$E \to T E'$

$E' \to + T E'$

$E' \to \varepsilon$

$T \to F T'$

$T' \to * F T'$

$T' \to \varepsilon$

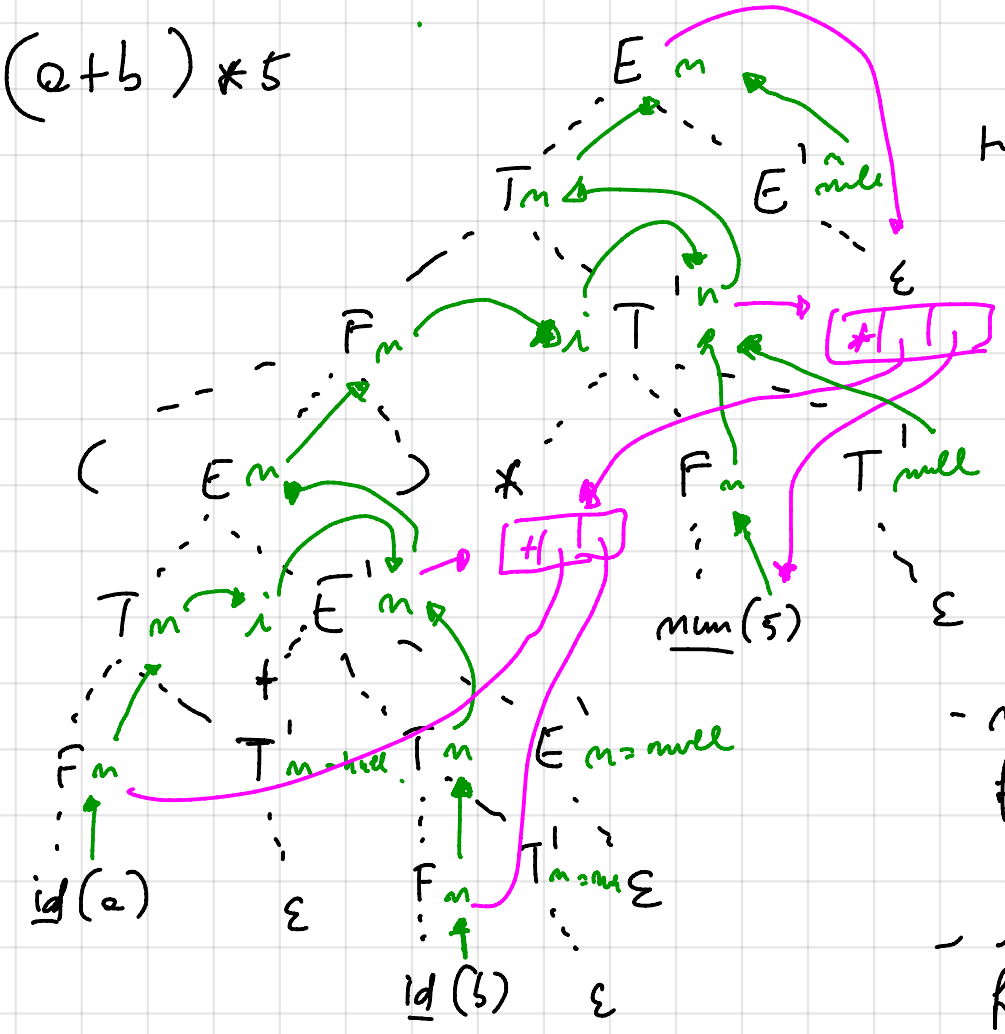
$F \to (E)$

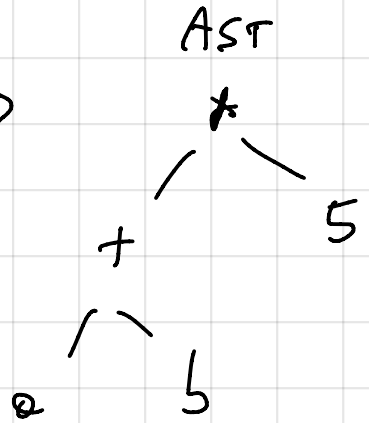
$F \to \underline{num}$

$F \to \underline{id}$

