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CS F331 - Assignment 1

A) Secret Message: BE SURE TO DRINK YOUR OVALTINE

- B) 1) In C++, I think the type checking is primarily static.
2) This means that type checking for C++ is primarily done during compile time, or atleast before runtime. As opposed to dynamic, which is done during runtime

C) 1, 3, 5.

D) This language contains strings that;

- 1) An equal number of zero or more x's on the left hand side, and z's on the right hand side.
2) An even number of y's in the middle (this include 0 y's).
ex. '', 'xz', 'xyyz', 'xxxzzz', 'xxxxxyyyyyyzzzz'

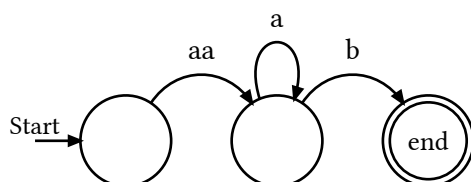
E) 3, 4, 5.

F) $y+(x|y|z)^*$

- G) 1) Axy
2) xyA
3) $S \rightarrow SS \rightarrow 1|2$ (see 1 and 2 parse tree banches below)
 $SS \rightarrow xyS$
 $SS \rightarrow Sxy$
4) $S \rightarrow A | B$
 $A \rightarrow xy$
 $B \rightarrow SB | S$

H) 1) (a)(a+)(b)

2)



- 3) $S \rightarrow ABC$
 $A \rightarrow aa$
 $B \rightarrow aB | \epsilon$
 $C \rightarrow b$

4) No, because there is only one parse tree.

- I) $\langle \text{reg-exp} \rangle ::= \langle \text{char} \rangle | \langle \text{char} \rangle \langle \text{reg-exp} \rangle$
 $\langle \text{char-non-terminals} \rangle ::= \langle \text{char} \rangle$