Programming Languages HW # 4

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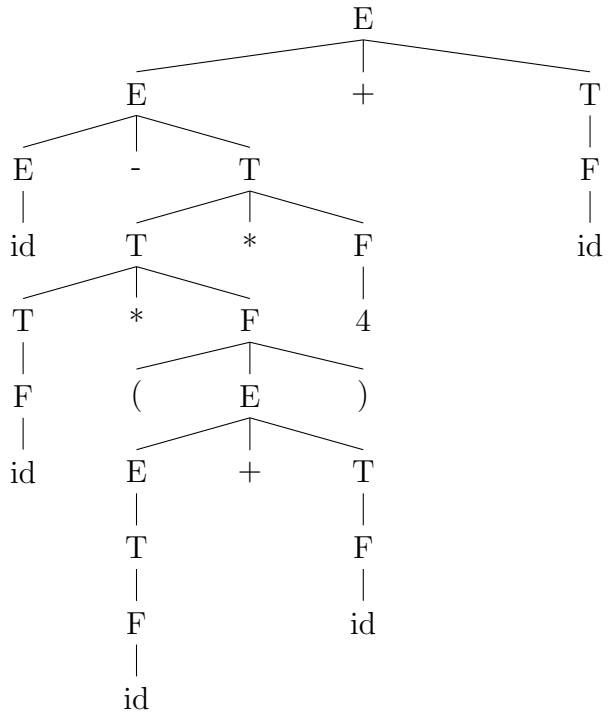
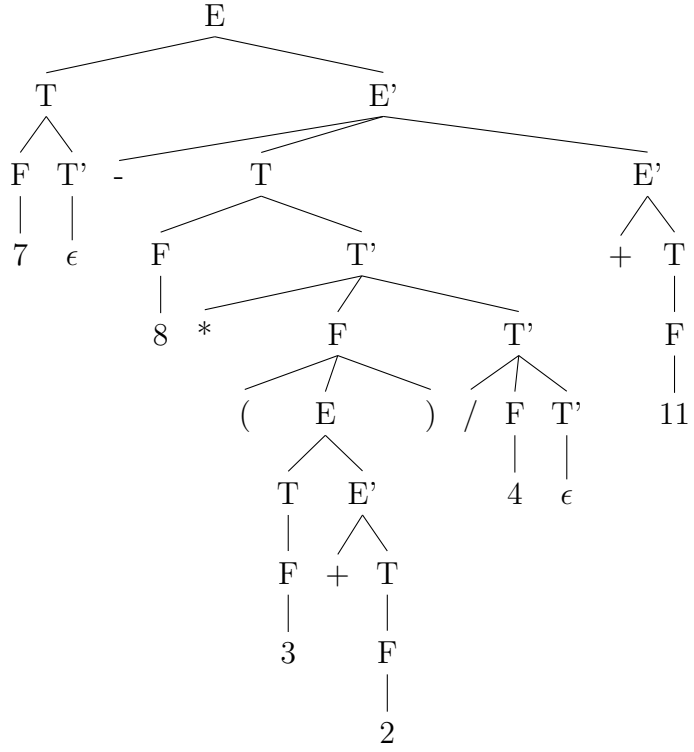
1. (a) It is not LL because $E \rightarrow E + T|... \equiv A \rightarrow A\alpha|\beta$



(b)



2. (a) $FIRST(S) \rightarrow \{a, b, \epsilon\}$
$FIRST(A) \rightarrow \{b, a\}$
$FIRST(B) \rightarrow \{a, b\}$
$FOLLOW(S) \rightarrow \{a, b\}$
$FOLLOW(A) \rightarrow \{b, a\}$
$FOLLOW(B) \rightarrow \{a, b\}$

(b)

	a	b	ϵ
S	S $\rightarrow$ aB	S $\rightarrow$ bA	S $\rightarrow \epsilon$
A	A $\rightarrow$ aS	A $\rightarrow$ bAA	
B	B $\rightarrow$ aBB	B $\rightarrow$ bS	

(c)

Matched	Stack	Input	Action
	S$	baab$	S $\rightarrow$ bA
	bA$	baab$	match
b	A$	aab$	A $\rightarrow$ aS
b	aS$	aab$	match
ba	S$	ab$	S $\rightarrow$ aB
ba	aB$	ab$	match
baa	B$	b$	B $\rightarrow$ bS
baa	bS$	b$	match
baab	S$	$	S $\rightarrow \epsilon$
baab	$	$	match
baab$			

3. $S \rightarrow BRE$
$B \rightarrow \hat{} \mid \epsilon$
$R \rightarrow X* \mid X+$
$X \rightarrow (Y) \mid [Y]$
$Y \rightarrow id\,Y \mid \epsilon$
$E \rightarrow \$ \mid \epsilon$

This is LL