$F.n = newLeaf(\underline{id}, id.entry)$

$(a+b) * 5$

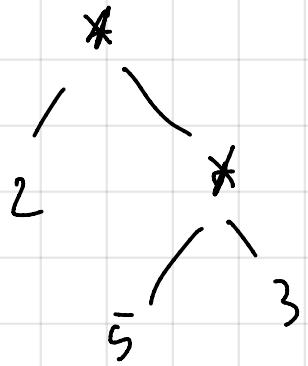


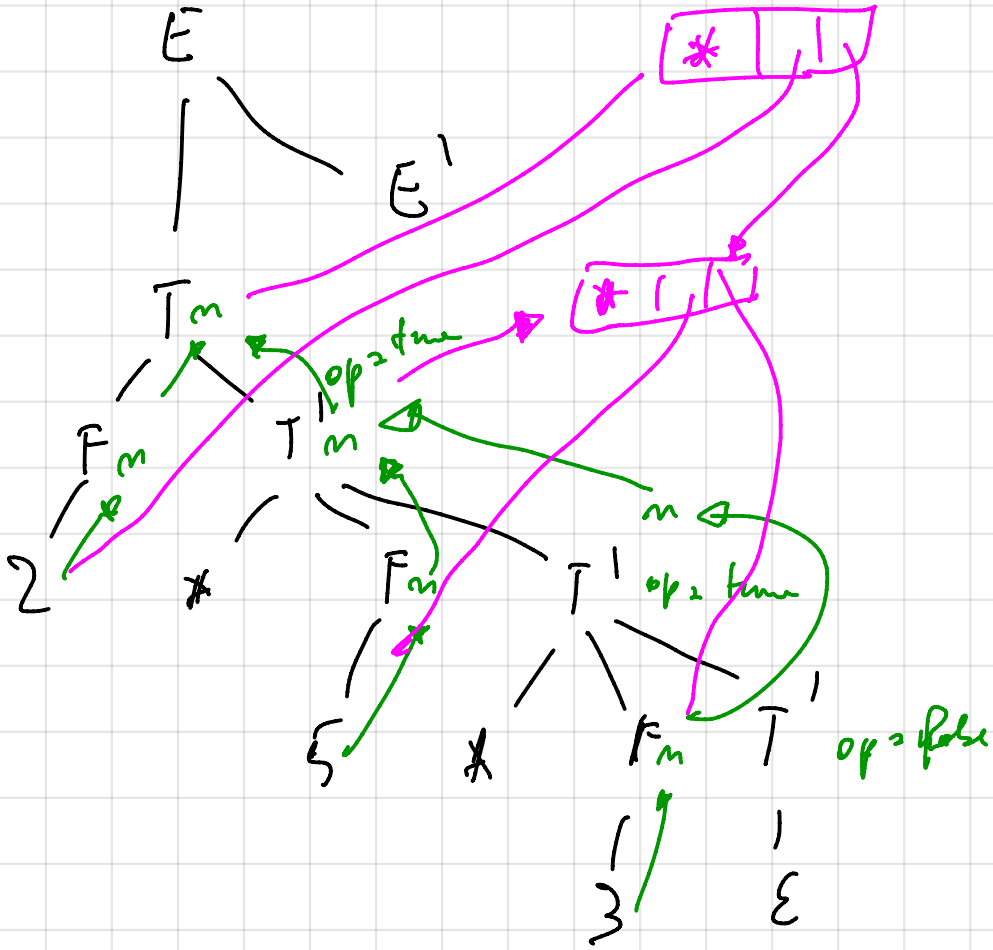


ATTRIBUTES

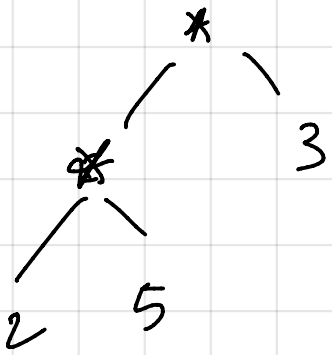
- n of type Node ∪ Leaf for E, E', T, T', F synt.
- i of type Node ∪ Leaf for T', E' inh.

