SECP 1013 DISCRETE STRUCTURE

TUTORIAL 5

LECTURER: Dr Razana Alwee

SUBMITTED BY:

T1

Adam Mustaqim Bin Azmi (A20EC0235)

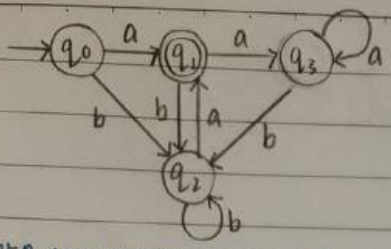
Chong Kah Wei (A20EC0027)

Muhammad Aiman Bin Abdul Razak (A20EC0082)

No.: Tutorial 5 (due 28/1)

Date:

1) i)



ii) DFA can receive an input string and determine whether a string is accepted or unaccepted

2) i)

Current state	Next state	
	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

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

Input is not accepted by the DFA since S_4 is not a final state.

b) w = ababab

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

Input is accepted by the DFA since S_3 is final state.

3) i) a) $M = [\{S_0, S_1, S_2, S_3, S_4, S_5\}, \{0,1\}, \{S_0\}, f_s, \{S_0, S_1, S_5\}]$

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

$I = \{0,1\}$

$q_0 = \{S_0\}$

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

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

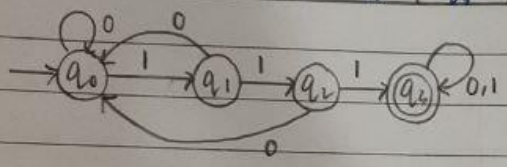
String 0011101100 is not accepted by the DFA since S_4 is not the final state.

No.: Date:

ii) accepts the set of all strings contain '111'

$M = [\{q_0, q_1, q_2, q_3\}, \{0,1\}, \{q_0\}, fs, \{q_3\}]$

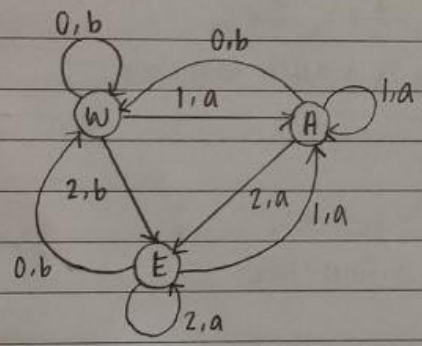
Current state	Next state	
	0	1
q_0	q_0	q_1
q_1	q_0	q_2
q_2	q_0	q_3
q_3	q_3	q_3



4) Stages :
W = WANDER
E = EVADE
A = ATTACK

Inputs :
0 = not enemies
1 = enemies and not vulnerable
2 = enemies and vulnerable

Outputs :
a = shoot
b = not shoot



No.: Date:

5)