

Q1. Consider the context-free grammar $G = \langle \{X, Y\}, \{a, b\}, P, X \rangle$, with productions P:

$$\begin{aligned} X &\rightarrow YY \\ Y &\rightarrow bY \mid Yb \mid a \mid YYY \end{aligned}$$

- a. Show using derivation how the string *ababaa* can be generated by this grammar.

- b. Construct a parse tree of this string.

Q2.

- a) Translate the following infix expression $8 * 7 \div 4$ into postfix expression.

- b) Draw the parse tree of this translation by using syntax-directed translation scheme that incrementally attaches program fragments to productions.