

ASSIGMENT 5
DISCRETE STRUCTURE



UNIVERSITI TEKNOLOGI MALAYSIA, JOHOR BAHRU

FACULTY OF COMPUTING

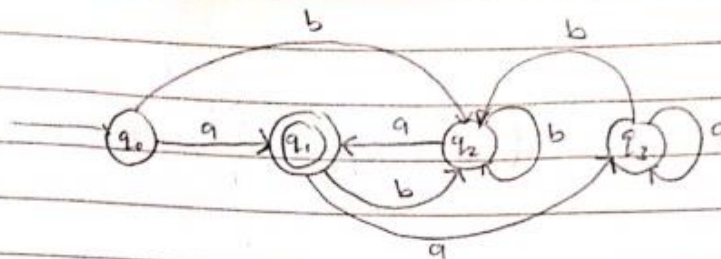
--	--	--

NAME OF GROUP 10 MEMBER :

- 1.AHMAD ZULFIKAR (A19EC3003)**
- 2.MUHAMMAD HARUN BIN MARZUKI (A20EC0212)**
- 3.MUHAMMAD TANBIRUL ISLAM SAEED (A20EC4039)**

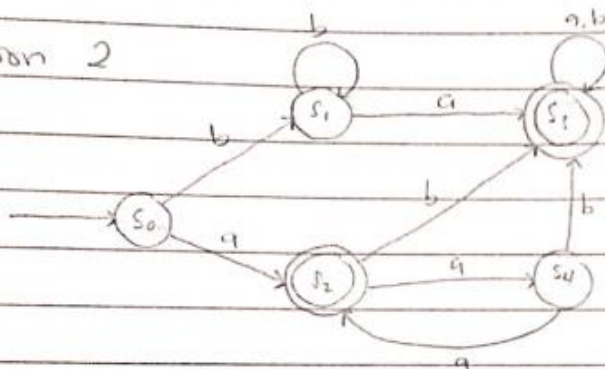
Que 1

i. transition table f_1



ii. because DFA will only accept input that reaches the final state

Question 2



i.	f_2	a	b	ii. a) $w = a a a a a a$
s_0	s_2	s_1		not accepted
s_1	s_3	s_1		b) $w = a b a b a b$
s_2	s_4	s_3		accepted
s_3	s_3	s_3		
s_4	s_2	s_3		

Question-3 Answer

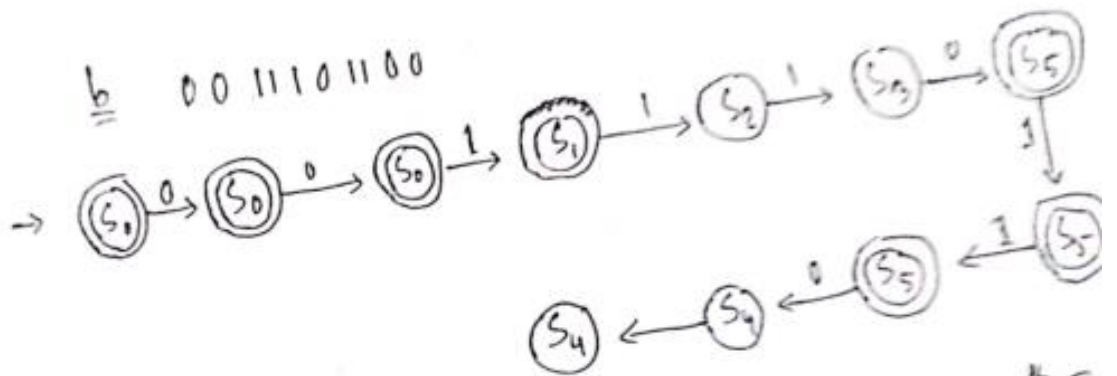
①

$$\underline{a} \quad S = \{s_0, s_1, s_2, s_3, s_4, s_5\}$$

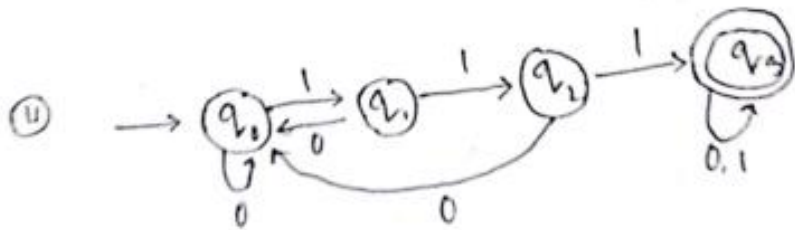
$$a = \langle 0, 14 \rangle$$

$$q_0 = 5.$$

$$F = \{s_0, s_2, s_3\}$$



0011101110 is not accepted by DFA on $S \notin F$



Question 4 - Ans:

Basically - A game is designed in which the game character goes into three states, which are Evade, Wander and Attack. Once the game character encounters an enemy, he goes from one state to another state. The state to which he goes depends on whether the game character is vulnerable or not. Based on the restrictions given, the actions are performed and a finite state diagram is drawn which describes the entire scenario.

States:

- 1) ATTACK: The hero keeps attacking in the state
- 2) EVADE: In this state the hero tries to save himself from the enemies
- 3) WANDER: In this state hero keeps wandering the battle field.

Action:

- 1) Shoot: If the hero encounters enemies then he immediately shoots them
- 2) No shoot: If the hero is in vulnerable condition, then he shoots only to save himself, otherwise he remains calm.

Diagram is given below:

