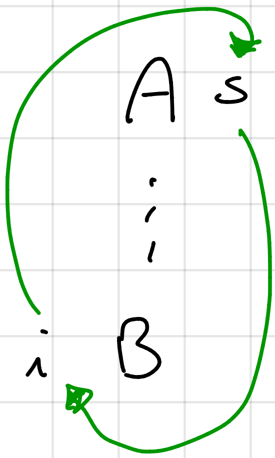
$A \to B$

$A.s = B.i$

$B.i = A.s + 1$

there is a cycle

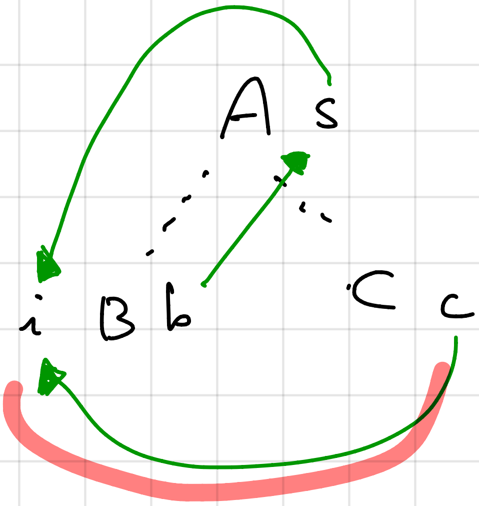


Not feasible

$A \to B\ C$

$A.s = B.b$

$B.i = C.c + A.s$



no cycle

but

not L-attributed

anyway, feasible with a particular traverse of the tree

$D \rightarrow T \; L \; \underline{;}$ $\qquad L.i = T.type$

$T \rightarrow \underline{int}$ $\qquad T.type = \text{'int'}$

$T \rightarrow \underline{float}$ $\qquad T.type = \text{'float'}$

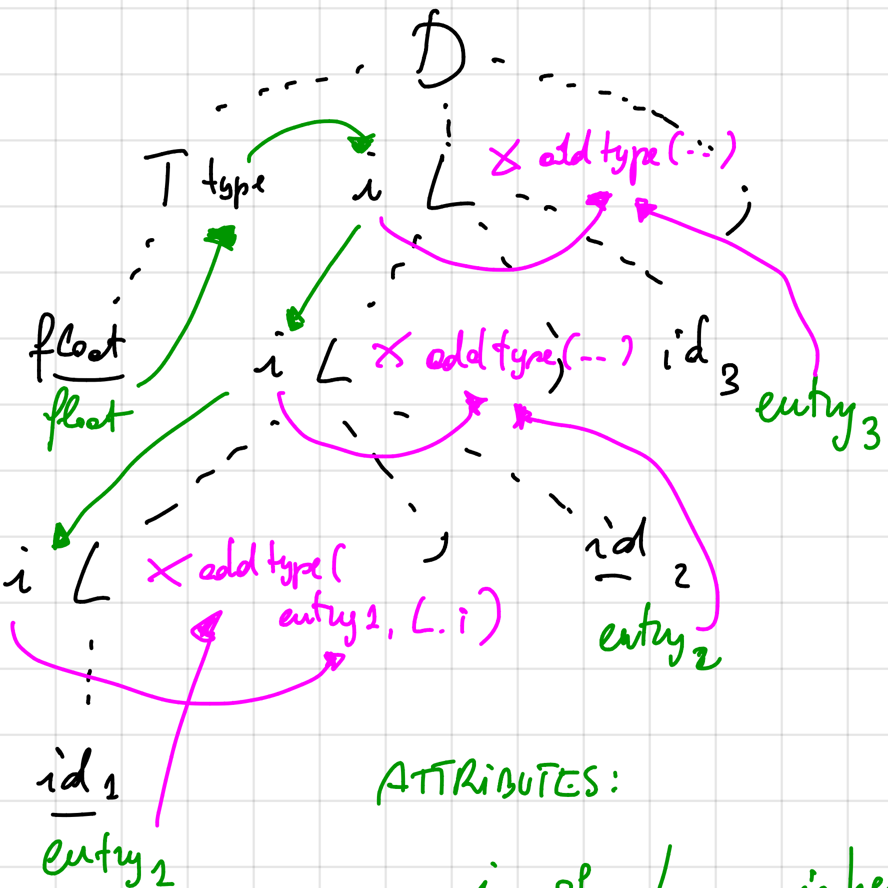
$L \rightarrow L_1 \, , \, \underline{id}$ $\qquad \begin{cases} L_1.i = L.i \\ addtype(\underline{id}.entry \, , \, L.i) \end{cases}$

$L \rightarrow \underline{id}$ $\qquad addtype(\underline{id}.entry, \; L.i)$

$\underline{float} \; \underline{id_1} \, , \, \underline{id_2} \, , \, \underline{id_3} \, ;$

side effect function addType (entry , type) ✗

that adds a type into the symbol table



ATTRIBUTES:

