

Midterm Exam 1 Study Guide

CSE 30151 Spring 2017

2017/02/09

You will have the whole class period of 75 minutes. The exam will be open book and open (paper) notes. No computers, smartphones, or tablets are allowed. The exam covers HW1 and HW2, as well as regular expressions. There will be six questions, worth 10 points each, for a total of 60 points (10% of your grade).

Many of the practice problems below are from the textbook. The numbers are from the 3rd US edition; if the 3rd international edition has a different number, it is indicated by “intl.”

- Design: Two questions
 - Write a finite automaton that recognizes a given language (like HW2 Q1, HW2 Q3b, Exercise 1.6–7).
 - Write a regular expression that matches a given language (like Exercise 1.18).
- Construction: Two out of the following three types of questions.
 - Convert a NFA to a DFA (like HW2 Q3ad, Exercise 1.16).
 - Convert a regular expression to a NFA (like Exercise 1.28).
 - Convert a NFA to a regular expression (like Exercise 1.21).
- Proofs: Two questions
 - Show that regular languages are closed under some operation (like HW2 Q2, Exercise 1.31 (intl. 1.36), Problem 1.66a (intl. 1.60)).
 - Something else! (Could be anything, but HW1 Q2–3 or Exercises 1.11, 23 might be good practice.)
 - Proving languages nonregular using the pumping lemma will **not** be on this exam.