



SCHOOL OF COMPUTING
SEMESTER 1, 2020/2021

SECI1013-07 STRUKTUR DISKRIT
(DISCRETE STRUCTURE)

SECTION: 07
ASSIGNMENT 05
GROUP: 02

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SUBMITTED TO:

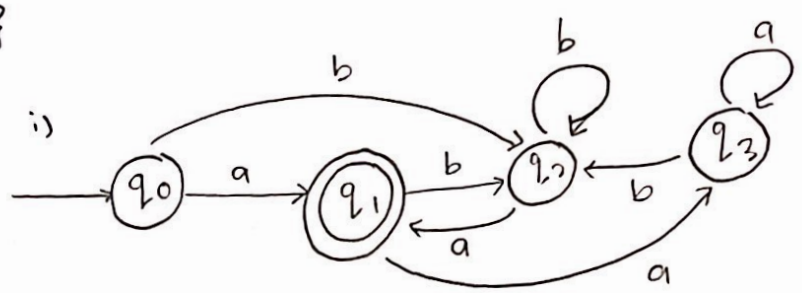
Dr. Haswadi Bin Hassan

Group 2 (A5)

Q1

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

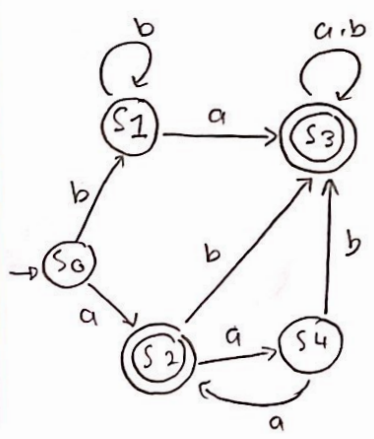
f_s	a	b
q_0	q_1	q_2
q_1	q_3	q_2
q_2	q_1	q_2
q_3	q_3	q_2



ii) - Because in DFA, there is only one path for specific input from current state to the next state.

- Hence, if DFA receive invalid and unmatched input character, the ^{input} string is not valid.

Q2



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) $w = a a a a a a a \rightarrow$ ^{not} accepted

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

b) $w = a b a b a b \rightarrow$ accepted

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

Answer to the question no-3

(i) $\rightarrow a$

Components of

$$S(\text{states}) \Rightarrow \{s_0, s_1, s_2, s_3, s_4, s_5\}$$

$$I(\text{Input symbol}) \Rightarrow \{0, 1\}$$

$$q_0(\text{Initial states}) = \{s_0\}$$

$$F(\text{final states}) = \{s_0, s_1, s_5\}$$

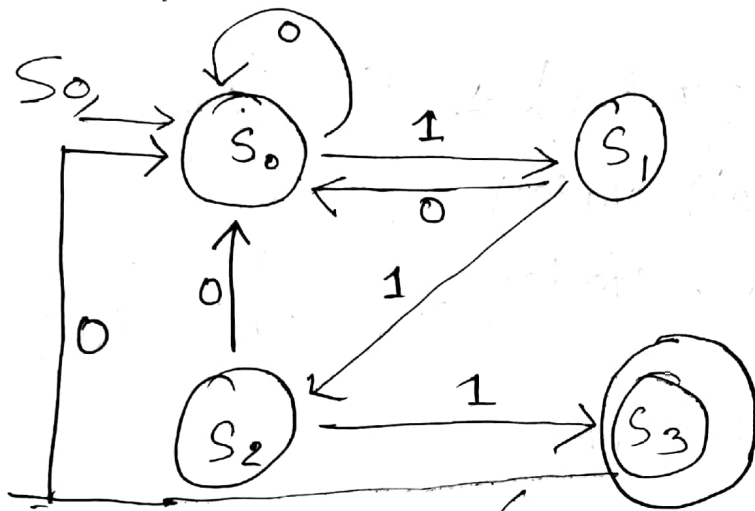
(i) $\rightarrow$ (b)

Sequence of configuration and states:-
of giving string 0011101100

$$\begin{aligned} &\Rightarrow \delta(s_0, 0011101100) = \delta(s_0, 0, 011101100) \\ &= \delta(s_0, 11101100) = \delta(s_1, 1101100) = \delta(s_2, 101100) \\ &= \delta(s_2, 101100) = \delta(s_3, 011000) = \delta(s_5, 1100) \\ &= \delta(s_5, 100) = \delta(s_5, 00) = \delta(s_4, 0) \\ &= s_4 \quad (\text{No}) \quad (\text{No final state}) \\ &\text{So, the string is not acceptable by DFA.} \end{aligned}$$

