

Assignment 5 (SECI1013-10)

Group member:

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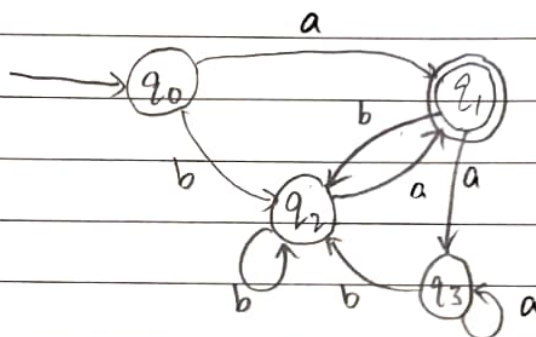
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1. $M = \{S, I, q_0, f_s, F\}$

$M = \{q_0, q_1, q_2, q_3\}, \{a, b\}, q_0, f_s, \{q_1\}$

(i)

f_s	a	b
q_0	q_1	q_2
q_1	q_3	q_2
q_2	q_1	q_2
q_3	q_3	q_2



(ii) DFA will only accept the password if it stopped at the "accepting state". Any wrong password will proceed to stop at the "not accepting state". Hence, DFA can be applied for verification of email password.

2. (i) State transition table:

(ii) (a) $W = a a a a a a$

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

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

 $\therefore$ Not accepted by the DFA(b) $W = a b a b a b$

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

 $\therefore$ Accepted by the DFA

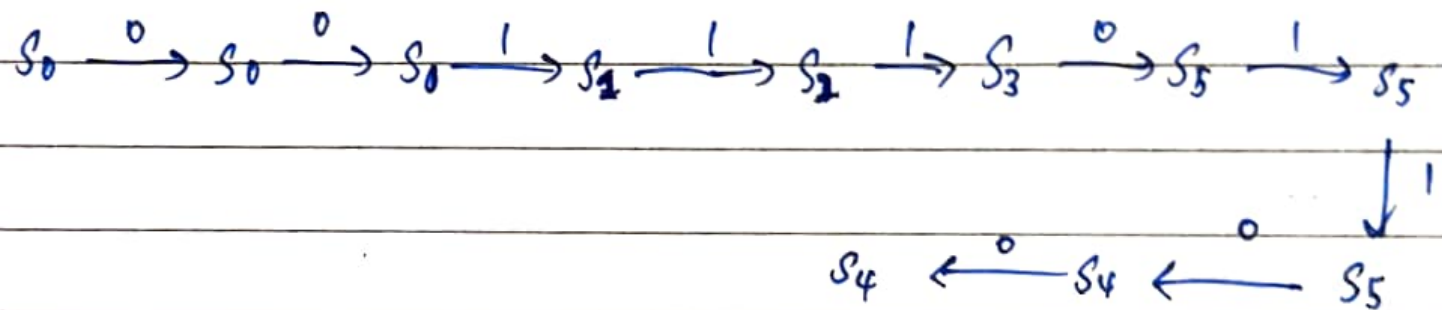
3. (i) a) $S = \{s_0, s_1, s_2, s_3, s_4, s_5\}$

$I = \{0, 1\}$

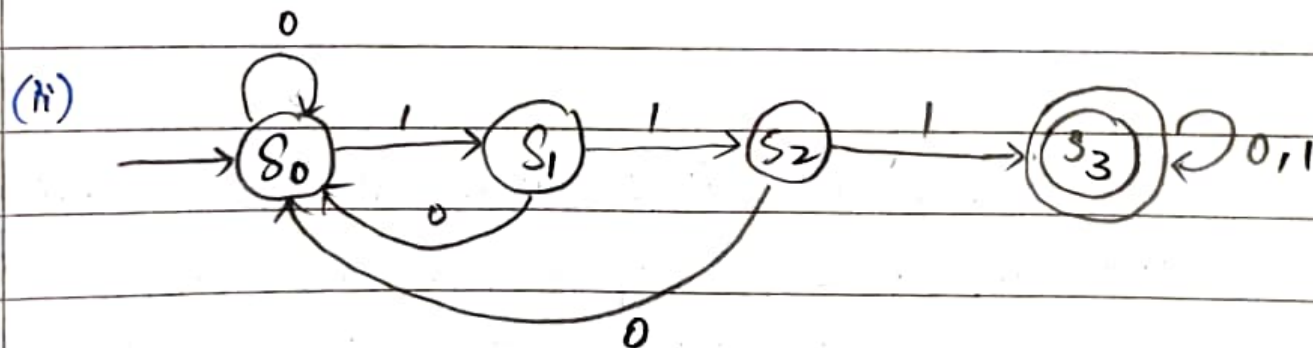
$q_0 = \{s_0\}$

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

(b) 0011101100



$\therefore$ Not accepted by DFA



4. Let NE be not enemies,
 Let E&NV be enemies & not vulnerable,
 Let E&V be enemies & vulnerable.

Let NS be not shoot,

Let S be shoot.

