

SANA SARWAR

FA17 - BCS - 090

COMSATS University Islamabad

Compiler Construction

Question #02.

$$E \rightarrow E + (E)$$

$$E \rightarrow a$$

Augmented

$$E' \rightarrow E$$

$$E \rightarrow a$$

$$E \rightarrow E + (E)$$

First

$$E' = \{a\}$$

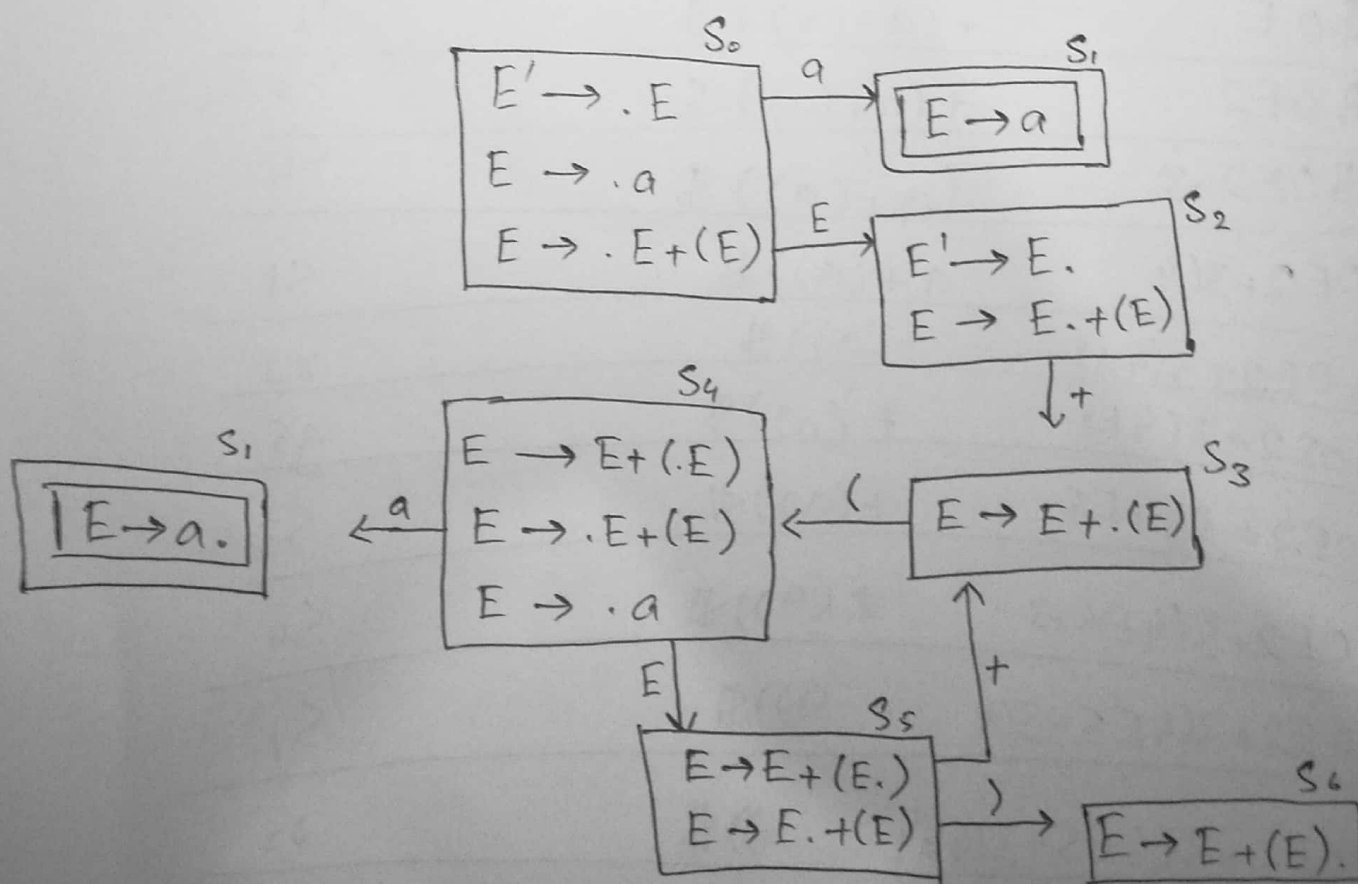
$$E = \{a\}$$

Follow

$$E' = \{\$ \}$$

$$E = \{\$, +\}$$

Canonical Collection



State	Action	Goto
0	a \$ () +	E
1	S ₁	
1	R ₂ R ₂ R ₂ R ₂ R ₂	2
2		
3	Accept S ₃	
4	S ₄	
4	S ₁	5
5		S ₆ S ₃
6	R ₁ R ₁ R ₁ R ₁ R ₁	