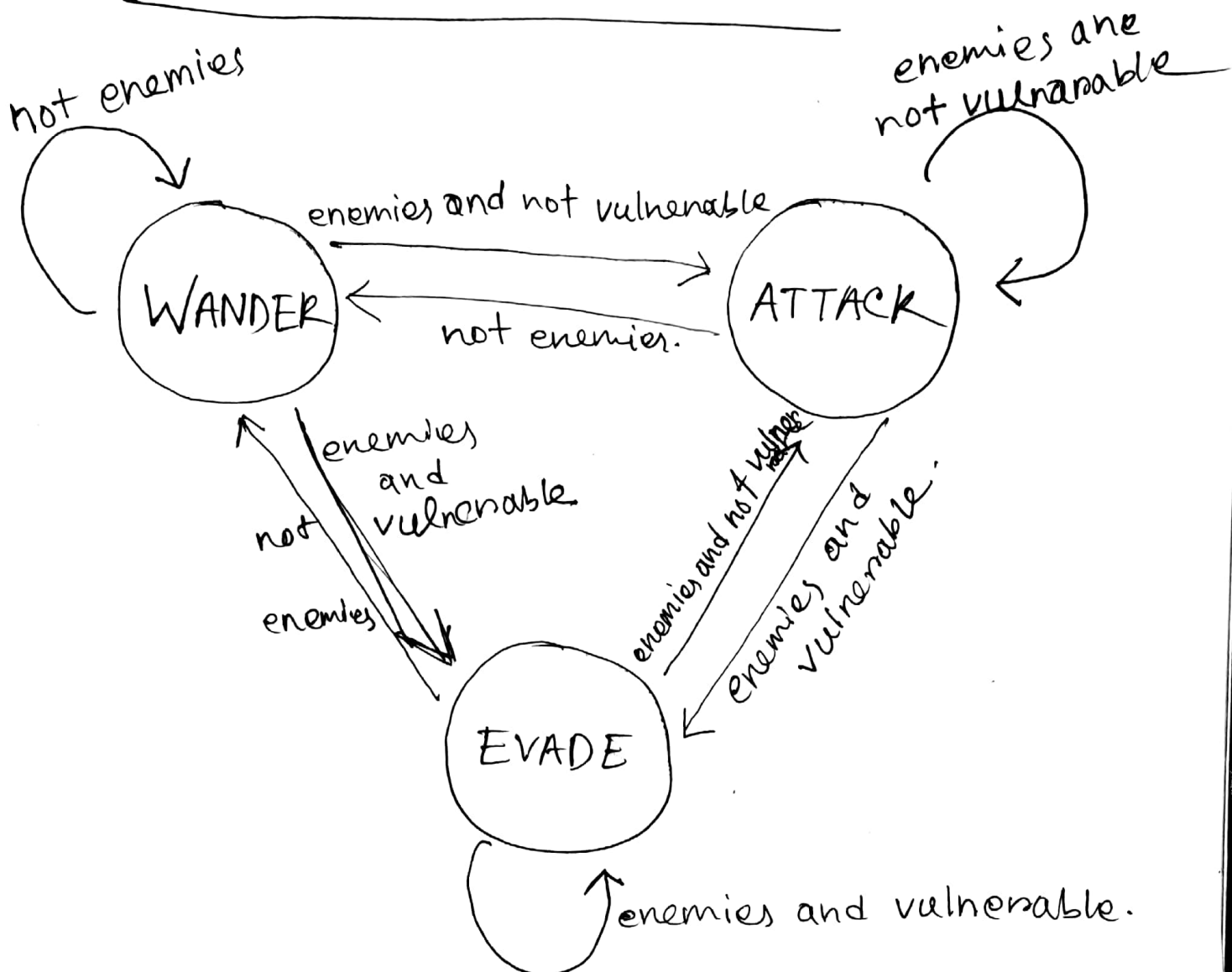
(ii)

DFA that accepts the set of all bits strings that contain three consecutive ones.



Here, $DFA = (\{S_0, S_1, S_2, S_3\}, \{0, 1\}, \{S_0\}, \{S_3\})$

Answer to the question no-04



Here are three states, ~~Wander~~ WANDER, ATTACK, EVADE. In the diagram the inputs are shown as arcs. The hero may go from one state to another on some input which is shown by an arc from one state to another. He may also stay in the same state. This is shown in the self loop arc.

Answer No 5

