

Qutaiba ALASHQAR. 20290036.

0tomata Teorisi ara sinavı, 26.04.2023.

1. soru //

① DFA tablosunu çiziniz ve formül.

/	a	b
$\rightarrow q_0$	q_1	q_2
q_1	q_1	q_2
$*q_2$	q_2	q_2

$q_0 \rightarrow$ start state

$q_2 \rightarrow$ final state

$$\begin{aligned} \delta(q_0, a) &= q_1 & \delta(q_1, a) &= q_1 & \delta(q_2, a) &= q_2 \\ \delta(q_0, b) &= q_2 & \delta(q_1, b) &= q_2 & \delta(q_2, b) &= q_2 \end{aligned}$$

② baaba işlemi yapın.

baaba

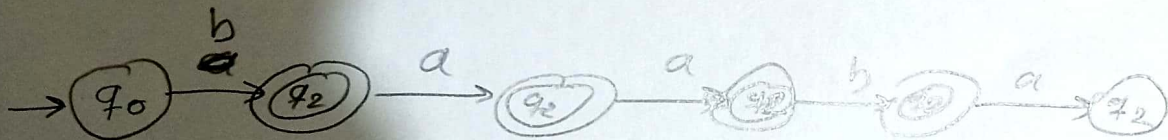
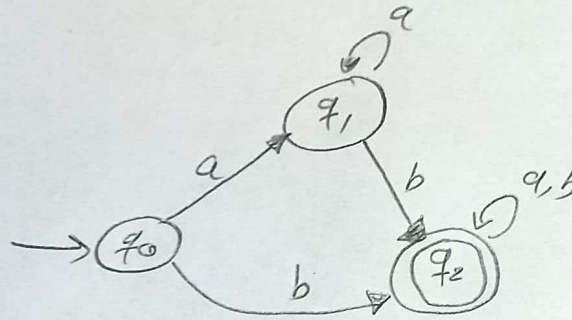
$$(q_0, b) \rightarrow q_2$$

$$(q_2, a) \rightarrow q_2$$

$$(q_2, a) \rightarrow q_2$$

$$(q_2, b) \rightarrow q_2$$

$$(q_2, a) \rightarrow q_2$$

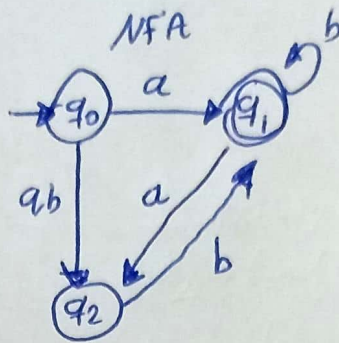


1.

