

1. a. $S \rightarrow AB$

$A \rightarrow dAc \mid dc$

$B \rightarrow bBa \mid ba$

$S \Rightarrow AB$

$\Rightarrow dcba$

$S \Rightarrow AB$

$\Rightarrow dAc bBa$

$\Rightarrow ddccbbba$

$S \Rightarrow AB$

$\Rightarrow dAc bBa$

$\Rightarrow ddAcc b bBaa$

$\Rightarrow dddccc bbb a a a$

$L(1) = \{ dcba, ddccbbba, dddccc bbb a a a, \dots \}$

$L(6) = \{ dcba, ddccbbba, dddccc bbb a a a, \dots \}$

$L(n) = \{ d^{n+1} c^{n+1} b^{n+1} a^{n+1} \mid n \geq 0 \}$

$$b. \quad C \rightarrow abc / cdD$$

$$D \rightarrow cE$$

$$E \rightarrow a$$

$$C \Rightarrow abc$$

$$\Rightarrow abcdD$$

$$\Rightarrow abcacE$$

$$\Rightarrow abcdeca$$

$$C \Rightarrow cdD$$

$$\Rightarrow cdceE$$

$$\Rightarrow cdca$$

$$L(G) = \{ abcdeca, cdca \}$$

$$c. \quad Abca \rightarrow Bcd$$

$$B \rightarrow c$$

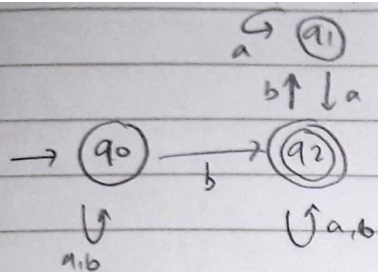
$$C \rightarrow d$$

$$Abca \Rightarrow Bcd$$

$$\Rightarrow odd$$

$$L(G) = \{ cda \}$$

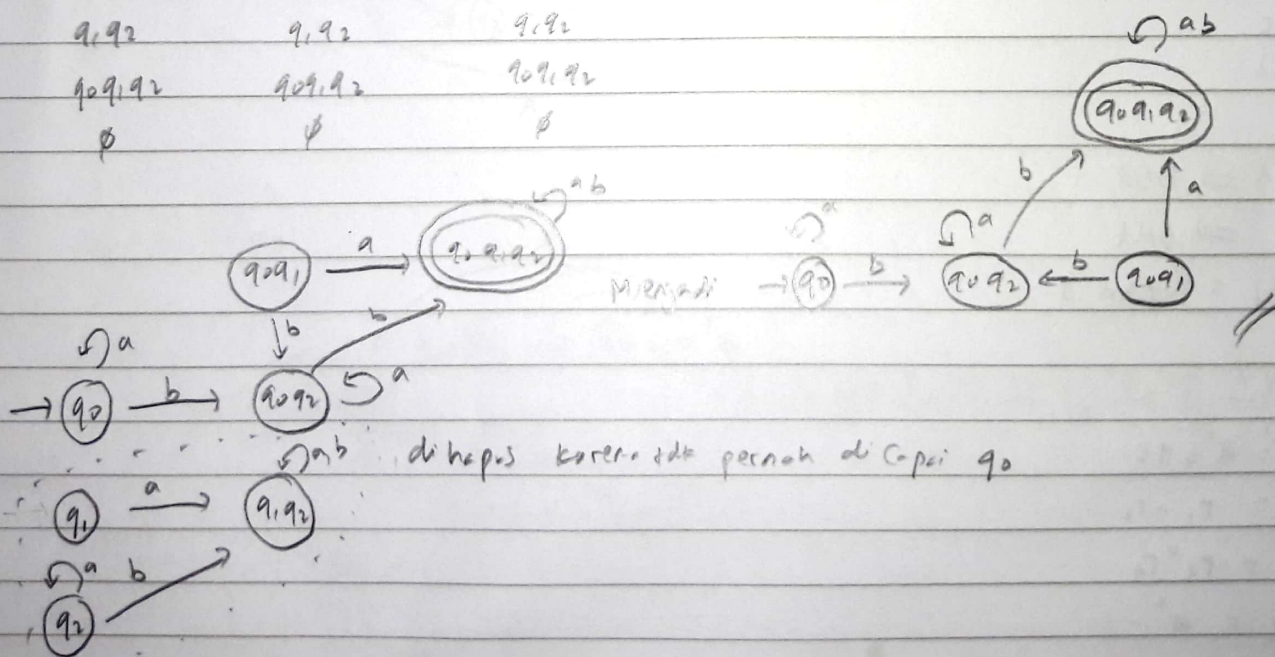
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a.	δ	a	b
	q_0	q_0	a, q_2
	q_1	q_1, q_2	\emptyset
	q_2	q_2	q_1, q_2

b. Karena saat q_1 di input b menghasilkan \emptyset

c.	δ	a	b
q_0	q_0	$q_0 q_1$	
q_1	$q_1 q_2$	\emptyset	
q_2	q_2	$q_1 q_1$	
$q_0 q_1$	$q_0 q_1 q_2$	$q_0 q_2$	
$q_0 q_2$	$q_0 q_2$	$q_0 q_1 q_2$	
$q_1 q_2$	$q_1 q_2$	$q_1 q_2$	
$q_0 q_1 q_2$	$q_0 q_1 q_2$	$q_0 q_1 q_2$	
\emptyset	\emptyset	\emptyset	



