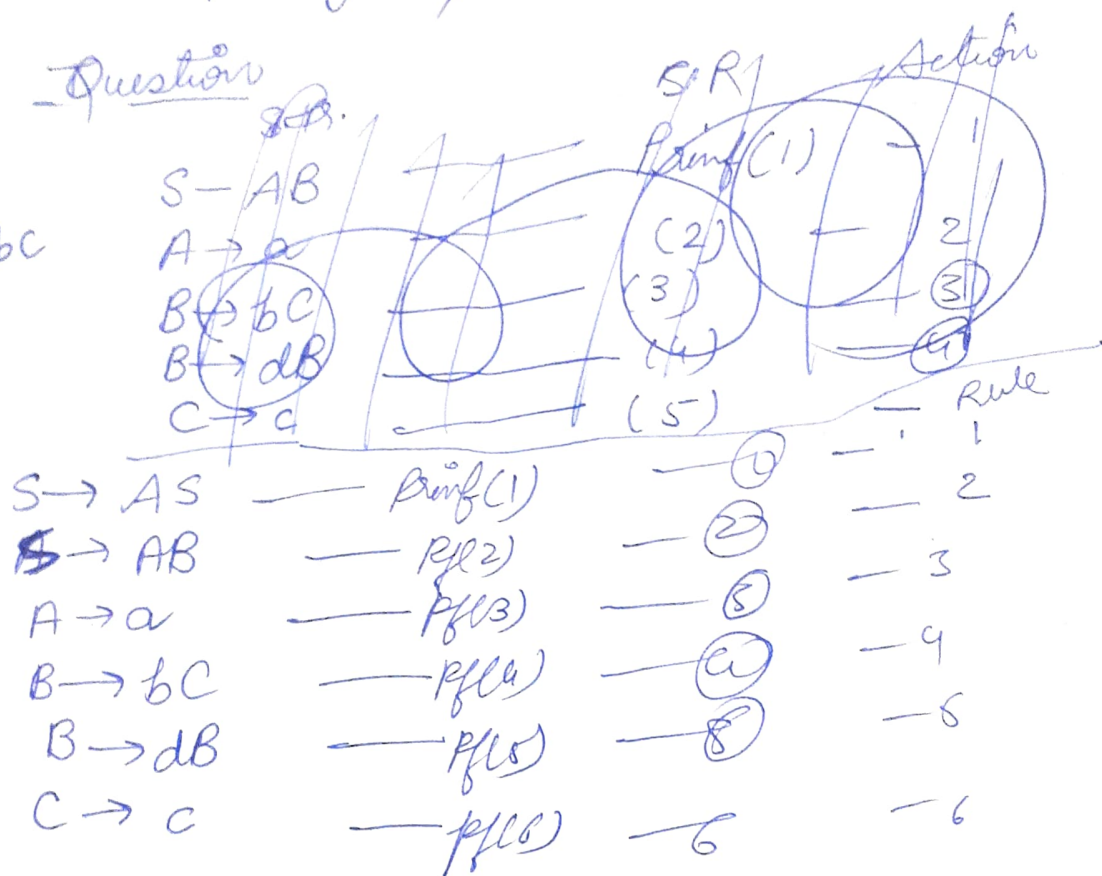


# How to Evaluate expression

Given one SDT and input And find output with corresponding input.

