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CS 342

Homework #1

Professor Samik Basu

Q1.

a. True, it won't be ambiguous if there is only one distinct parse tree.

b. True, needs two trees to get more correct grammar for ambiguous.

c. True, because it will be different on two different parse trees for left most and right most.

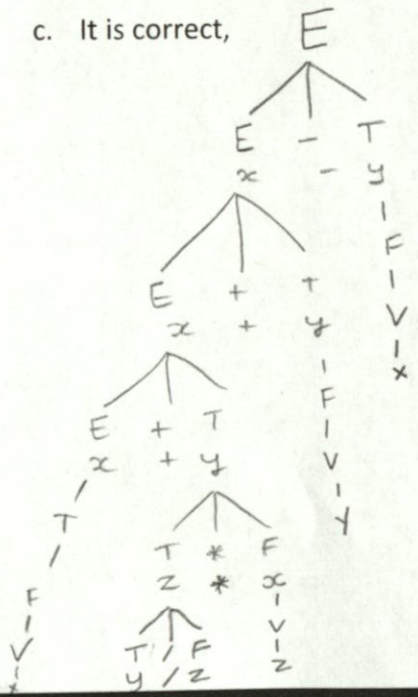
d. True, possible to get 8.

Q2.

a. Left associative, expands on the left of the operator. Also, we know that the lower the operator is the higher the precedence.

b. No, because they are being evaluated equally. If you look at the E there is both "+" and "-"so they are being equal every time.

c. It is correct,



Q3.

a. Any number of programs can be generated by above grammar.

b. No, because there are not any ways where you can generate more than one parse tree because of associativity and precedence seems to be well defined.

Q4.

Terminals: {x, y, z, True, False, $\neg$, $\wedge$, $\Longrightarrow$, $\exists$, $\forall$}
Nonterminal: {S, L, V, P, Q, B, J, Y}
Start Symbol: S
Production rules:

S -> L
L -> Q|B|V|P
V -> x|y|z
P -> True|False
Q -> J $\Longrightarrow$ $B|J$
J -> J $\wedge$ $Y|Y$
Y -> $\neg Y|V|P$