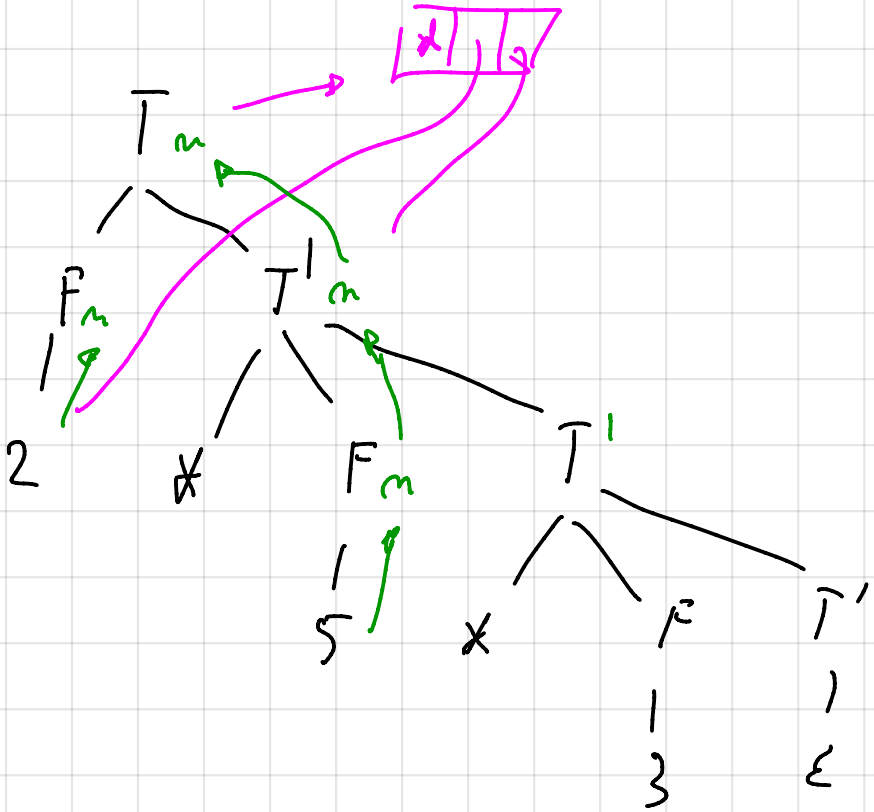
AST





AST





$expr \rightarrow expr_2 + term \quad \{print('+')\}$

$expr \rightarrow expr_2 - term \quad \{print('-')\}$

$expr \rightarrow term$

$term \rightarrow 0 \quad \{print('0')\}$

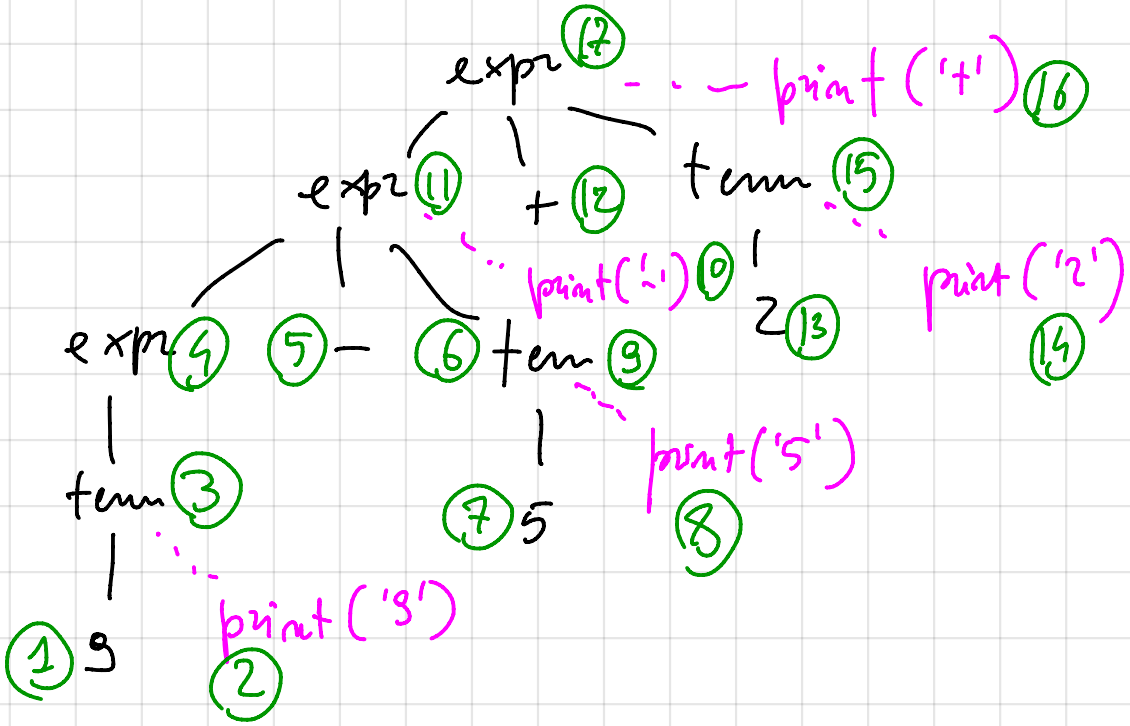
$\vdots \qquad \vdots \qquad \vdots$

$term \rightarrow 9 \quad \{print('9')\}$

$9-5+2 \mapsto 95-2+$

DF LR visit

OUTPUT: 95-2+



$$E \to E \underbrace{+ T \{ print('+') \}}_{\alpha}$$

$$E \to \underbrace{T}_{\beta}$$

$$\downarrow$$

$$E \to T E'$$

$$E' \to + T \{ print('+') \} E'$$

