



SECI 1013
DISCRETE STRUCTURE

TUTORIAL 5

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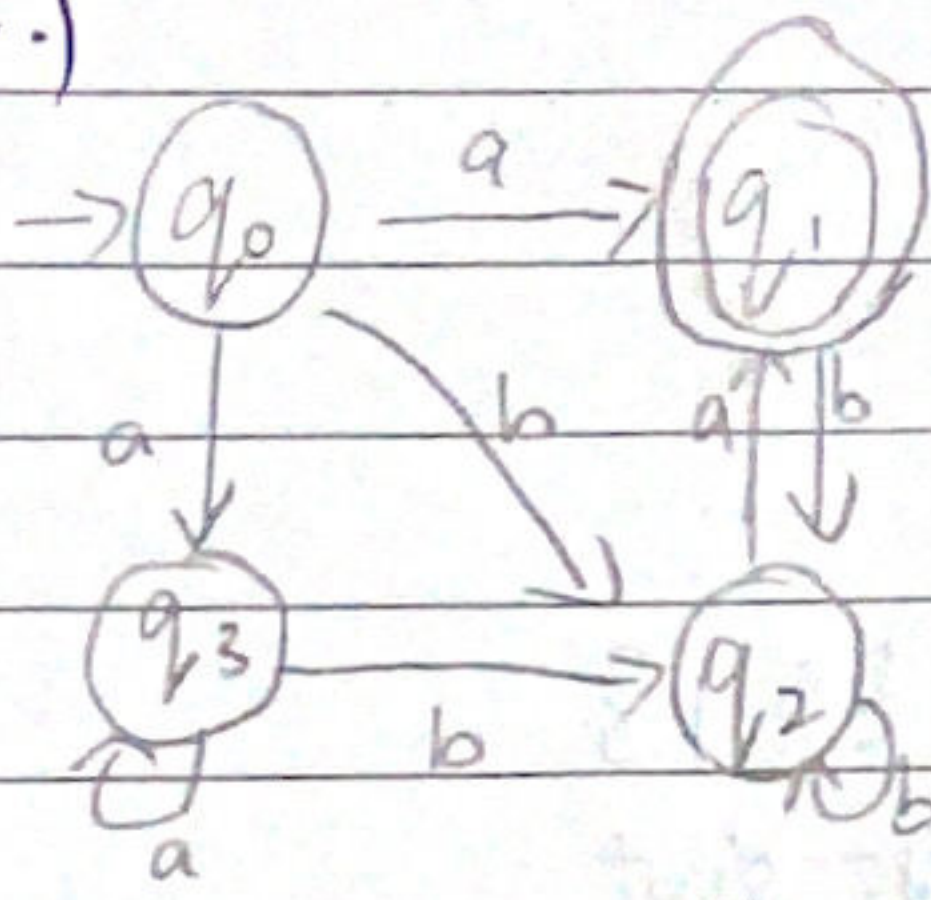
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1. i.)



ii.) DFA is suitable for verification of email password. This is because DFA can determine the string to be accepted or unaccepted. The string only will be accepted when the password is same as the string entered.

2. i.)

δ_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) $w = aagaaa$

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

$\therefore$ Not accepted by DFA.

b) $w = ababab$

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

$\therefore$ accepted by DFA.

3. (a) $S = \{S_0, S_1, S_2, S_3, S_4, S_5\}$

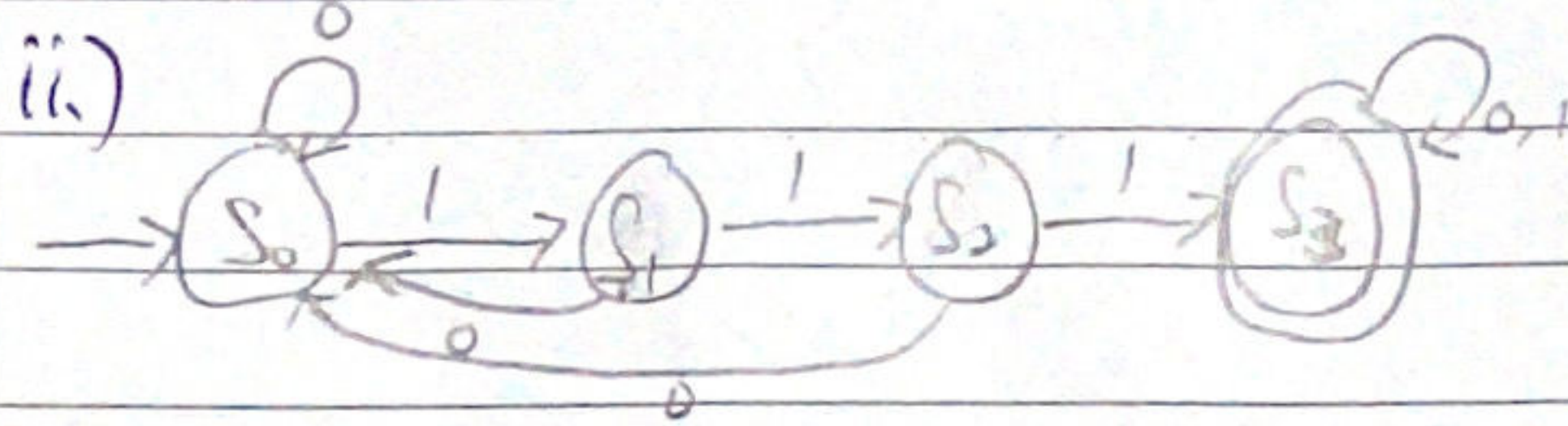
$I = \{0, 1\}$

$q_0 = \{S_0\}$

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

(b) i.) $S_0 \xrightarrow{0} S_0 \xrightarrow{0} S_0 \xrightarrow{1} S_1 \xrightarrow{1} S_2 \xrightarrow{1} S_3 \xrightarrow{0} S_5 \xrightarrow{1} S_5 \xrightarrow{1} S_5 \xrightarrow{0} S_4 \xrightarrow{0} S_4$

$\therefore$ Not accepted by DFA.



