

COMP 455
Models of Languages and Computation
Spring 2019
Homework 6
Due Wednesday, March 20, 2019

1. Show that the following grammar is ambiguous:

$$\begin{aligned}S &\rightarrow AU \\S &\rightarrow VC \\U &\rightarrow BC \\V &\rightarrow AB \\A &\rightarrow a \\A &\rightarrow f \\B &\rightarrow b \\C &\rightarrow c \\C &\rightarrow g\end{aligned}$$

where upper case letters are nonterminals, lower case letters are terminals, and S is the start symbol. Give an equivalent unambiguous grammar.

2. Draw a parse tree for the grammar of example 3.1.3 and the string $id * (id + id) + id$.

3. Problem 3.3.1, parts (b) and (c), from the text, page 135. Note that there is a mistake in one edition of the text in this problem. Part (b) should say “Show that $aba, aa, abb \notin L(M)$, but $baa, bab, baaaa \in L(M)$.”

For this homework you may work in groups of up to four people and groups are encouraged to turn in only one paper with everyone’s names in the group on it. This will make the work of the grader easier. However, people in different groups may not collaborate.

Those who want to be part of a group and can’t find others may meet in the front after class and form groups, if you desire to. You may also send email to the TA and he will assign people to groups.