Now we need lookahead parser!
in tutorials!