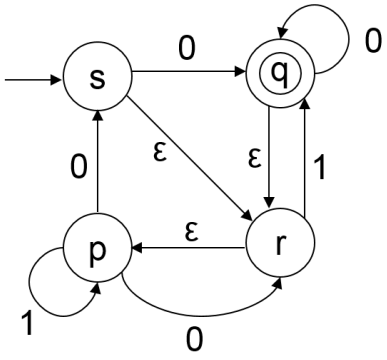
Department of Electrical Engineering and Computer Science

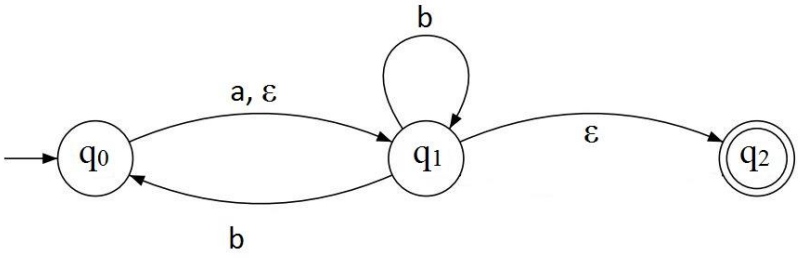
CIS 490/590 Foundations of Computing
Fall 2021

Assignment 2
(Due date: 10/04/21)

1. For each of the following NFAs, draw the equivalent DFA that accepts the same language. Label the states to make it clear that how it was obtained. [6 points]



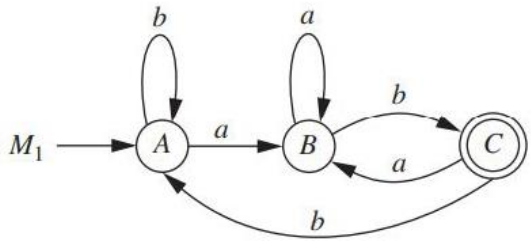
(a)

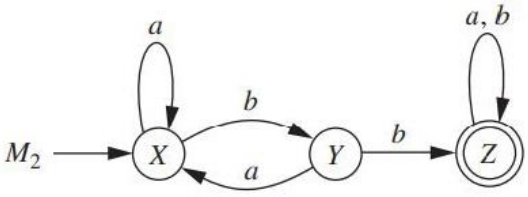


(b)

2. Let M1 and M2 to be the DFAs pictured below, accepting languages L1 and L2, respectively. Design DFAs accepting the following two languages: [6 points]

a. $L_1 \cup L_2$
b. $L_1 \cap L_2$





3. Write Python program to implement a deterministic finite state machine (DFA) that accepts the following language. [5 points]

$$L = \{W : W \text{ is your CSU ID}\}$$

4. Design a graphical user interface (GUI) for part 3 above that allows the user to enter the strings and get the output as an acceptance or rejection of that input string. [3 points]

Graduate students, please modify the program in part 3 to make the DFA accepts either the above-mentioned language or the following language.

$$L = \{V : V \text{ is your last name}\}$$

What to turn in:

Submit your work through **Blackboard** as **one single** folder including:

- An `HTML` file called `index.html` that links to the overall summary of your answers.
- A folder called `CIS_490_590` that includes all files, program codes along with the supported files (if any), etc.

Notes:

- Late submissions will receive a penalty of 10% per day up to two days.
- No material will be accepted after two days past the deadline.
- Email submissions will not be accepted.