

## Homework 2: Regular Languages and NFAs

### Theory of Computation (CSCI 3500)

Write the solution to each question on its own page.

All questions must be in order.

Your name must be on each page.

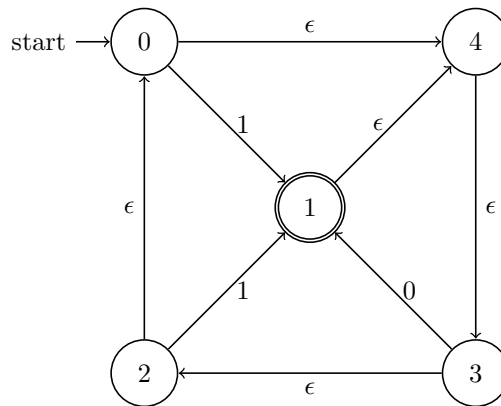
Then email me a single PDF file of your solution set.

All assignments not adhering to this will not be graded.

0. Construct a NFA that accepts the following language:

$$L = \{w \in \{\%, \$\}^* \mid |w| = 3n \text{ for } n \in \mathbb{N}\}$$

1. Use the run function for NFAs to show that the word 0111 is accepted by the following NFA:



2. Using the mathematical definition of a NFA prove that any NFA  $M$  with more than one final state is equivalent to a NFA with a single final state.
3. Using the mathematical definition of an NFA show that any finite language is regular. This time you should give a rigorous proof.