



UTM

UNIVERSITI TEKNOLOGI MALAYSIA

DISCRETE STRUCTURE (SECI 1013-03)

SEMESTER 1-2020/2021

ASSIGNMENT 5

GROUP 5

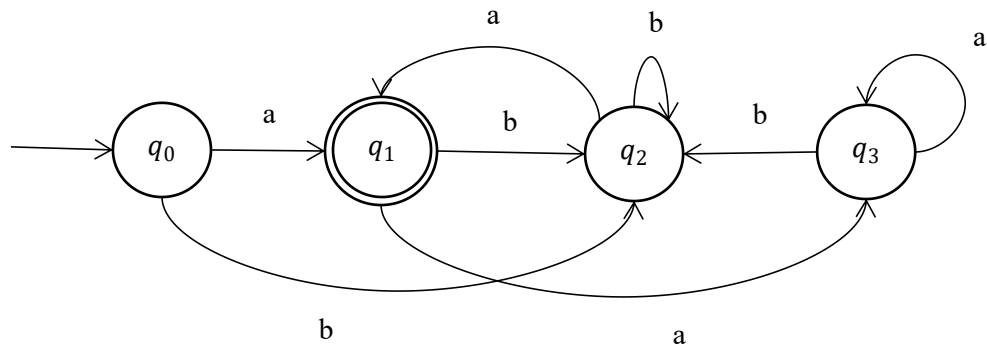
GROUP MEMBERS:

NAME	MATRIC NO.
1. KELVIN EE	A20EC0195
2. LEE CAI XUAN	A20EC0062
3. RASMIN KAUR SANDHU	A19ET0216

LECTURER'S NAME:

DR. NOR AZIZAH BINTI ALI

1i)



ii) DFA is suitable for verification of email password because it can detect if the password has at least one integer and one alphabet.

2i)

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

iiia) $w = \text{aaaaaa}$

$S_0 \xrightarrow{a} S_2 \xrightarrow{a} S_4 \xrightarrow{a} S_2 \xrightarrow{a} S_4 \xrightarrow{a} S_2 \xrightarrow{a} S_4$

The input is not accepted by DFA because S_4 is not the final state.

b) $w = \text{ababab}$

$S_0 \xrightarrow{a} S_2 \xrightarrow{b} S_3 \xrightarrow{a} S_3 \xrightarrow{b} S_3 \xrightarrow{a} S_3 \xrightarrow{b} S_3$

The input is accepted by DFA because S_3 is the final state.

3ia) $S = \{S_0, S_1, S_2, S_3, S_4, S_5\}$

$I = \{0, 1\}$

$q_0 = S_0$

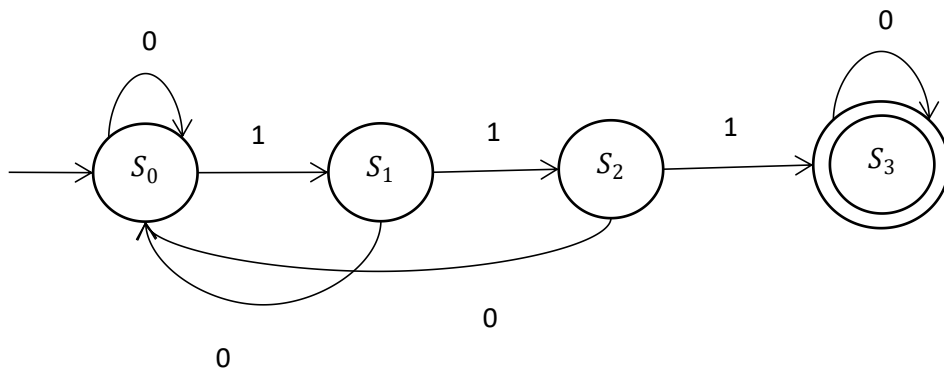
$F = \{S_0, S_1, S_5\}$

b)

$S_0 \xrightarrow{0} S_0 \xrightarrow{0} S_0 \xrightarrow{1} S_1 \xrightarrow{1} S_2 \xrightarrow{1} S_3 \xrightarrow{0} S_5 \xrightarrow{1} S_5 \xrightarrow{1} S_5 \xrightarrow{0} S_4 \xrightarrow{0} S_4$

The string is not accepted by DFA because S_4 is not the final state.

ii)



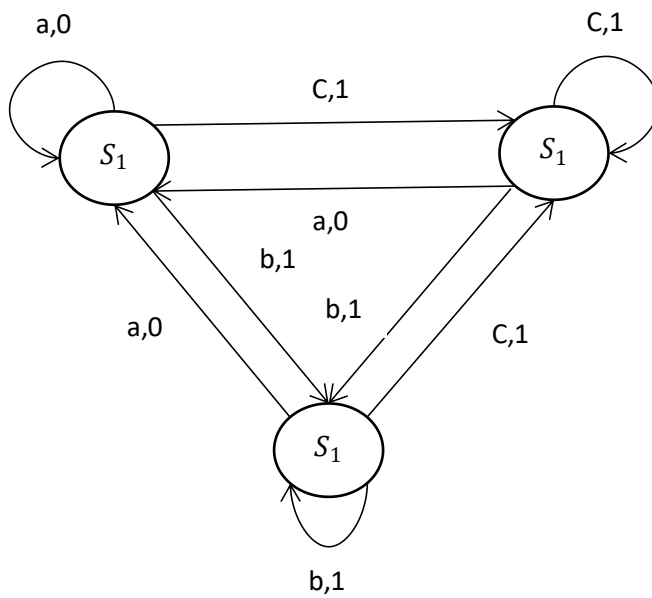
4)

States:
 S_1 = WANDER
 S_2 = EVADE
 S_3 = ATTACK

Inputs:
 a = not enemies
 b = enemies & not vulnerable
 c = enemies & vulnerable

Outputs:
 0 = not shoot
 1 = shoot

State	Input			Output		
	a	b	c	a	b	c
S_1	S_1	S_3	S_2	0	1	1
S_2	S_1	S_3	S_2	0	1	1
S_3	S_1	S_3	S_2	0	1	1



5)

