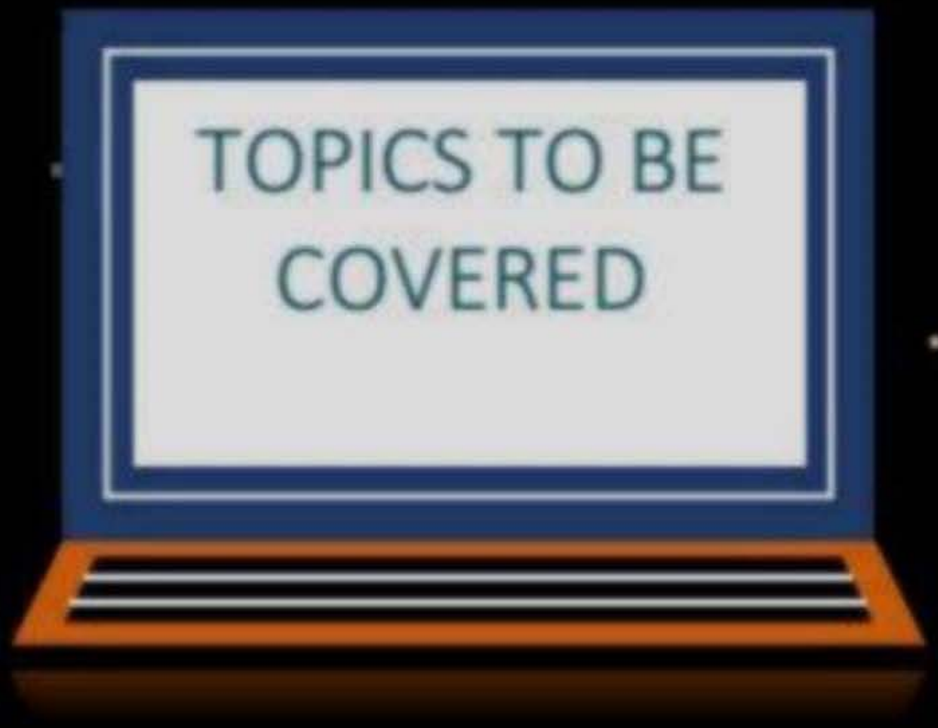
CS & IT ENGINEERING

Compiler Design

Syntax Directed Translations

Lecture No. 3

By- DEVA Sir



SDTs

I) In S-attributed SDT,

attributes are evaluated using Bottom-UP approach.

II) In L-attributed SDT,

Inherited attributes evaluated using top-down approach

(Parent / left sibling)

and Synthesized attributes evaluated using bottom-up approach

(Children)

