



SECI 1013
DISCRETE STRUCTURE

TUTORIAL 5

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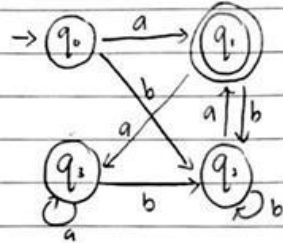
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Semester 1 2020/2021

Tutorial 5

1. i)



ii) It will receive the input string and determine whether a string is accepted or unaccepted. Only the string that matches its accepting state (match with password) will be accepted; otherwise, it will be rejected.

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) $w = aaaaaa$

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

The string is not accepted by the DFA.

b) $w = ababab$

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

The string is accepted by the DFA.

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

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

$$q_0 = \{s_0\}$$

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

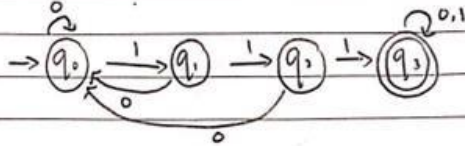
NO.:

Date:

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 the DFA.

ii)

4. $S = \{q_0, q_1, q_2\}$ $I = \{NE, ENV, EV\}$ Output: $\{0, 1\}$ $q_0 = \text{WANDER}$

NE = not enemy

0 = shoot

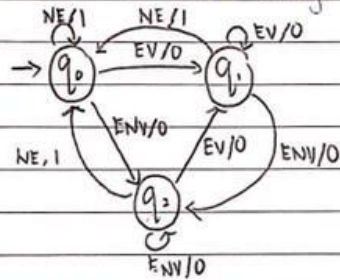
 $q_1 = \text{EVADE}$

ENV = enemy & not vulnerable

1 = not shoot

 $q_2 = \text{ATTACK}$

EV = enemy & vulnerable



5.