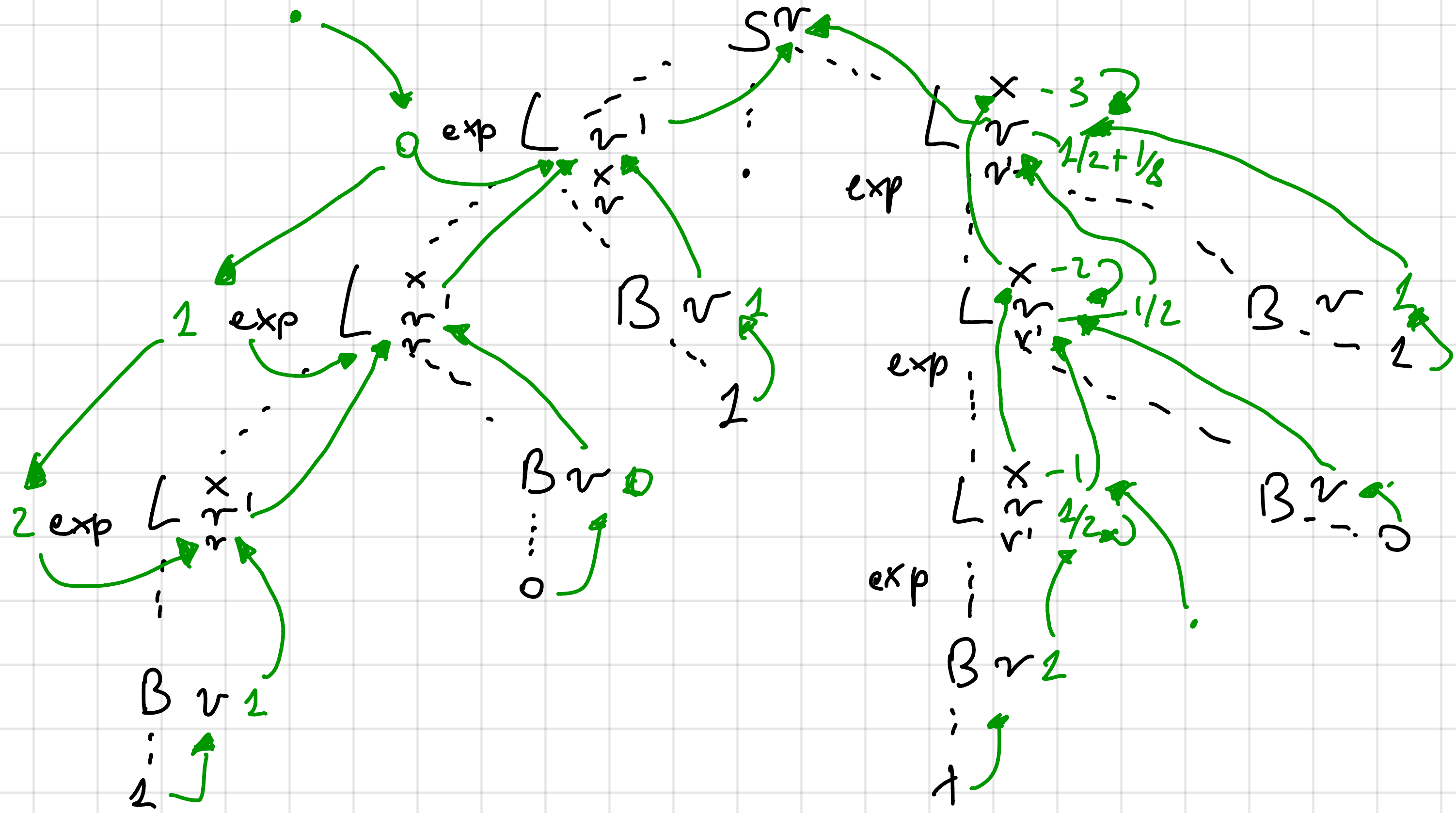
i of L inherited of type "type"

type of T syntesized of type "type"

$S \to L_1 . L_2$	$L_1.exp = 0$	$S.v = L_1.v' + L_2.v$
$S \to L$	$L.exp = 0$	$S.v = L.v'$
$L \to L_1 B$	$L.x = L_1.x - 1$ $L.v = L_1.v + exp(2, L.x) \cdot B.v$ $L_1.exp = L.exp + 1$ $L.v' = L_1.v' + exp(2, L.exp) \cdot B.v$	
$L \to B$	$L.x = -1$ $L.v = B.v \cdot exp(2, L.x) \sim 2^{L.x}$ $L.v' = B.v \cdot exp(2, L.exp)$	
$B \to 0$	$B.v = 0$	
$B \to 1$	$B.v = 1$	

$$101.101 \rightsquigarrow 1 \cdot 2^{2} + 0 \cdot 2^{1} + 1 \cdot 2^{0} \, . \, 1 \cdot 2^{-1} + 0 \cdot 2^{-2} + \cdot 2^{-3} =$$

$$= 4 + 0 + 1 \, . \, \frac{1}{2} + 0 + \frac{1}{8} = 5 . \frac{5}{8} = 5.625$$



$E \to E_2 + T$	$E.node = \text{new } Node('+', E_2.node, T.node)$
$E \to E_2 - T$	$E.node = \text{new } Node('-', E_2.node, T.node)$
$E \to T$	$E.node = T.node$
$T \to (E)$	$T.node = E.node$
$T \to \underline{id}$	$T.node = \text{new } Leaf(\underline{id}, \underline{id}.entry)$
$T \to \underline{num}$	$T.node = \text{new } Leaf(\underline{num}, \underline{num}.lexvalue)$

5 - 3 + 2

Parse Tree

AST