

3) $s = (a+b) * (c-d) + (a*b)$

$t_1 = a+b$

$t_2 = c-d$

$t_3 = t_1 * t_2$

$t_4 = a * b$

$t_5 = t_3 + t_4$

| quadruple | result | op | arg1 | arg2 |
|-----------|--------|----|-------|-------|
| (0) | t_1 | + | a | b |
| (1) | t_2 | - | c | d |
| (2) | t_3 | * | t_1 | t_2 |
| (3) | t_4 | * | a | b |
| (4) | t_5 | + | t_3 | t_4 |

| triple | op | arg1 | arg2 |
|--------|----|-------|-------|
| (0) | + | a | b |
| (1) | - | c | d |
| (2) | * | t_1 | t_2 |
| (3) | * | a | b |
| (4) | + | t_3 | t_4 |

indirect triple

| | |
|-----|------|
| (0) | (10) |
| (1) | (11) |
| (2) | (12) |
| (3) | (13) |
| (4) | (14) |

| | | a | b |
|-----|---|-------|-------|
| (0) | + | a | b |
| (1) | - | c | d |
| (2) | * | t_1 | t_2 |
| (3) | * | a | b |
| (4) | + | t_3 | t_4 |

5 1)

$$S \rightarrow TL$$

$$T \rightarrow \text{int float}$$

$$L \rightarrow L, id \mid \epsilon$$

$$S \rightarrow TL$$

$$T \rightarrow \text{int} \mid \text{float}$$

$$L \rightarrow id \mid \epsilon$$

$$L' \rightarrow idL' \mid \epsilon$$

$$\text{first}(S) = \{\text{int}, \text{float}\}$$

$$\text{first}(T) = \{\text{int}, \text{float}\}$$

$$\text{first}(L) = \{id\}$$

$$\text{first}(L') = \{, \epsilon\}$$

$$\text{follow}(S) = \{\$, \epsilon\}$$

$$\text{follow}(T) = \{\}$$

$$\text{follow}(L) = \{\$\}$$

$$\text{follow}(L') = \{\$\}$$

| non terminal | Terminal | | | | |
|-----------------|----------------------------|------------------------------|----------------------|-----------------------|---------------------------|
| | int | float | id | , | \$ |
| S | $S \rightarrow TL$ | $S \rightarrow TL$ | | | |
| T | $T \rightarrow \text{int}$ | $T \rightarrow \text{float}$ | | | |
| L | | | $L \rightarrow idL'$ | | |
| L' | | | | $L' \rightarrow idL'$ | $L' \rightarrow \epsilon$ |