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2) Construct an NFA for the following regular expression: $(a|b)^*abb$

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3) Consider the following grammar:

$$S \rightarrow aSbS \mid bSaS \mid$$

- a) Construct two different left most derivations for the sentence: abab
- b) Construct the corresponding rightmost derivations
- c) Construct the formed parse trees
- d) What do earlier results tell you about this grammar?

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4) Consider the following grammar:

$bE \rightarrow bE \text{ or } bT$
 $bE \rightarrow bT$
 $bT \rightarrow bT \text{ and } bF$
 $bT \rightarrow bF$
 $bF \rightarrow \text{not } bF$
 $bF \rightarrow (bE)$
 $bF \rightarrow \text{true}$
 $bF \rightarrow \text{false}$

- a) Construct a parse tree for the sentence: not (true or false)
b) Is this grammar ambiguous? Why?

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5) Consider the following grammar:

$S \rightarrow \text{if } E \text{ then } S$
 $S \rightarrow \text{if } E \text{ then } S \text{ else } S$
 $S \rightarrow a$
 $E \rightarrow b$

Left factor the above grammar and show that the transformed grammar is not LL(1)?

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6) Consider the following grammar:

$$E \rightarrow E + T$$
$$E \rightarrow T$$
$$T \rightarrow TF$$
$$T \rightarrow F$$
$$F \rightarrow F^*$$
$$F \rightarrow a$$
$$F \rightarrow b$$

Construct the SLR parsing table for this grammar? Would this grammar be classified as SLR? LR(0)?

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