



SECI 1013

DISCRETE STRUCTURE

SEMESTER 1 2020/2021

TUTORIAL 5 :

LECTURER:

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SUBMITTED BY:

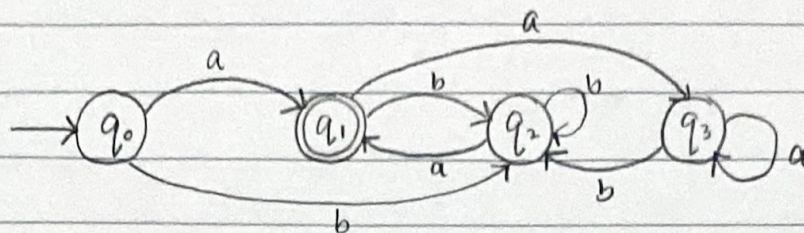
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Tutorial 5

1. i)



ii) It is because DFA has only a final state and does not produce any output. DFA receives input string and determine whether a string is accepted or unaccepted. The sequence can be criticized if and only if the input is included to bring the machine to final state.

2. i) state transition table

f_s	a	b
s_0	s_2	s_1
s_1	s_3	s_1
s_2	s_4	s_3
s_3	s_3	s_3
s_4	s_2	s_3

ii) a) $w = aaaaaa$

$s_0 \xrightarrow{a} s_2 \xrightarrow{a} s_4 \xrightarrow{a} s_2 \xrightarrow{a} s_4 \xrightarrow{a} s_2 \xrightarrow{a} s_4$

w is not accepted by DFA because it is not end at final state.

b) $w = ababab$

$s_0 \xrightarrow{a} s_2 \xrightarrow{b} s_3 \xrightarrow{a} s_3 \xrightarrow{b} s_3 \xrightarrow{a} s_3 \xrightarrow{b} s_3$

w is accepted by DFA because it is end at final state.

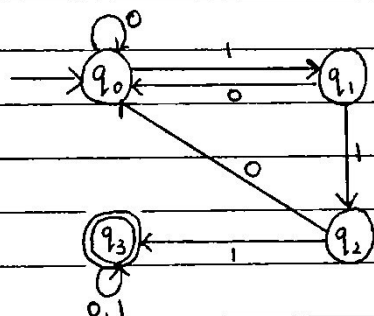
Question 3

i. a) $S = \{s_0, s_1, s_2, s_3, s_4, s_5\}$ $I = \{0, 1\}$ $q_0 = \{s_0\}$ $F = \{s_0, s_1, s_5\}$

b) 0011101100

 $s_0 \xrightarrow{0} s_0 \xrightarrow{0} s_0 \xrightarrow{1} s_1 \xrightarrow{1} s_2 \xrightarrow{1} s_3 \xrightarrow{0} s_5 \xrightarrow{1} s_5 \xrightarrow{1} s_5 \xrightarrow{0} s_4 \xrightarrow{0} s_4$ $\therefore$ not accepted by M

ii.

 $M = \{q_0, q_1, q_2, q_3\}$ $I = \{0, 1\}$ $q_0 = \{q_0\}$ $F = \{q_3\}$

f_s	0	1
q_0	q_0	q_1
q_1	q_0	q_2
q_2	q_0	q_3
q_3	q_3	q_3

Question 4

 $M = \{S, I, O, q_0, f_s, f_o\}$

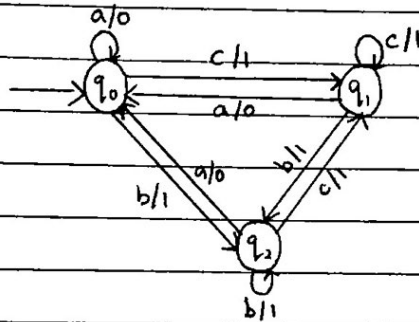
States

 $q_0 = \text{WANDER}$ $q_1 = \text{EVADE}$ $q_2 = \text{ATTACK}$

Inputs

 $a = \text{not enemies}$ $b = \text{enemies \& not vulnerable}$ $c = \text{enemies \& vulnerable}$

Outputs

 $1 = \text{shoot}$ $0 = \text{not shoot}$ 

	f_s			f_o		
	a	b	c	a	b	c
q_0	q_0	q_2	q_1	0	1	1
q_1	q_0	q_2	q_1	0	1	1
q_2	q_0	q_2	q_1	0	1	1

No. :

Date :

QUESTION 5