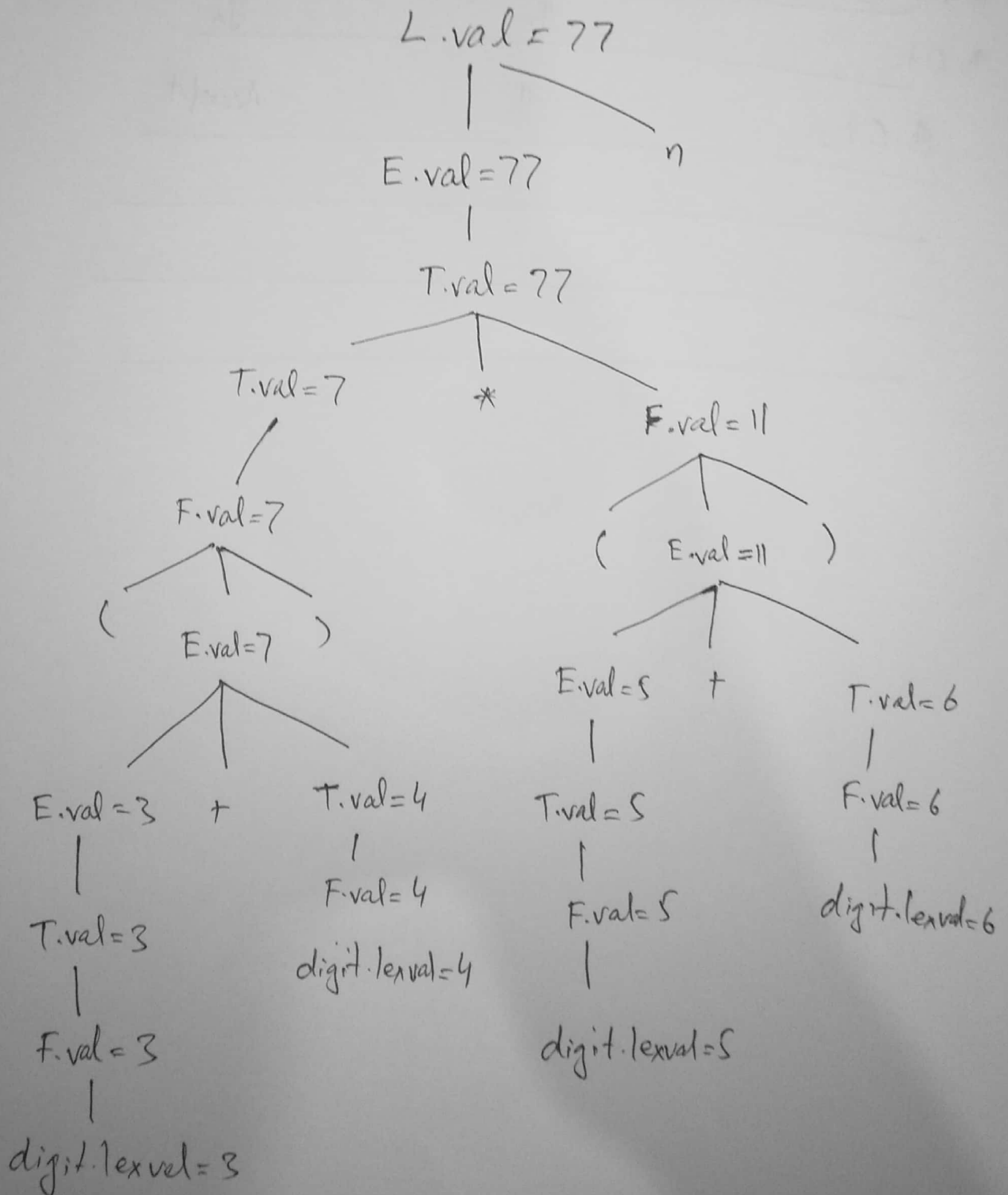
Stack	Input	Action
\$0	a+(a+(a))\$	S ₁
\$0a1	+(a+(a))\$	S ₂
\$0E	+(a+(a))\$	S ₂
\$0E2	+(a+(a))\$	S ₃
\$0E2+3	(a+(a))\$	S ₄
\$0E2+3(4	a+(a))\$	S ₁
\$0E2+3(4a1	+(a))\$	S ₂
\$0E2+3(4E1	+(a))\$	S ₅
\$0E2+3(4ES	+(a))\$	S ₃
\$0E2+3(4ES+3	+(a))\$	S ₄
\$0E2+3(4ES+3(4	a))\$	S ₁
\$0E2+3(4ES+3(4a1))\$	S ₂

Stack	Input	Action
$\$SOE2+3(4ES+3(4$)\$	g_5
$\$SOE2+3(4ES+3(4ES$)\$	S_6
$\$SOE2+3(4ES+3(4ES)6$)\$	δ_1
$\$OE$	\$	g_2
$\$OE_2$	\$	Accept

Question # 01

1. $(3+4) * (5+6) n$

Annotated Parse Tree



Question # 03

Regular Expression

$[char + int][(a-z)\{1\}(a-z, 0-9[-])\{0-3\}]$