$S = \{ \text{Wander, Evade, Attack} \}$

$I = \{ \text{NE, E\&NV, E\&V} \}$

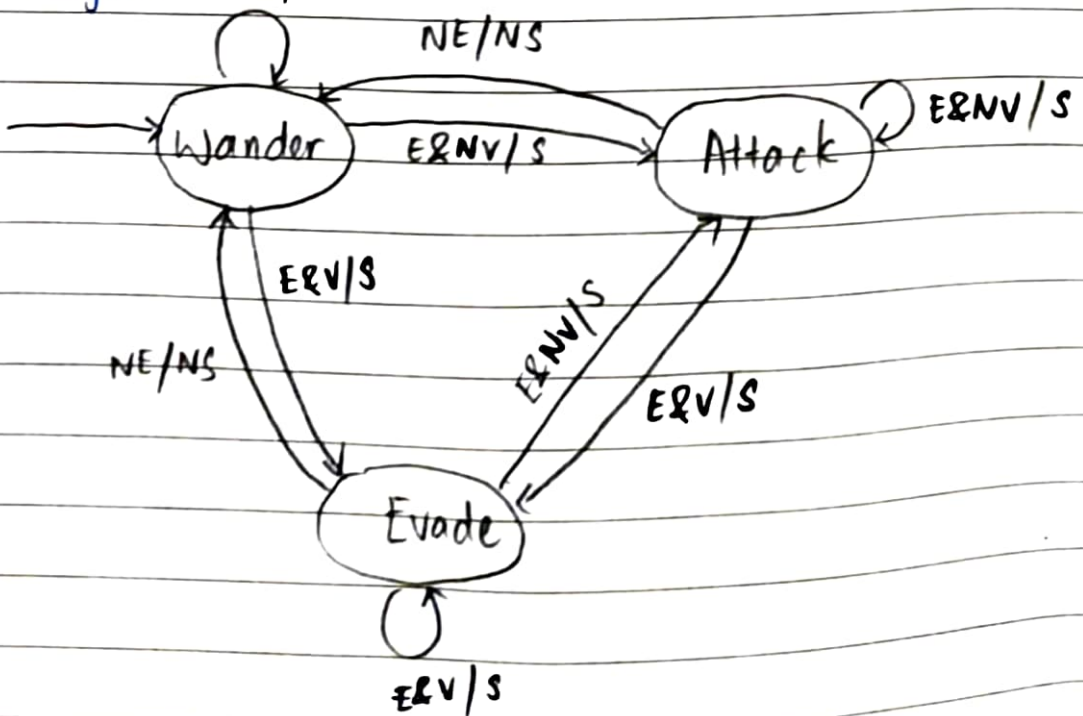
$O = \{ S, NS \}$

$q_0 = \{ \text{Wander} \}$

State transition table:

	f_s			f_o		
	NE	E&NV	E&V	NE	E&NV	E&V
Wander	Wander	Attack	Evade	NS	S	S
Evade	Wander	Attack	Evade	NS	S	S
Attack	Wander	Attack	Evade	NS	S	S

State diagram: NE/NS



5. State transition table :

	f_0 and f_1								
	A	B	C	D	E	F	G	H	I
S_1	$S_2/0$	$S_1/0$	$S_1/0$	$S_1/0$	$S_1/0$	$S_1/0$	$S_1/0$	$S_1/0$	$S_1/0$
S_2	$S_2/0$	$S_3/0$	$S_9/1$	$S_2/0$	$S_2/0$	$S_2/0$	$S_2/0$	$S_2/0$	$S_2/0$
S_3	$S_3/0$	$S_3/0$	$S_3/0$	$S_6/0$	$S_4/0$	$S_3/0$	$S_9/1$	$S_3/0$	$S_3/0$
S_4	$S_4/0$	$S_4/0$	$S_4/0$	$S_6/0$	$S_5/0$	$S_4/0$	$S_9/1$	$S_4/0$	$S_4/0$
S_5	$S_5/0$	$S_5/0$	$S_5/0$	$S_6/0$	$S_4/2$	$S_5/0$	$S_9/1$	$S_5/0$	$S_5/0$
S_6	$S_6/0$	$S_6/0$	$S_6/0$	$S_6/0$	$S_6/0$	$S_7/0$	$S_9/1$	$S_6/0$	$S_6/0$
S_7	$S_8/0$	$S_8/0$	$S_8/0$	$S_8/0$	$S_8/0$	$S_8/0$	$S_9/1$	$S_8/0$	$S_8/0$
S_8	$S_8/0$	$S_8/0$	$S_8/0$	$S_8/0$	$S_8/0$	$S_8/0$	$S_8/0$	$S_6/0$	$S_9/1$
S_9	$S_1/0$	$S_1/0$	$S_1/0$	$S_1/0$	$S_1/0$	$S_1/0$	$S_1/0$	$S_1/0$	$S_1/0$

State diagram:

$B/0, C/0, D/0, E/0, F/0, G/0, H/0, I/0$