2. Soru //

NFA tablo

	a	b
$\rightarrow q_0$	q_1, q_2	q_2
$* q_1$	q_2	q_1
q_2	\emptyset	q_1



$$\{q_0\} \xrightarrow{a^*} \{q_1, q_2\} \checkmark$$

$$\{q_0\} \xrightarrow{b} \{q_2\} \checkmark$$

$$\{q_1, q_2\} \xrightarrow{a} \{q_2\} \checkmark$$

$$\{q_1, q_2\} \xrightarrow{b} \{q_1\} \checkmark$$

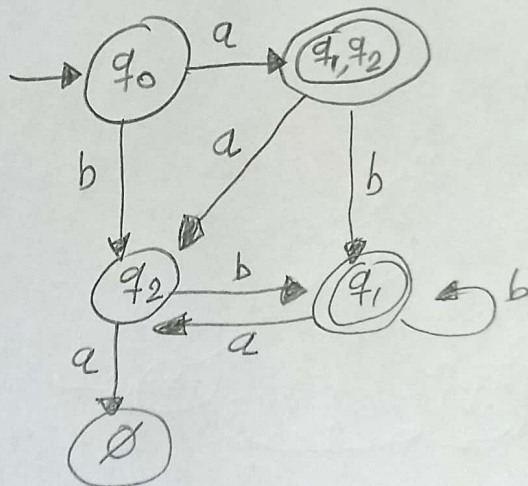
$$\{q_2\} \xrightarrow{a} \emptyset$$

$$\{q_2\} \xrightarrow{b} \{q_1\} \checkmark$$

$$\{q_1\} \xrightarrow{a} \{q_2\} \checkmark$$

$$\{q_1\} \xrightarrow{b} \{q_1\} \checkmark$$

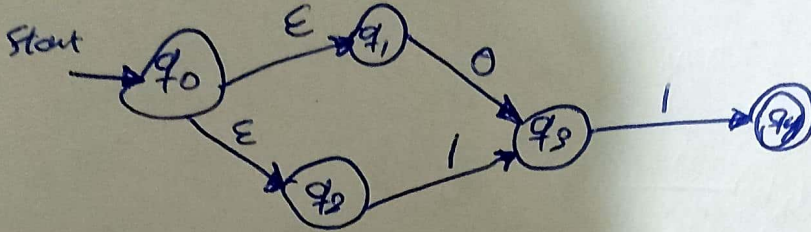
DFA



2.

3. soru //

ϵ -NFA, ϵ geçişi DFA bulunuz.



start noktası ϵ ile q_0, q_1, q_2 ekle ediyoruz
bu da bizim başlangıç

$$\{q_0, q_1, q_2\} \xrightarrow{0} \{q_3\} \checkmark$$

$$\{q_0, q_1, q_2\} \xrightarrow{1} \{q_3\} \checkmark$$

DFA ↓

$$\{q_3\} \xrightarrow{0} \emptyset$$

$$\{q_3\} \xrightarrow{1} \{q_4\}$$

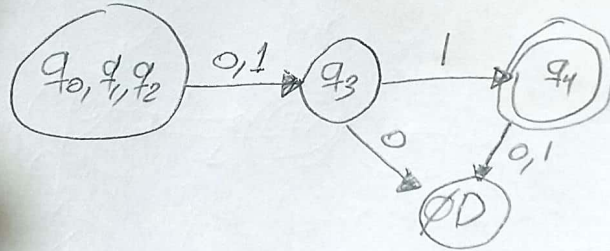
$$\{q_4\} \xrightarrow{0,1} \emptyset$$

$$\{q_1\} \xrightarrow{0} \{q_3\}$$

$$\{q_2\} \xrightarrow{1} \{q_3\}$$

$$\{q_0\} \xrightarrow{0,1} \emptyset$$

$$\{q_0\} \xrightarrow{0,1} \{q_3\}$$



$$\epsilon\text{-closure}(q_4) = \{q_4\}$$

$$\epsilon\text{-closure}(q_0) = \{q_0, q_1, q_2\}$$

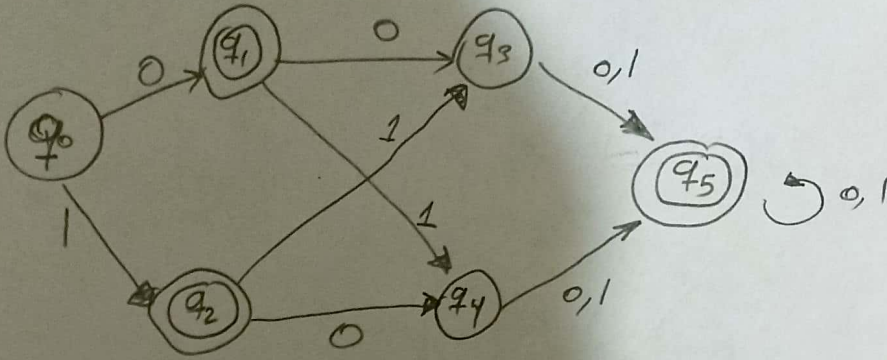
$$\epsilon\text{-closure}(q_1) = \{q_1\}$$

$$\epsilon\text{-closure}(q_2) = \{q_2\}$$

$$\epsilon\text{-closure}(\emptyset) = \emptyset$$

3.