7.18

① $S \rightarrow S_1 \# T \quad \{S.val = S_1.val * T.val\}$

$S \rightarrow T \quad \{S.val = T.val\}$

$T \rightarrow T_1 \% R \quad \{T.val = T_1.val / R.val\}$

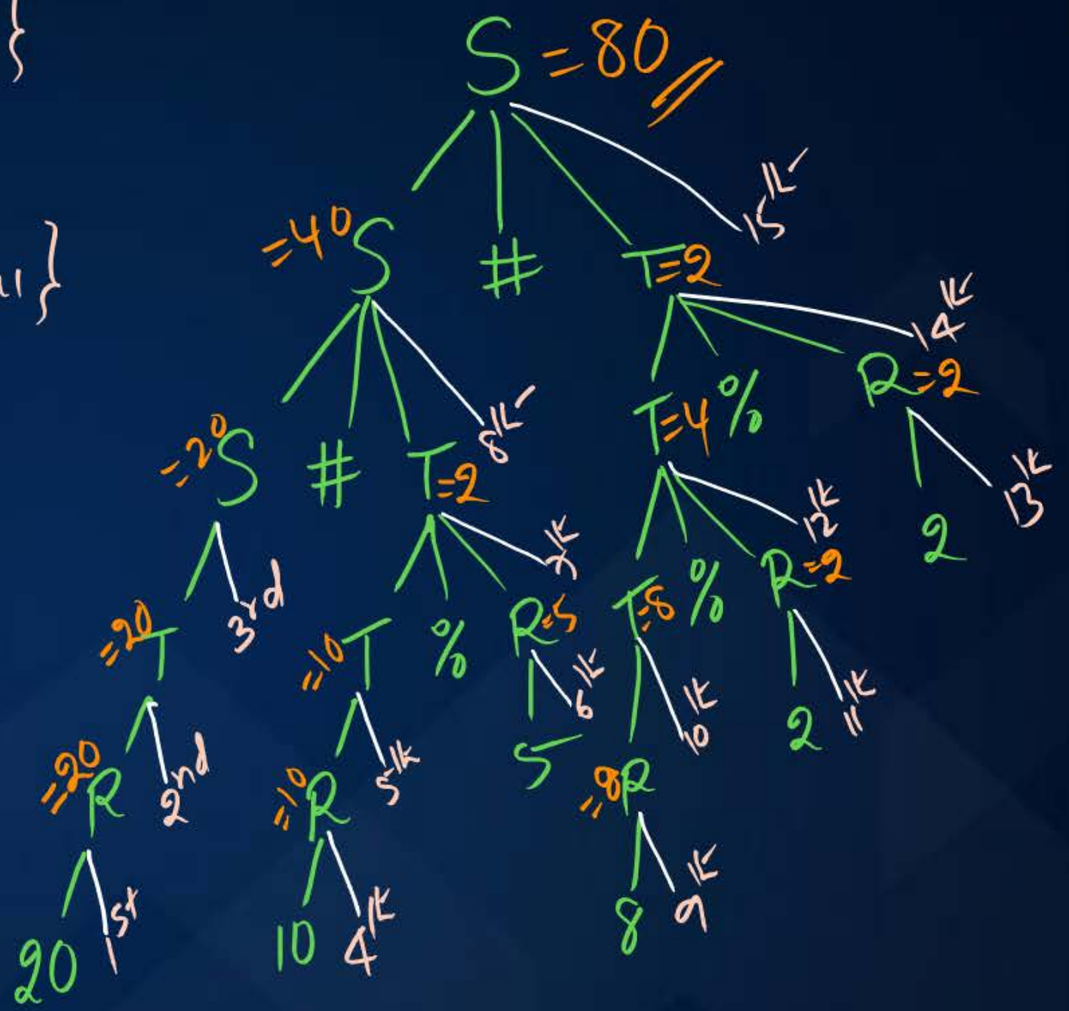
$T \rightarrow R \quad \{T.val = R.val\}$

$R \rightarrow id \quad \{R.val = id.val\}$

Input: 20 # 10 % 5 # 8 % 2 % 2

Compute the value at Root.

