# COMP3438 Lab 10

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## 1.

The 2 production rules are: $S \to aaaSbbb, S \to aa$. Thus, CFG for $L = \{a^{3n+2n}b^{3n} | n \geq 0\}$:

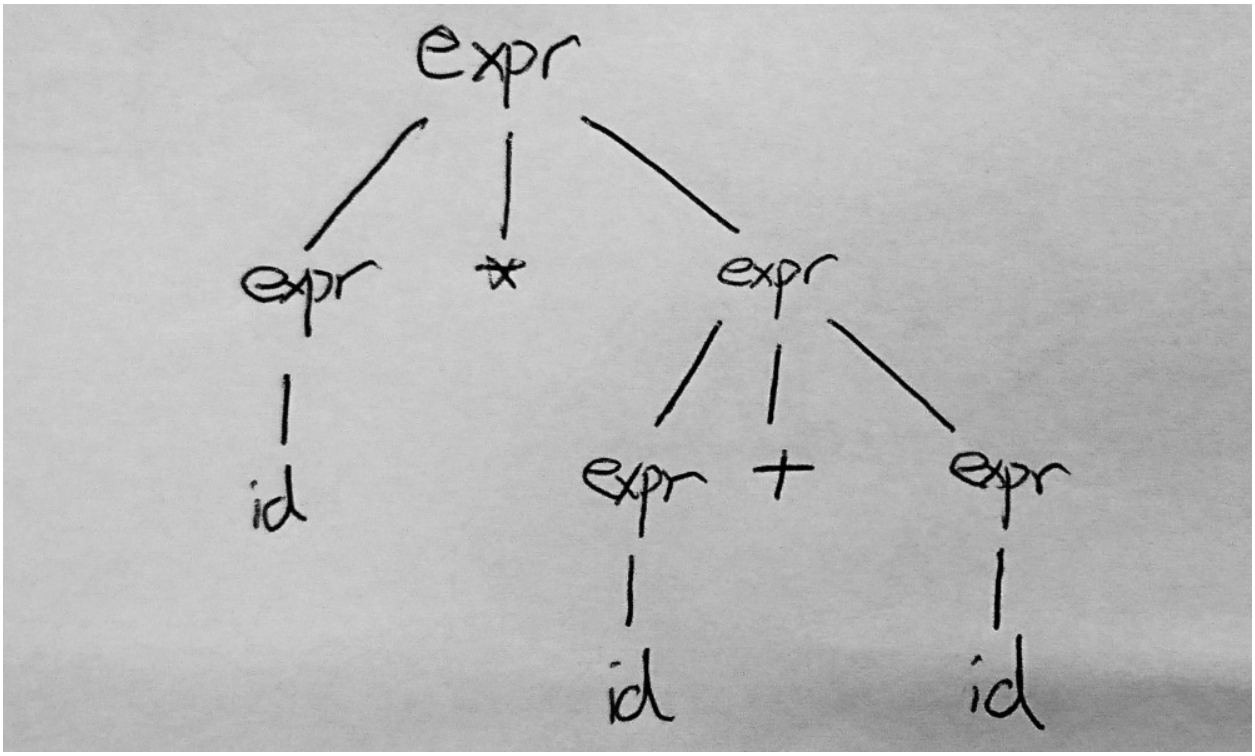
$$G = \{N = \{S\}, T = \{a, b\}, S, P = \{S \to aaaSbbb | aa\}\}$$

## 2.

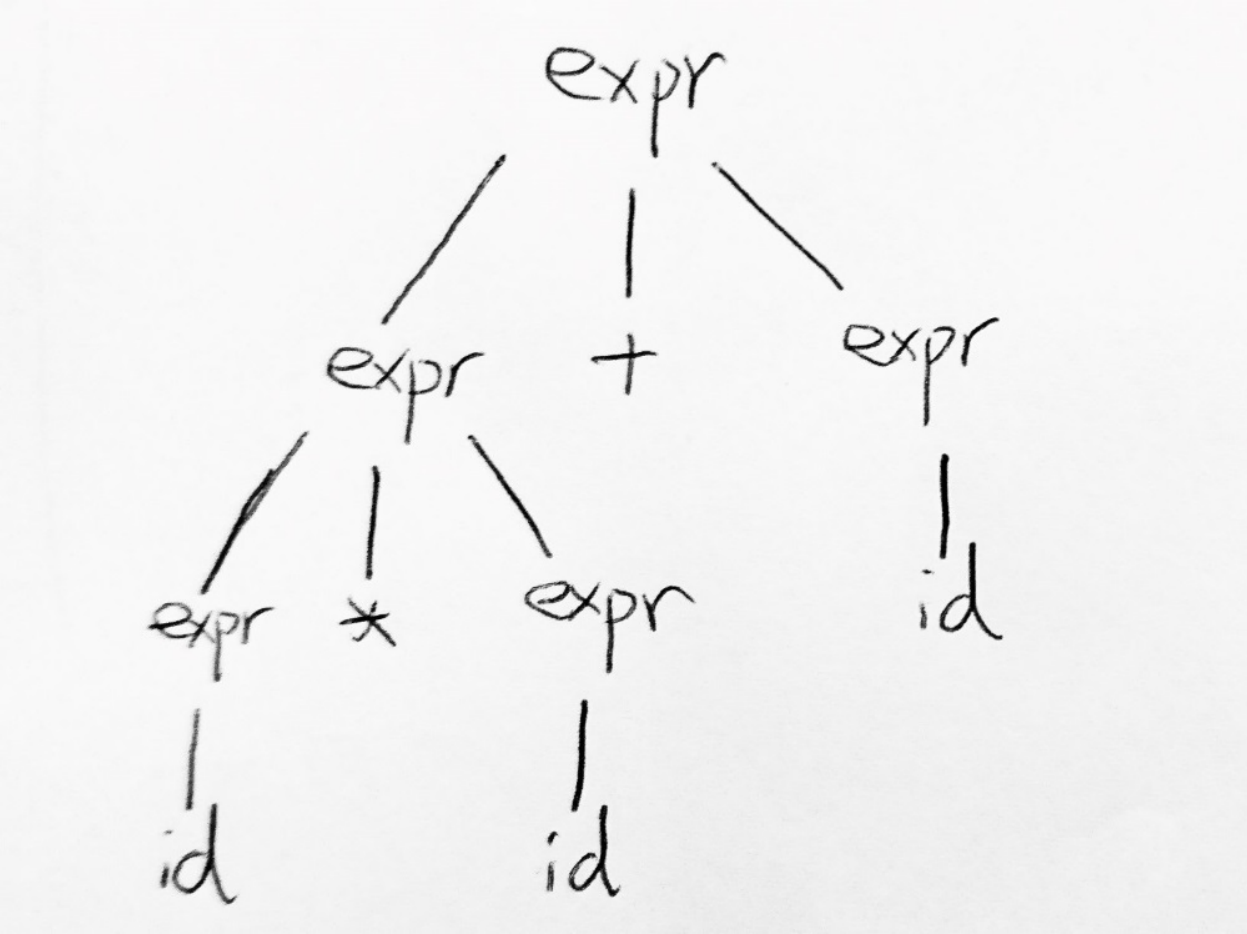
**(a)** Leftmost derivation for $id * id + id$:

$$expr \Rightarrow expr * expr \Rightarrow id * expr \Rightarrow id * expr + expr \Rightarrow id * id + expr \Rightarrow id * id + id$$

**(b)** Parse tree for (a)




**(c)** $G$ is ambiguous as the grammar can be represented by another parse tree:


expr
expr
+
expr
expr
*
expr
id
id
id