## ① Question

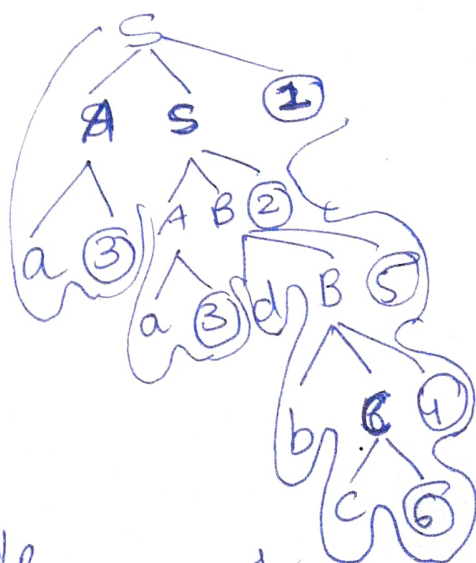
input  
aadbcc



## ① Top-Down-Approach (T to B & L to R)\*

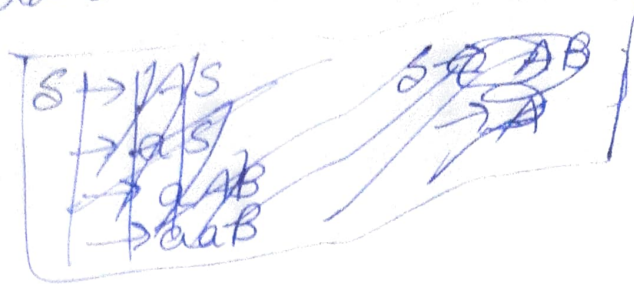
input  $\rightarrow$  aadbcc

$S \rightarrow AS$   
 ~~$S \rightarrow AB$~~   
 $\rightarrow aS$   
 $\rightarrow aAB$   
 $\rightarrow aaB$   
 $\rightarrow aa**d**B$   
 $\rightarrow aadbB$   
 $\rightarrow aadb**c**$   
 $\rightarrow aadbcc$

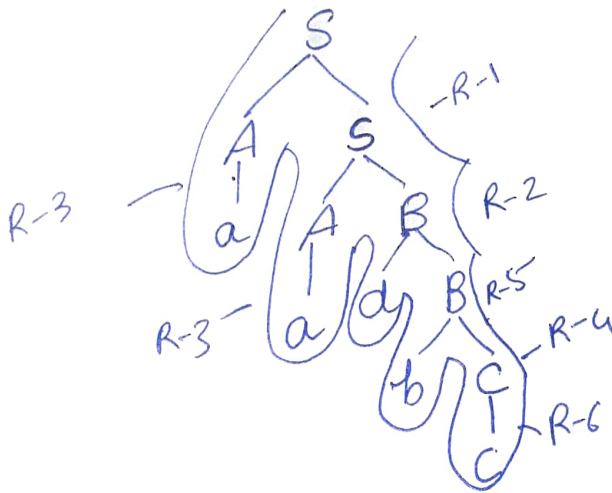


q/p  
 364521

Bottom-up App. (work on reduction  
 RHS reduced by LHS(NT))  
 input  $\rightarrow aadbcb$



$S \rightarrow AS$   
 $\rightarrow AAB$   
 $\rightarrow AAdB$   
 $\rightarrow AAdbc$   
 $AAdbc$   
 $Aadbcb$   
 $aadbcb$



o/p 3 3 6 4 5 2 1

Pg-2

# Syntax Directed Translation Schemes

SDT schemes is similar to SDD, except that the order of evaluation of the semantic rules is explicitly shown

It is also a CFL in which semantic rules are embedded with the right side of production with attributes are also associated with the grammar symbols.

- ① Top-Down Approach
- ② Bottom-Up

\* How to evaluate Arithmetic expressions using SDT  
P.O. S.R

		Action/rule
$E \rightarrow E \& T$	$\{ Eval = E.val * T.val \}$	①
$E \rightarrow T$	$\{ E.val = T.val \}$	②
$T \rightarrow T @ F$	$\{ T.val = T.val - F.val \}$	③
$T \rightarrow F$	$\{ T.val = f.val \}$	④
$F \rightarrow num$	$\{ f.val = num \}$	⑤

