**Construction of Parsing Table**

**Grammar:**

E → T E'   
E' → + T E' | 𝜀   
T → F T'   
T' → \* F T' | 𝜀   
F → (E) | x | y

**Step 1:**

FIRST and FOLLOW

FIRST (E) = FIRST (T) = FIRST (F) = {(, x, y}

FIRST (E’) = {+, 𝜀}

FIRST (T) = FIRST (F) = {(, x, y}

FIRST (T’) = {\*, 𝜀}

FIRST (F) = {(, x, y}

FOLLOW (E) = {), $}

FOLLOW (E’) = FOLLOW (E) = {), $}

FOLLOW (T) = {FIRST (E’) – 𝜀} U FOLLOW (E’) = {+} U { ), $} = {+, ), $}

FOLLOW (T’) = FOLLOW (T) = {+, ), $}

FOLLOW (F) = {FIRST (T’) – 𝜀} U FOLLOW (T’) = {\*} U {+, ), $}= {\*, +, ), $}

Parsing Table:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | x | y | + | \* | ( | ) | $ |
| E | E → T E' | E → T E' |  |  | E → T E' |  |  |
| E' |  |  | E' → + T E' |  |  | E' → 𝜀 | E' → 𝜀 |
| T | T → F T' | T → F T' |  |  | T → F T' |  |  |
| T' |  |  | T' → 𝜀 | T' → \* F T' |  | T' → 𝜀 | T' → 𝜀 |
| F | F → x | F → y |  |  | F → (E) |  |  |

Practice: drawing the parse tree by implementing the stack.

Input: (x \* y) + (y+y)