



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SCHOOL OF COMPUTING
Faculty of Engineering

Discrete Structure

Section - 7

Assignment 4

Done by:

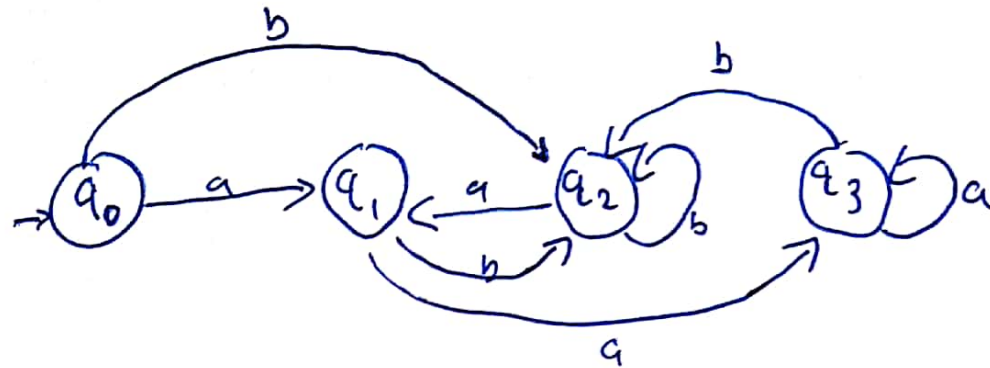
Group = 9

Members:

<u>No.</u>	<u>Name</u>	<u>Matric No.</u>	<u>Questions</u>
1	Muhammad Faiz Aiman Bin Fakhrurrazi	A20EC0209	3,6,9,12,15
2	Savero Fajri Sutino	A19EC3016	2,5,8,11,14
3	Islam Mohammed Ruzhan	A20EC4028	1,4,7,10,13

Q.

i)



ii) DFA will accept input that only reach to the final

Question = 2.

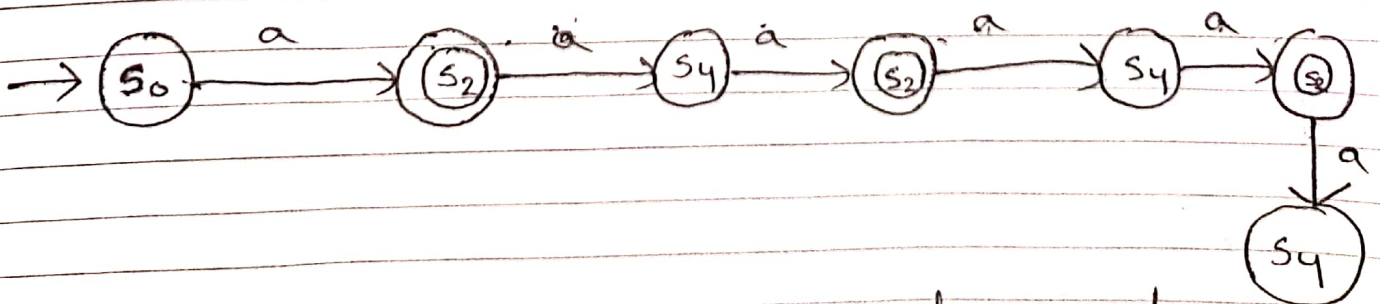
i) The state transition table for the diagram is :-

	f	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) $w = a a a a a a$ state diagram :-

For the transition state diagram :-

For $w = a a a a a a$, the state transition diagram will be :-

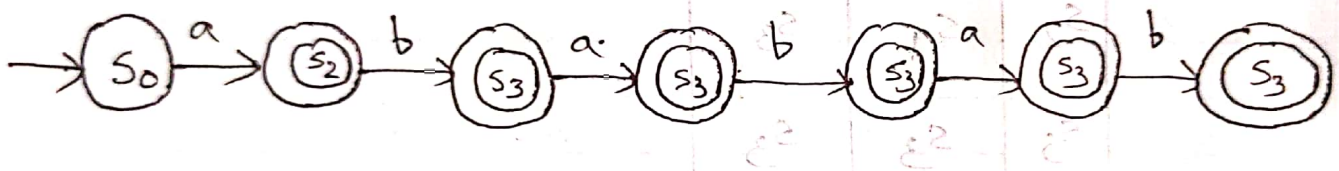


In this input string, we can see for the final input the transition stops at s_4 , which is not a

final state. So the input string cannot be accepted.

b) $w = ababab$.

