National University of Computer & Emerging Sciences, Karachi

Fall 2022 CS-Department
Assignment 2

Deadline 20 March 2022

Course Code: CS3005	Course Name: Theory of Automata
Course Instructors:	Musawar Ali, Bakhtawar Abbasi
Sections:	A,B,C,D,E,F

Question 1: (GTG and State Elimination) (10) Points

Find the regular expression of the DFA given in figure 1, using state elimination method.

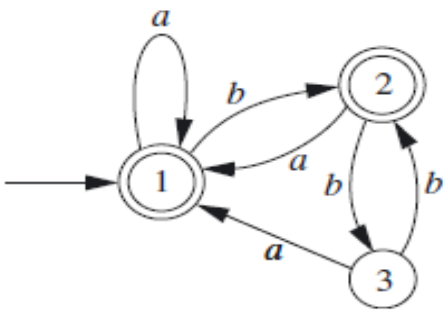

Figure 1

Note : Show steps of your method properly to get full credit.

Question 2: (GTG and State Elimination) (10) Points

Find the regular expression of the DFA given in figure 2, using state elimination method.

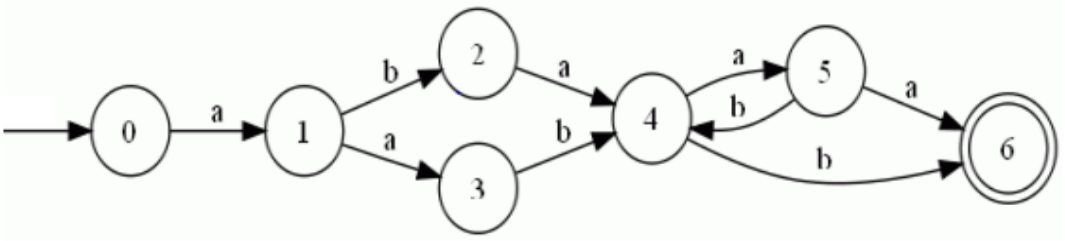

Figure 2

Note : Show steps of your method properly to get full credit.

Question 3: (Conversion Epsilon NFA to DFA) **10 Points**

Construct the DFA from the Epsilon NFA given in figure 3.

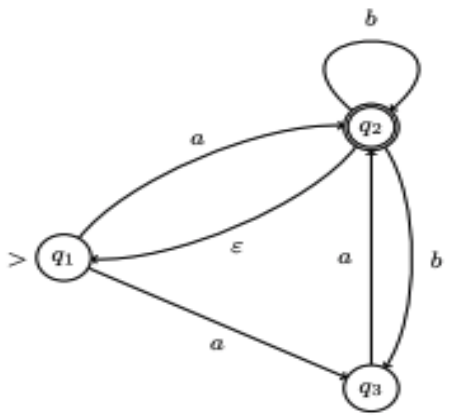

Figure 3

Note: Show steps of your method properly to get full credit.

Question 4: (Conversion epsilon-NFA to DFA) **10 Points**

Construct the DFA from the Epsilon NFA given in figure 4.

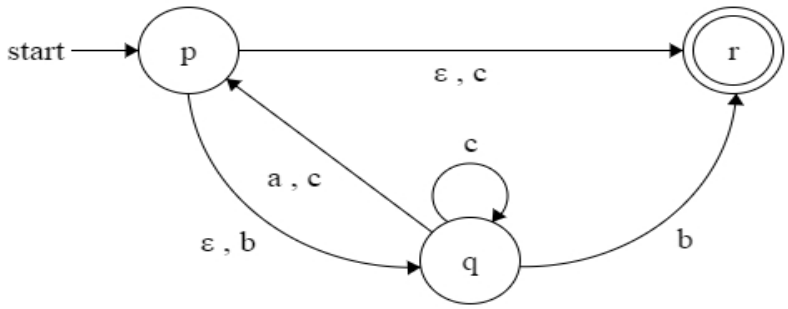

Figure 4

Note: Show steps of your method properly to get full credit.

Question 5: (Conversion NFA to DFA) **10 Points**

Construct the DFA from the NFA given in figure 5.

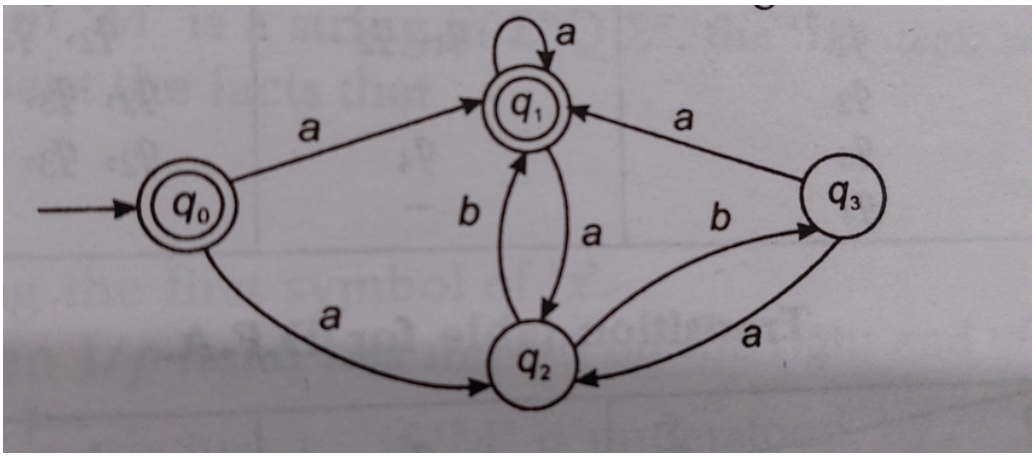

Figure 5

Note: Show steps of your method properly to get full credit.

Question 6: **(10+10+10+10) Points**

1. **Find the Concatenation of FA1 and FA2 given in Figure 6 and Figure 7.**
2. **Find the Union of FA1 and FA2 given in Figure 6 and Figure 7.**
3. **Find the Intersection of FA1 and FA2 given in Figure 6 and Figure 7.**
4. **Find the Closure of FA1 given in Figure 6.**

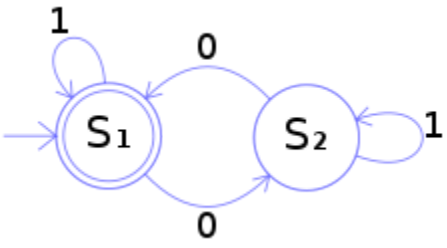

Figure 6

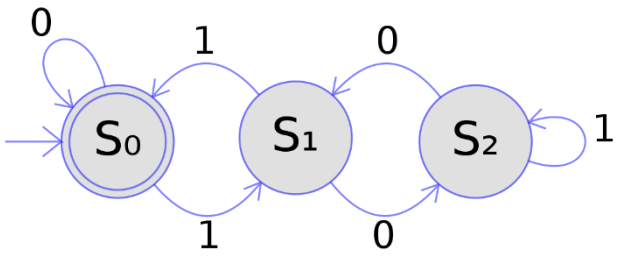

Figure 7

Note: Show steps of your method properly to get full credit.

BEST OF LUCK!