4200 - Formal Languages: Solution to Homework #3

Due on Wed 18, 2019 at 2:00pm

Instructor: Dr. Anh Nguyen

Problem 1

15 points
Construct NFA that recognizes following languages:

1. All binary numbers that contain 00 or 11
2. All binary numbers that contain a 1 in the 3rd location from the right (e.g. **1**00, 10**1**11, ...)
3. All binary numbers that can be divided by 3

Problem 2

15 points
Via subset construction, construct DFAs from all three NFAs that were constructed in problem 1.
Please show step-by-step solutions.
Solution:

Problem 1

Figure 1:

Figure 2: All binary numbers that can be divided by 3.

Problem 2

The DFA is the same as the NFA provided in the solution to the Problem 1.c. above.