The state transition for this input string is:-



In this diagram, we can see that after the final input, the transition stops at S_3 , which is a final state. So the string is accepted.



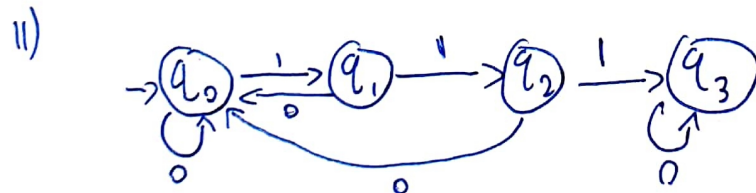
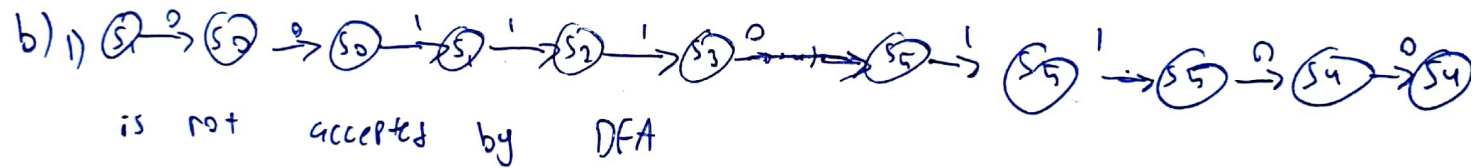
Q₃

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

$I = \{0, 1\}$

$q_0 = s_0$

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



Question = 4.

~~Here~~

$S = \{$

Let WANDER = W.

EVADE = E.

ATTACK = A.

