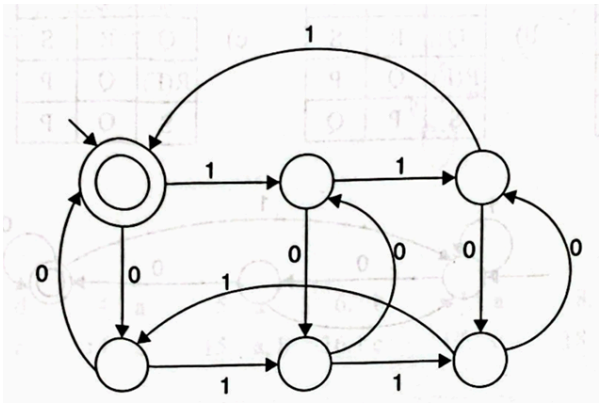
Theory of Automata: Assignment 2

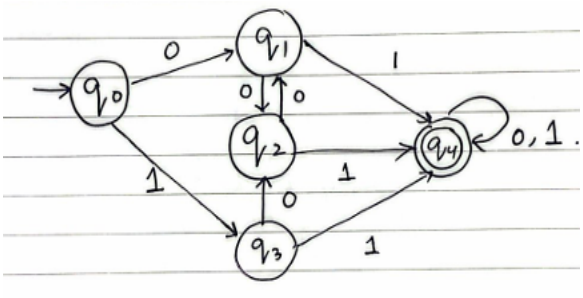
Deadline: Oct 21, 2024 (in class)

Submit the assignment in hard form. Also, submit the soft form on GCR if we cannot find your hard form. Plagiarism gets a minimum zero and a maximum of F in the course. No extension in the deadline shall be given.

Question 1: Minimize the following DFAs

a.

b. 

c. 

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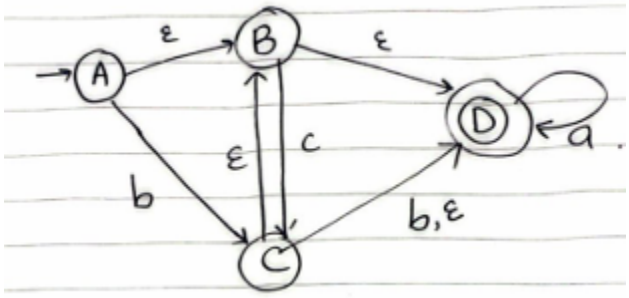
	States	a	b
→	A	B	F
	B	A	F
	C	G	A
	D	H	B
+	E	A	G
+	F	H	C
+	G	A	D
	H	A	C

Question 2: For all question below a) Convert the RE to ⅄-NFA b) Convert ⅄-NFA DFA, and c) Convert DFA to Minimized DFA

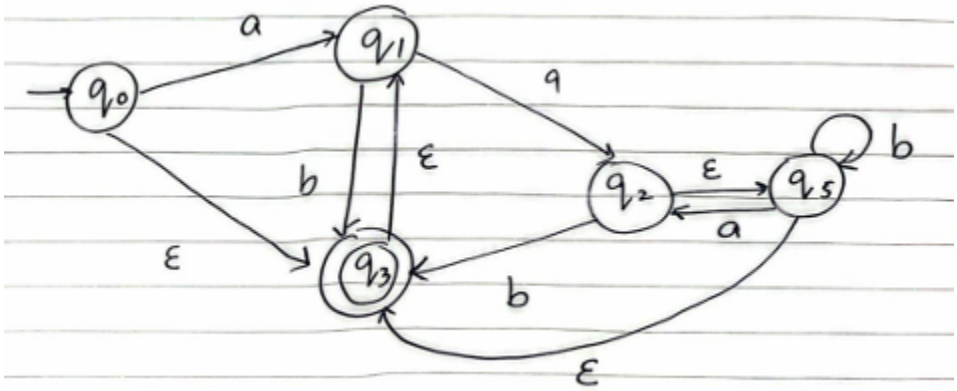
1) (0+1)*(00)* + (01)*(11)*
2) ab(aa+bb)(a+b)*b
3)a*(b*a)*
4)10+(0+11)0*1
5) a+b(ab+a)

Question 3 : Convert ⅄-NFA to DFA

a.

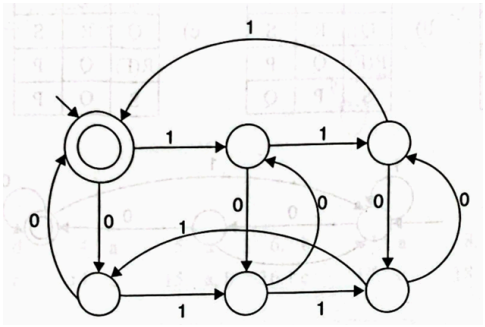
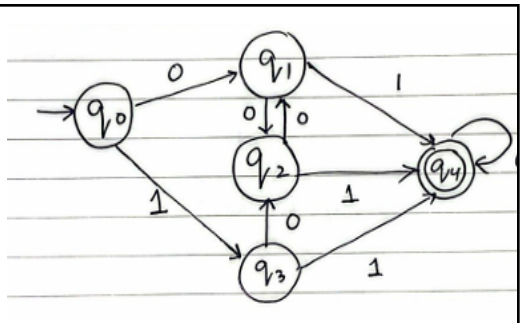


b.



Question 4: Consider the DFAs given. Use Kleene's theorem to solve question 4.

DFA 1	DFA 2

a. DFA-1 + DFA-2 (+ representing Union)
b. DFA-1.DFA-2 (. representing Concatenation)
c. Minimized-DFA-1 + Minimized-DFA-2 (+ representing Union)
d. Minimized-DFA-1 . Minimized-DFA-2 (. representing Concatenation)
e. (DFA-1)*
f. (DFA-2)*

GOOD LUCK 🙂