COMP 455
Models of Languages and Computation
Spring 2019
Homework 4
Due Tuesday, February 26, 2019

1. Problem 2.3.7, part (b), from the text, page 84. You need not use the construction of example 2.3.2, just come up with a regular expression for this automaton and illustrate how you got it.

2. Using the pumping theorem and closure under intersection, show that the language $L = \{wbbw : w \in \{a, b\}^*\}$ is not regular. (Hint: Intersect L with the regular language denoted by a^*bba^*. The intersection gives the language $\{a^nbba^n : n \geq 0\}$. This language would be regular if L were regular. To show that L is not regular, you only have to show that $\{a^nbba^n : n \geq 0\}$ is not regular, and you can do this using the pumping lemma.

3. Find a regular language L and a non-regular subset S of L.

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.