$$E' \to \varepsilon$$

$$A \to A \alpha \mid \beta$$

$$\hookrightarrow$$

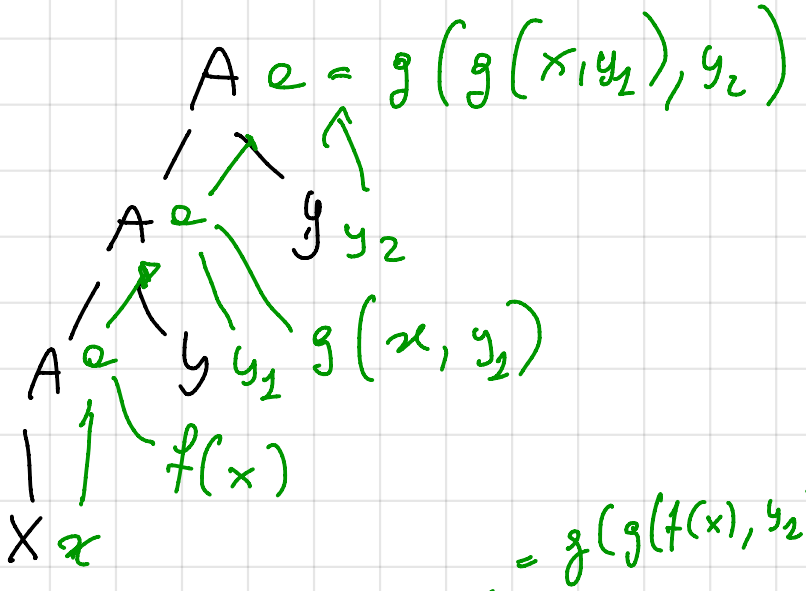
$$A \to \beta A'$$

$$\beta' \to \alpha A' \mid \varepsilon$$

$A \to A_1\ y \quad \{ A.a = g(A_1.a,\ y.y) \}$

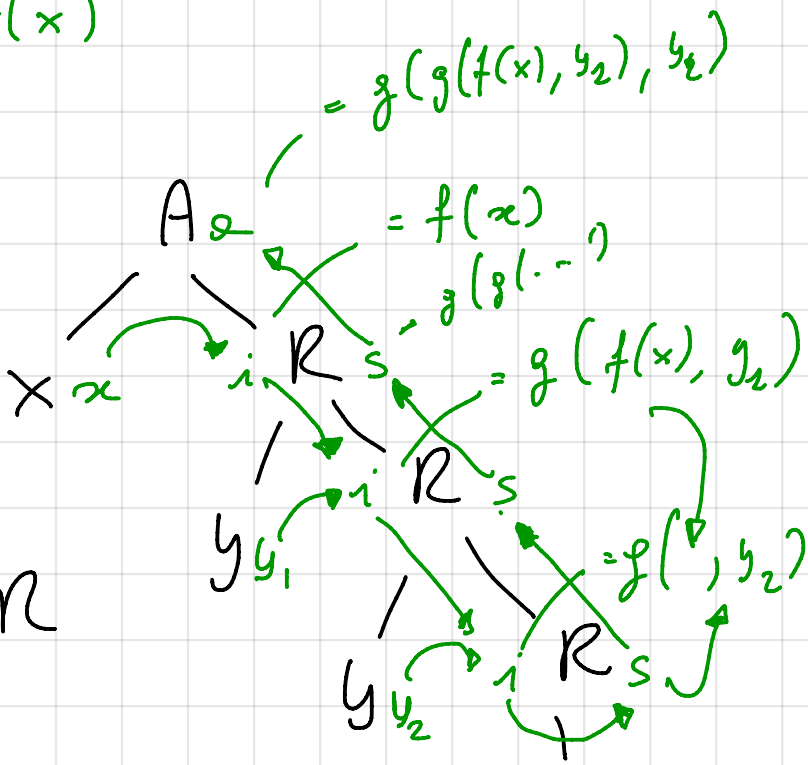
$A \to x \quad \{ A.a = f(x.x) \}$

x y y



$A \to X\ R$

$R \to y\ R \mid \varepsilon$



$A \to X \quad \{ R.i = f(x.x) \}\ R \quad \{ A.a = R.s \}$

$R \to y \quad \{ R_1.i = g(R.i,\ y.y) \}\ R_1 \quad \{ R.s = R_1.s \}$

$R \to \varepsilon \quad \{ R.s = R.i \}$