



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SCHOOL OF COMPUTING

SEMESTER I 2020/2021

SECI1013-06 STRUKTUR DISKRIT (DISCRETE STRUCTURE)

ASSIGNMENT 5

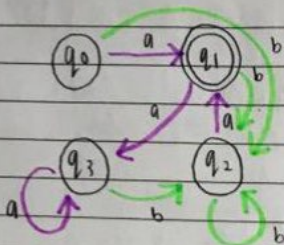
GROUP 2

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PENSYARAH: ASSOC. PROF. DR. ROSELINA SALLEHUUDIN

Question 1

- i. Construct a state transition diagram of DFA given the state transition function, f .



- ii. DFA can be applied for verification of email password. Justify why DFA is suitable verification?

- DFA is suitable for email verification because there is no output needed for email verification. DFA can be used either the email and password entered is correct or not. If the input is correct, then it will go to next state. Else if the input is incorrect, then it will repeat.

Answer to the question NO: 2

i)

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) $w = aaaaaa$

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

s_4 is not accepted. Because, s_4 is not a final state

b) $w = ababab$

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

this is accepted. Because, s_3 is a final state.

Question 3

- i. a) List all the component of S, I, q_0, F .

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

$$I = \{0, 1\}$$

$$q_0 = s_0$$

$$F = \{s_0, s_1, s_5\}$$

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Answer to the Question No: 3

i) b). given,

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$s_0 \xrightarrow{0} s_0 \xrightarrow{0} s_0 \xrightarrow{1} s_1 \xrightarrow{1} s_2 \xrightarrow{1} s_3 \xrightarrow{0} s_5 \xrightarrow{1} s_5 \xrightarrow{1} s_5 \xrightarrow{0} s_4 \xrightarrow{0} s_4$

according to the question, $s_4 \notin F$.

so, it is not accepted by DFA

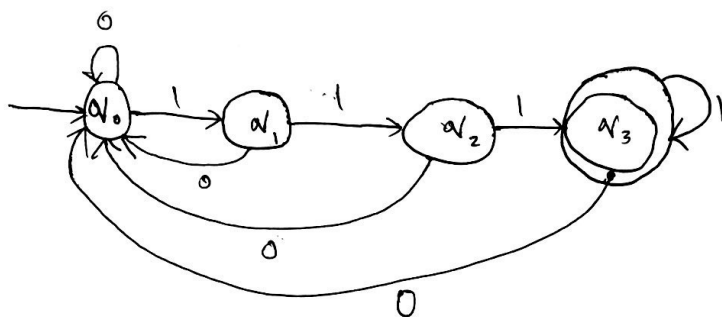
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Ans. to the Ques. No. 30

(ii)

The DFA:



The DFA M ,

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

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Ans. to the Ques. No. 4:

The three states are WANDER, EVADE,
ATTACK.

Let,

WANDER = W

EVADE = E

Attack = A.

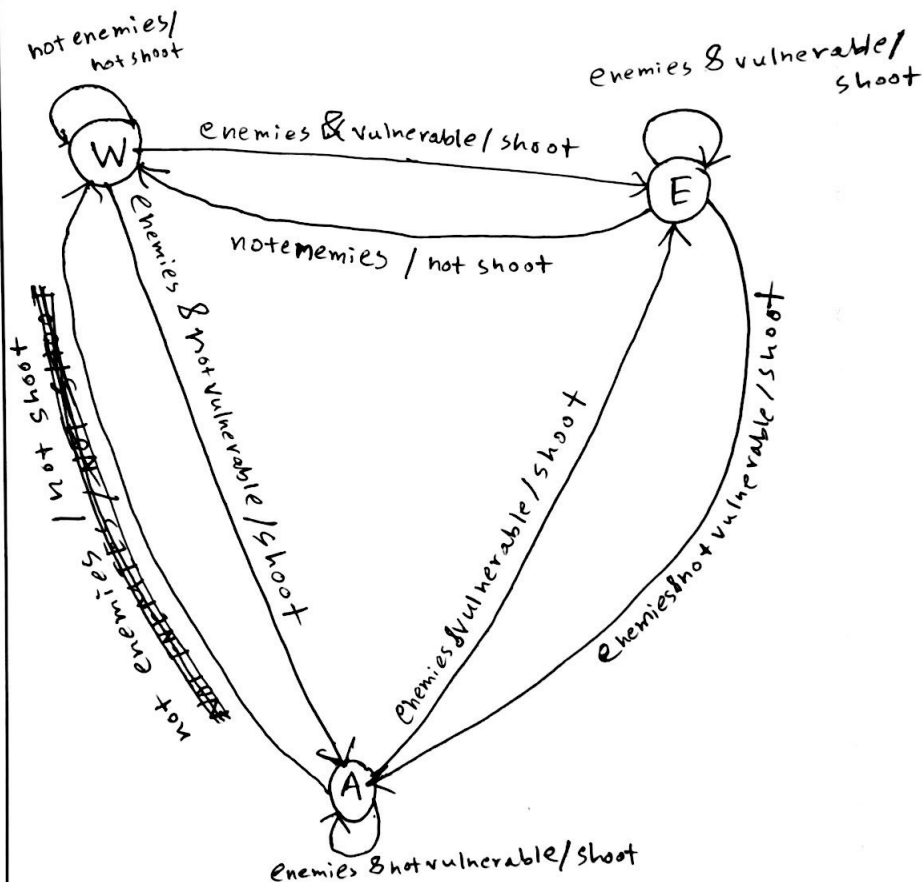
Inputs are not enemies, enemies & not
vulnerable, enemies & vulnerable.

Outputs are Shoot, not shoot.

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Ans. to the Ques. No. 4;



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Question 5:

