

CSC544 Assignment #1

due Tuesday 2/3 in class

Problems

1. Give the state diagrams of DFAs recognizing the following languages (assume $\Sigma = \{0, 1\}$):
 - (a) $\{w \mid w \text{ begins with a 1 and ends with a 0}\}$
 - (b) $\{w \mid w \text{ contains at least three 1s}\}$
 - (c) $\{w \mid w \text{ does not contain the substring 110}\}$
2. Implement the DFAs of the previous problem in your favorite programming language and demonstrate that they work correctly (accepting strings that are in the language and rejecting strings that are not in the language). Submit your source code and a copy of your test runs.
3. Use the construction given in the proof of Theorem 1.45 (Theorem 1.22 1st edition) to give the state diagram of the NFA recognizing the union of the two languages described in Problem 1a and Problem 1b.