Input -  $4 \& 8 @ 5 \& 7 @ 3$

## Top-Down Approach

42 8 @ 527 @ 3

$$E \rightarrow E \& T$$

ॐ नमो भगवते वासुदेवाय

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→ E & T & T

$Q \rightarrow X$

→ T & T & T

@ → -

→ F & T & T

→ num & T & T

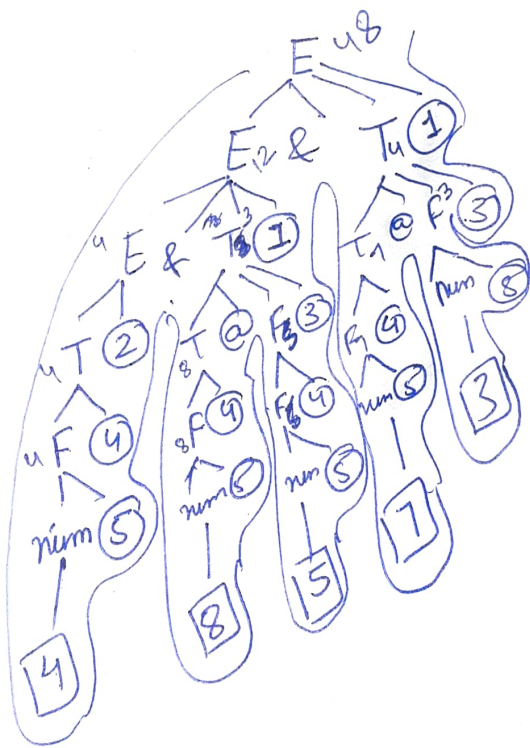
→ num & T@F 4T

→ num & f @ num & f @

→ num & f @ num & f @ num

→ num & num @ num

→ num & num @ num & num & num;





input  $\rightarrow 4 \& 8 @ 5 \& 7 @ 3$

Bottom-Up.

$$E \rightarrow E \& T$$

$\rightarrow E \& T @ F$

→ T & F @ F

→ E & T & F @ F

→ E & T @ F & F @ F

→ E & T @ F & F @ F  
→ E & F @ F & F @ F

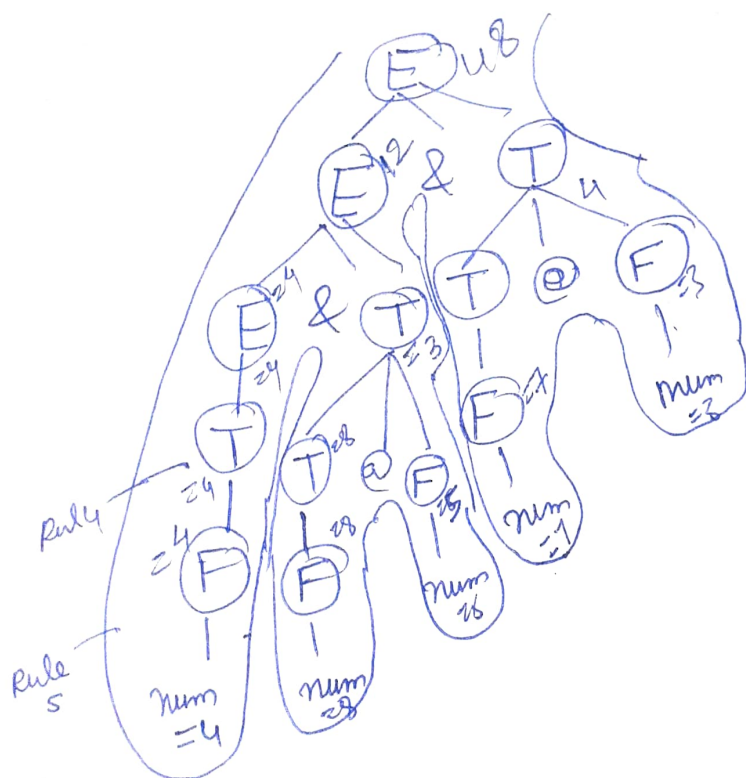
→ E & F @ R & T

→ T & F @ F & F

→ f f f @ f f f

2 → \*

② → -



2/8

48

Shwetawari