

HOMEWORK #7, CPSC 421/501, FALL 2017

JOEL FRIEDMAN

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Please note:

- (1) **We may only mark a subset of the problems below, depending on time constraints; the solution set we provide will solve all of the problems below.**
- (2) Proofs should be written out formally. **Your solutions should be explained: e.g., if we ask for a DFA, you should explain how it works, not merely produce a diagram of the DFA.**
- (3) Homework that is difficult to read may not be graded.
- (4) You may work together on homework, **you must write up your own solutions individually.** You must acknowledge with whom you worked (specify their `ugrad.cs.ubc.ca` email addresses). You must also acknowledge any sources you have used beyond the textbook and two articles on the class website.
- (5) When you submit your homework to `gradescope.com`, you need to put the solutions to different problems on different pages; `gradescope.com` will ask you to identify which pages correspond to which problems. Please use the problem numbers below.
- (6) Bonus questions count for marks above the 10% homework grade.

Homework Problems

- (1) Problem 1 of the December 2014 final exam posted on the course website.
- (2) Problem 2 of the December 2014 final exam; in part 2(b), “Future” refers to what we call “AcceptingFuture” this year.
- (3) Problem 5(a) of the December 2014 final exam.
- (4) Problem 2 of the December 2011 final exam posted on the course website.

- (5) Problem 8(a) of the December 2011 final exam posted on the website. Do this in the Myhill-Nerode style, by proving that as s varies over Σ^* , there are only finitely many values for

$$\text{AcceptingFuture}(L, s) \stackrel{\text{def}}{=} \{t \mid st \in L\} .$$

- (6) Use the answer of the previous problem to build a DFA for the language L of Problem 8(a) of the December 2011 final exam.

DEPARTMENT OF COMPUTER SCIENCE, UNIVERSITY OF BRITISH COLUMBIA, VANCOUVER, BC V6T 1Z4, CANADA, AND DEPARTMENT OF MATHEMATICS, UNIVERSITY OF BRITISH COLUMBIA, VANCOUVER, BC V6T 1Z2, CANADA.

E-mail address: `jf@cs.ubc.ca` or `jf@math.ubc.ca`

URL: <http://www.math.ubc.ca/~jf>