# Midterm Exam 1: Study Guide

CSE 30151 Spring 2016

2016/02/11

You will have the whole class period of 75 minutes. The exam will be open book and open (paper) notes. No computers, smartphones, or any other Turing-equivalent machines are allowed.

The exam covers everything up to and including HW3. There will be six questions, worth 10 points each, for a total of 60 points (10% of your grade).

- Design:

    - Write a finite automaton that recognizes a given language (like HW2 Q1, HW4 Q2a, HW4 Q3a, Exercise 1.6j).

    - Write a regular expression that matches a given language (like Exercise 1.18e).

- Construction: Two out of the following three types of questions.

    - Convert a NFA to a DFA (like HW2 Q3, Exercise 1.16b).

    - Convert a regular expression to a NFA (like HW3 Q1, Exercise 1.28a).

    - Convert a NFA to a regular expression (like HW3 Q3, Exercise 1.21a).

- Proofs:

    - Show that regular languages are closed under some operation (like HW2 Q2c, HW4 Q1b, Problem 1.66a).

    - Something else! (Could be anything, but Exercise 1.11 might be good practice.)