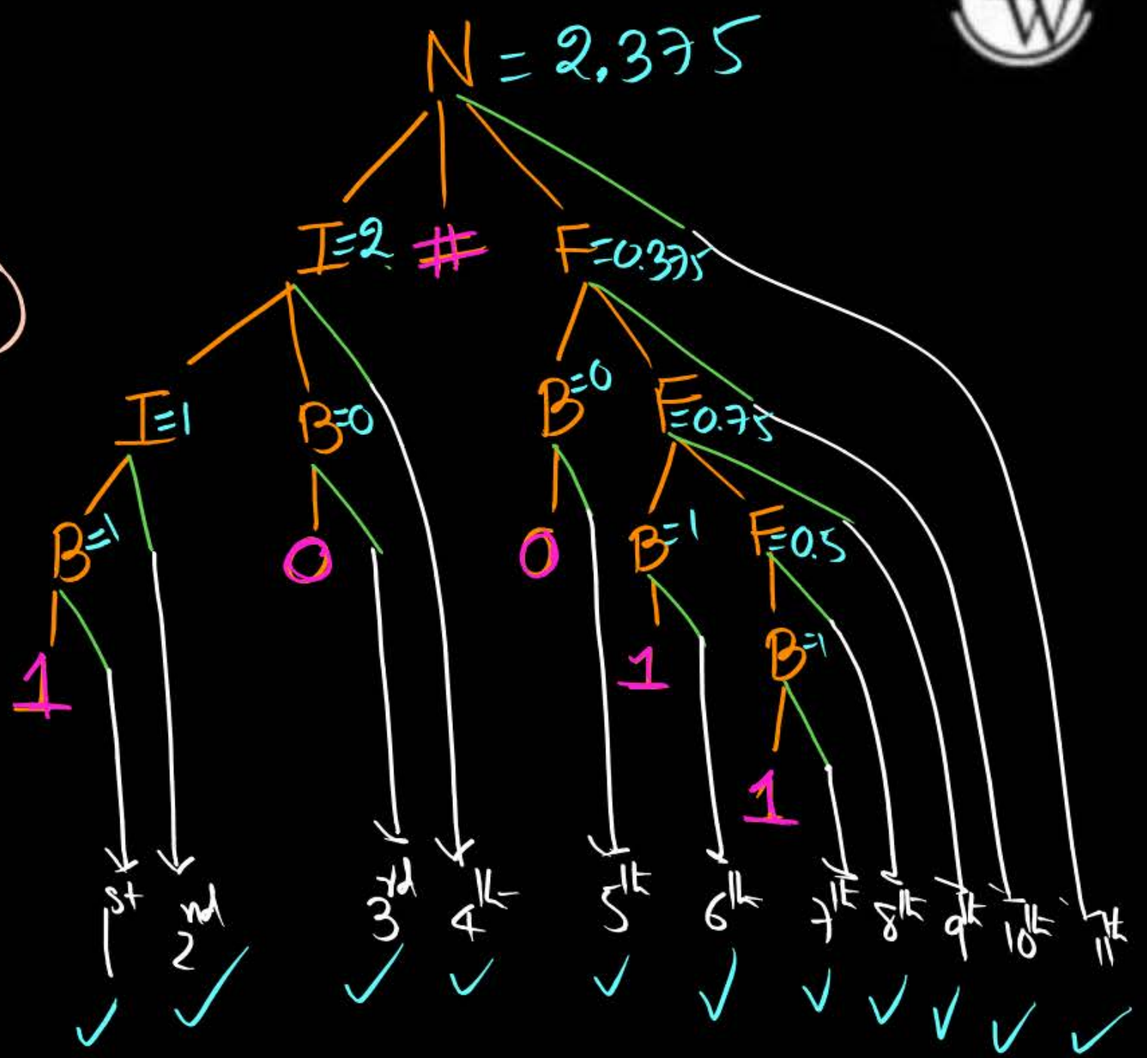
= 80 //



②

$N \rightarrow I \# F$	$N.val = I.val + F.val$
$I \rightarrow I_1 B$	$I.val = 2 I_1.val + B.val$
$I \rightarrow B$	$I.val = B.val$
$F \rightarrow B F_1$	$F.val = \frac{1}{2}(B.val + F_1.val)$
$F \rightarrow B$	$F.val = \frac{1}{2} B.val$
$B \rightarrow 0$	$B.val = 0$
$B \rightarrow 1$	$B.val = 1$

Input : 10 #011



③

L.type = T.type

D → T L	X_1.type = X_2.type
T → int	T.type = int
T → float	T.type = float
L → L_1, id	X_3.type = X_4.type ; AddType (id.entry , X_5.type)
L → id	AddType(id.entry , X_6.type)

X_1 = L

X_2 = T

X_3 = L_1

X_4 = L

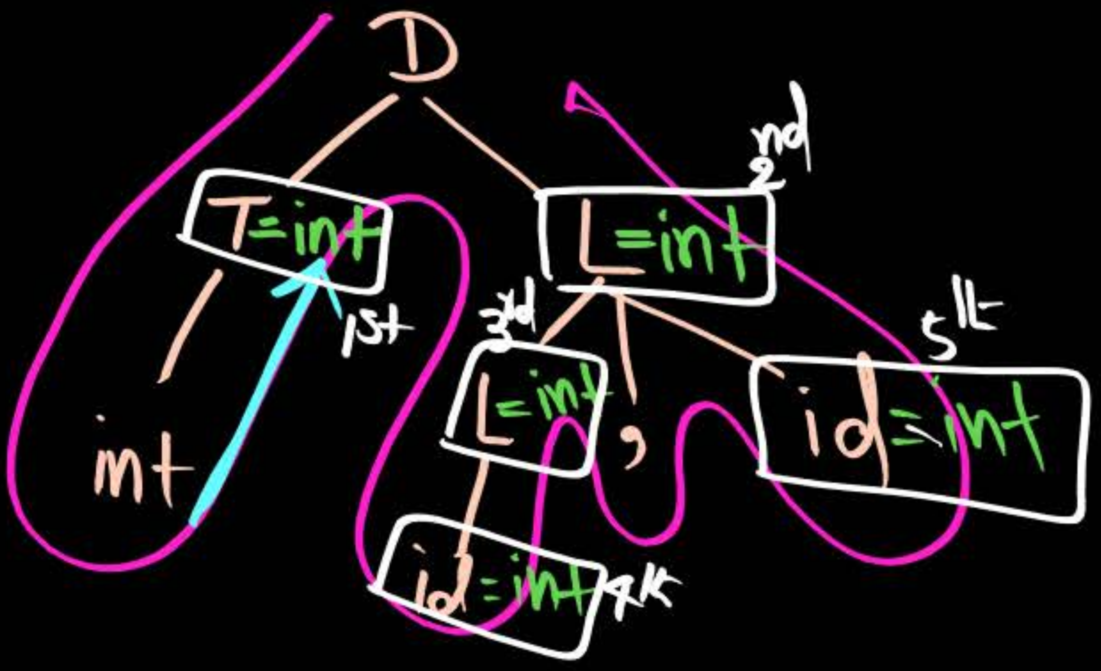
X_5 = L or L_1

X_6 = L

int x, y

↓

inter



int x

int x, y

int x, y, z

:

Summary

- SDTs ✓
- Next: Intermediate code & Code optimization


THANK YOU
GW
SOLDIERS !