4. $S = \{S_0, S_1, S_2\}$ $I = \{NE, ENV, EV\}$ Output = $\{0, 1\}$

$S_0 = \text{WANDER}$

$NE = \text{not enemies}$

$0 = \text{shoot}$

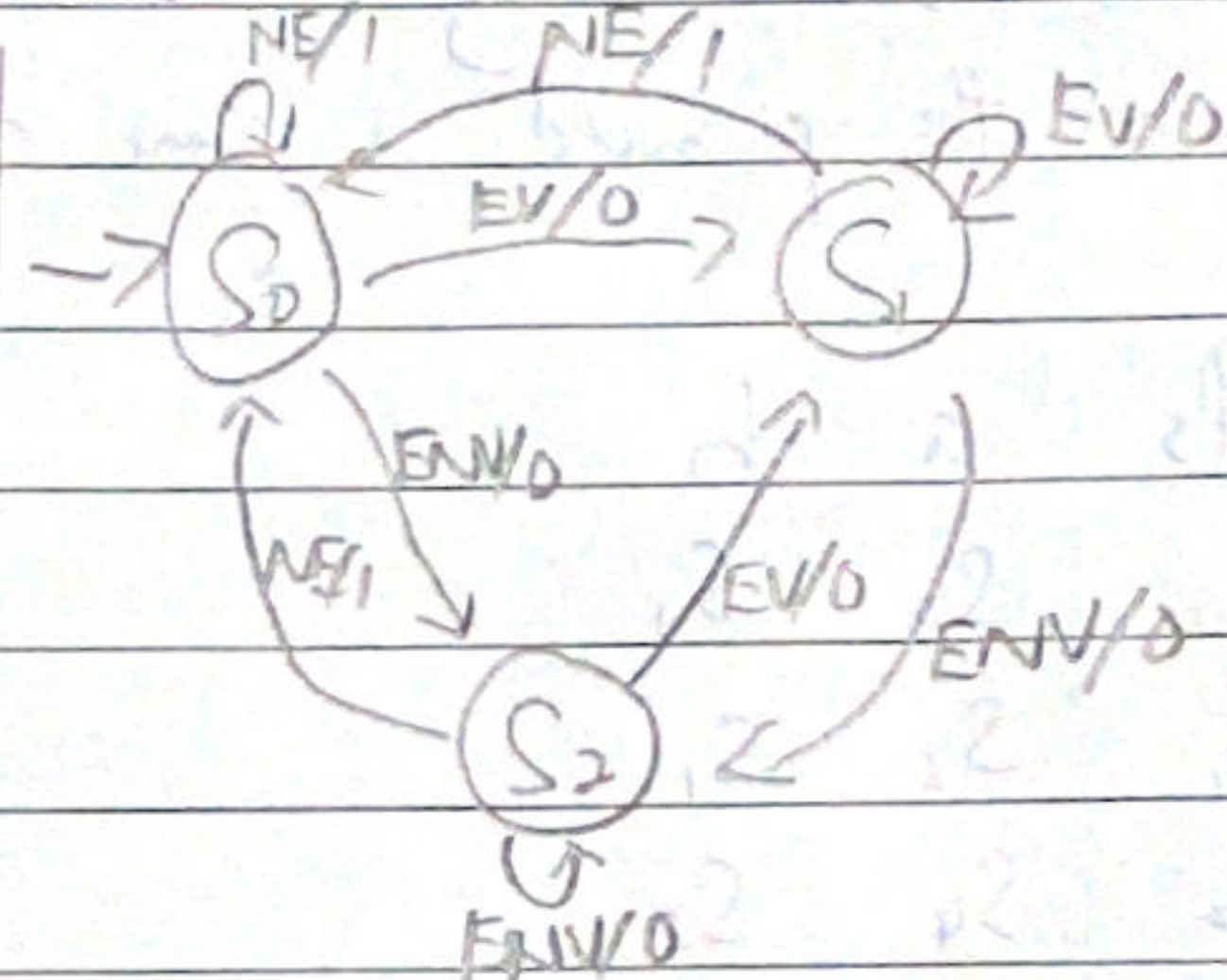
$S_1 = \text{EVASIVE}$

$ENV = \text{Enemies \& not vulnerable}$ $1 = \text{not shoot}$

$S_2 = \text{ATTACK}$

$EV = \text{Enemies \& vulnerable}$

S_0	NE	1	S_0
S_0	ENV	0	S_2
S_0	NV	0	S_1
S_1	NE	1	S_0
S_1	ENV	0	S_2
S_1	NV	0	S_1
S_2	NE	1	S_0
S_2	ENV	0	S_2
S_2	NV	0	S_1



5.

