

CS 3530: Assignment 1a

Fall 2017

Exercise 1.6bcefm (15 points)

Problem

Give state diagrams of DFAs recognizing the following languages. In all parts the alphabet is $\{0, 1\}$.

- b. Language: $\{w : w \text{ contains at least three 1s}\}$

Solution

- c. Language: $\{w : w \text{ contains the substring } 0101, \text{ i.e., } w = x0101y \text{ for some } x \text{ and } y\}$

Solution

- e. Language: $\{w : w \text{ starts with } 0 \text{ and has odd length, or starts with } 1 \text{ and has even length}\}$

Solution

- f. Language: $\{w : w \text{ doesn't contain the substring } 110\}$

Solution

- m. Language: The empty set

Solution

Exercise 1.7c (5 points)

Problem

Give state diagrams of NFAs with the specified number of states recognizing each of the following languages. In all parts the alphabet is $\{0, 1\}$.

- c. Language: $\{w : w \text{ contains an even number of } 0\text{'s, or contains exactly two } 1\text{s}\}$ with six states

Solution