4. sonu// table killing



① check for nonreducible states from q_0
No Non reducible stat

③ x olan yeri final statet için
bir tane final ve bitane non final
olması lazım.

③ şimdi (q_2, q_1) noktasından tarama
başlıyoruz.

q_0						
q_1	x					
q_2	x	x				
q_3	x	x	x			
q_4	x	x	x			
q_5	x	x	x	x	x	x
	q_0	q_1	q_2	q_3	q_4	q_5

$(q_2, q_1) \rightarrow (q_2, 0) \rightarrow q_4$ ignore
 $(q_1, 0) \rightarrow q_3$
 $(q_2, 1) \rightarrow q_3$ ignore
 $(q_1, 1) \rightarrow q_4$

$(q_3, q_0) \rightarrow (q_3, 0) \rightarrow q_5$ aliyoruz
 $(q_0, 0) \rightarrow q_1$
 $(q_3, 1) \rightarrow q_4$ aliyoruz
 $(q_0, 1) \rightarrow q_2$

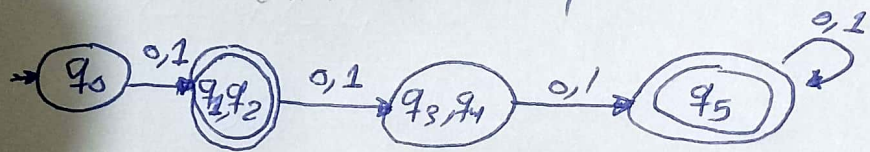
$(q_4, q_0) \rightarrow (q_4, 0) \rightarrow q_5$ aliyoruz
 $(q_0, 0) \rightarrow q_1$
 $(q_4, 1) \rightarrow q_5$ aliyoruz
 $(q_0, 1) \rightarrow q_2$

$(q_4, q_3) = (q_1, 0) \rightarrow q_5$ ignore
 $(q_3, 0) \rightarrow q_4$
 $(q_4, 1) \rightarrow q_5$ ignore
 $(q_3, 1) \rightarrow q_4$

$(q_5, q_1) \rightarrow (q_5, 0) \rightarrow q_3$ aliyoruz
 $(q_1, 0) \rightarrow q_3$
 $(q_5, 1) \rightarrow q_4$ aliyoruz
 $(q_1, 1) \rightarrow q_4$

$(q_5, q_2) = (q_1, 0) \rightarrow q_5$ aliyoruz
 $(q_2, 0) \rightarrow q_4$
 $(q_5, 1) \rightarrow q_4$ aliyoruz
 $(q_2, 1) \rightarrow q_3$

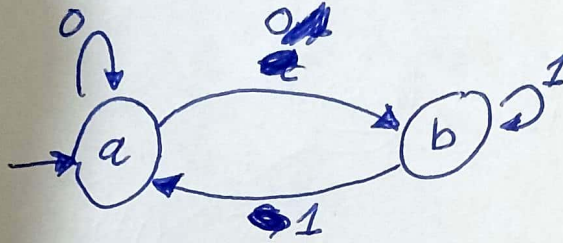
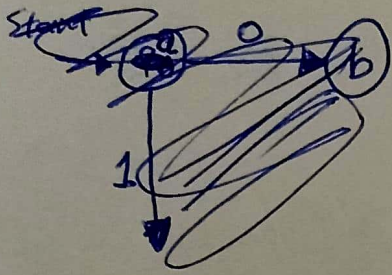
0 zaman
 q_1, q_2 ve
 q_3, q_4 kısmına
Etkiyor



4.

5. soru // 01 ile başlayan

(a) 01 ile başlayan



(b). $h(0) = ab$, $h(1) = ba$

$h(101) = ?$

$h(101) = baabba$

baba orijinali ne olacak ?

$h(111)$ olacak

(5.)