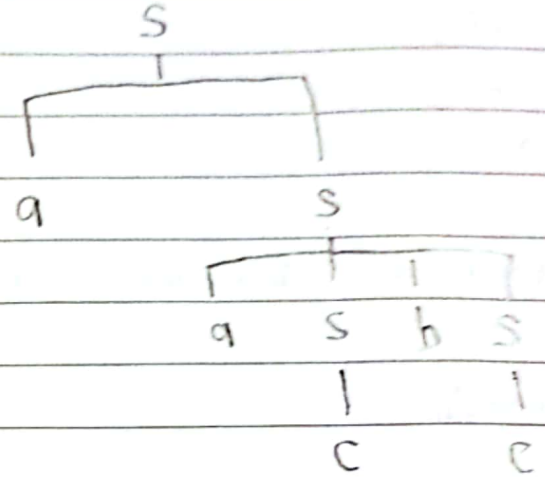
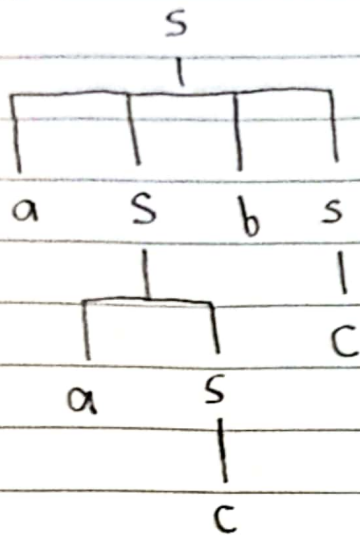


Tutorial Week 3

Question 2



$$S \rightarrow aacbc$$

$$S \rightarrow aacbc$$

\therefore The grammar is ambiguous

Question 3

a) $\text{Expr} \rightarrow \text{Expr} + \text{Expr}$ (Rule 1)
 $\text{Expr} \rightarrow \text{var} + \text{Expr}$ (Rule 4)
 $\text{Expr} \rightarrow \text{var} + \text{const}$ (Rule 5)

b) $\text{Expr} \rightarrow \text{Expr} * \text{Expr}$ (Rule 2)
 $\text{Expr} \rightarrow \text{Expr} + \text{Expr} * \text{Expr}$ (Rule 1)
 $\text{Expr} \rightarrow \text{var} + \text{Expr} * \text{Expr}$ (Rule 4)
 $\text{Expr} \rightarrow \text{var} + \text{var} * \text{Expr}$ (Rule 4)
 $\text{Expr} \rightarrow \text{var} + \text{var} * \text{var}$ (Rule 4)

c) $\text{Expr} \rightarrow (\text{Expr})$ (Rule 3)
 $\text{Expr} \rightarrow (\text{var})$ (Rule 4)

d) $\text{Expr} \rightarrow \text{Expr} * \text{Expr}$ (Rule 2)
 $\text{Expr} \rightarrow (\text{Expr}) * \text{Expr}$ (Rule 3)
 $\text{Expr} \rightarrow (\text{Expr} + \text{Expr}) * \text{Expr}$ (Rule 1)
 $\text{Expr} \rightarrow (\text{var} + \text{Expr}) * \text{Expr}$ (Rule 4)
 $\text{Expr} \rightarrow (\text{var} + \text{var}) * \text{Expr}$ (Rule 4)
 $\text{Expr} \rightarrow (\text{var} + \text{var}) * \text{var}$ (Rule 4)