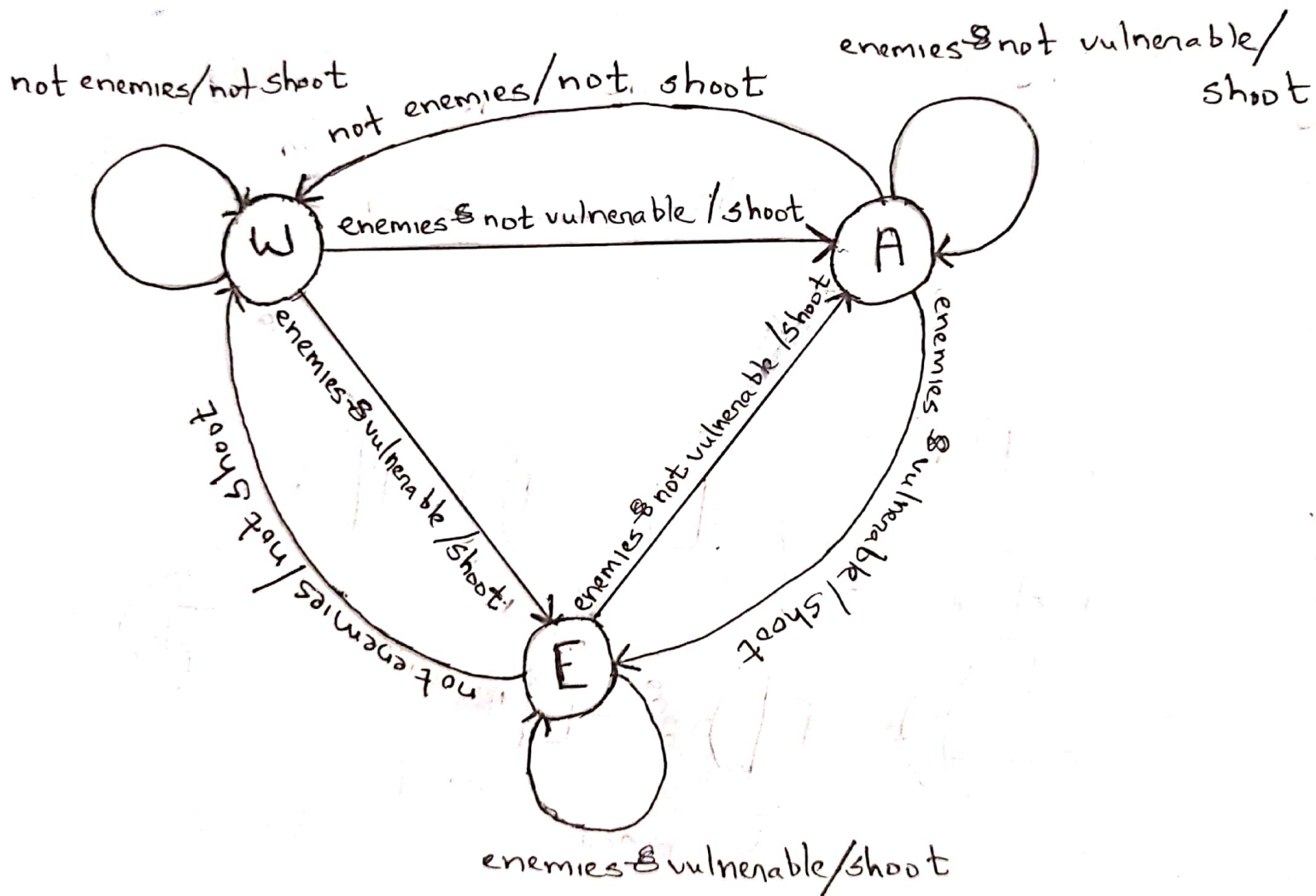
∴ $S = \{W, E, A\}$

Let, $q_0 = W.$

$I = \{ \text{not enemies, enemies \& not vulnerable, enemies \& vulnerable} \}.$

$O = \{ \text{shoot, not shoot} \}$

The finite state diagram to model the game is



Question 5

States :

S₁ : Welcome screen

S₂ : Validating screen

S₃ : 1st PIN entering screen

S₄ : 2nd PIN entering screen

S₅ : 3rd PIN entering screen

S₆ : Choosing transaction screen

S₇ : Performing transaction

S₈ : Asking for other transaction screen

S₉ : Terminate ATM session

Inputs :

A : Insert ATM card

B : Valid ATM card

C : Invalid ATM card

D : Correct PIN

E : Incorrect PIN

F : Transaction is selected

G : Complete transaction

H : Yes for other transaction

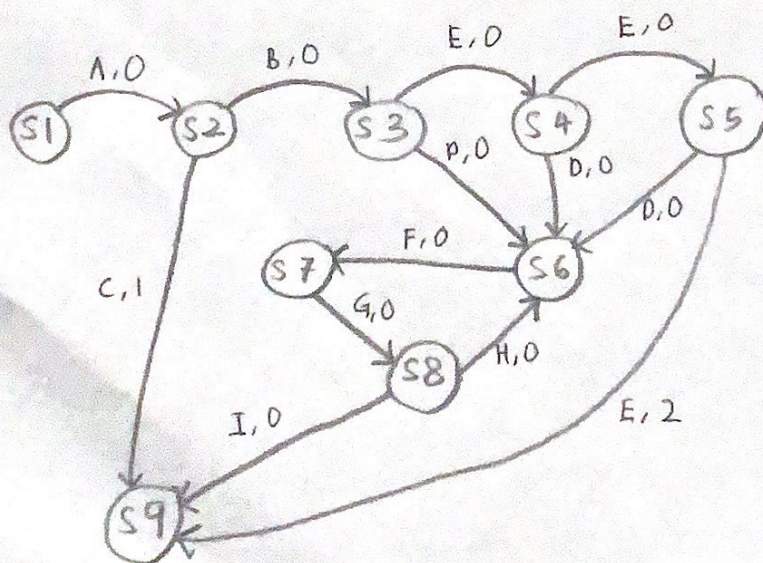
I : No for other transaction screen

Outputs :

0 : Nothing happened

1 : Eject ATM card

2 : Lock ATM card



state diagram