4. a. $\Gamma = a^* b^+ c$

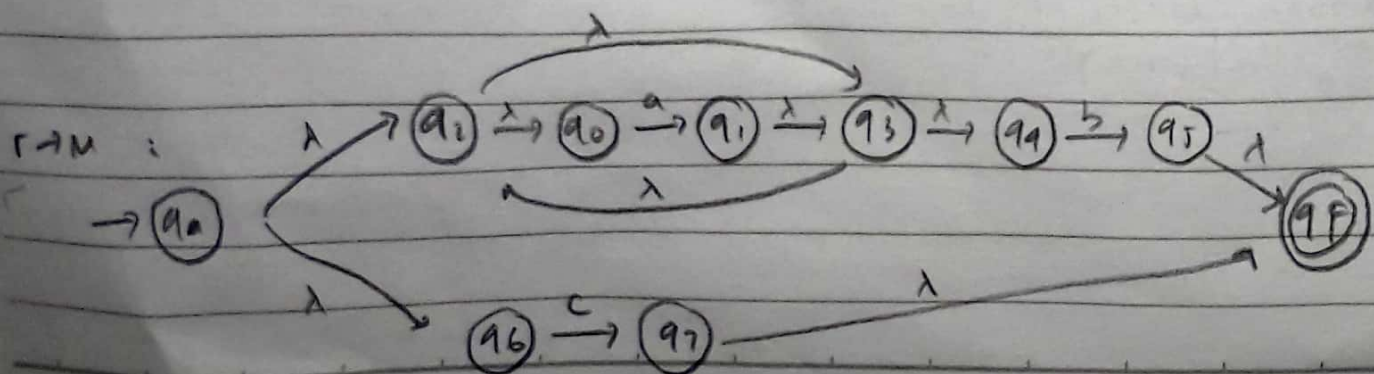
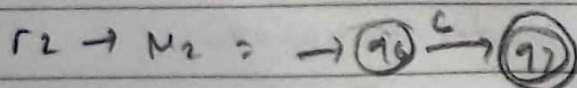
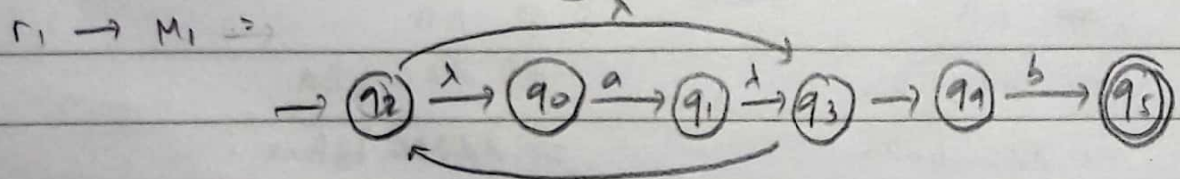
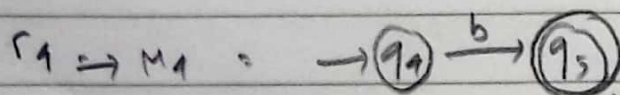
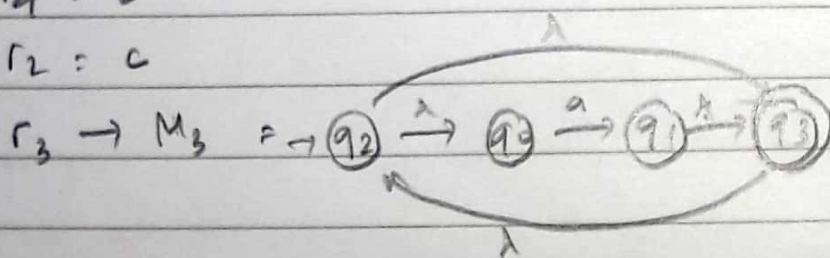
$$\Gamma = \Gamma_1 + \Gamma_2$$

$$\Gamma_1 = \Gamma_3^* \Gamma_4$$

$$\Gamma_3 = a^*$$

$$\Gamma_4 = b$$

$$\Gamma_2 = c$$



b. $r = (a+b)^* ab$

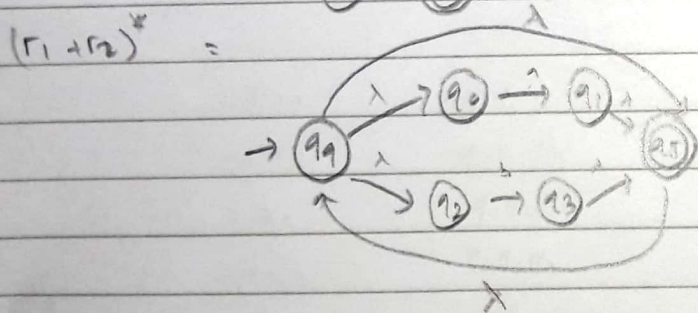
$r = (r_1 + r_2)^* . r_3 . r_4$

$r_1 = r_3 = a$

$r_2 = r_4 = b$

$r_1 \rightarrow M_1 := \rightarrow q_0 \xrightarrow{a} q_1$

$r_2 \rightarrow M_2 := \rightarrow q_2 \xrightarrow{b} q_3$



$r_3 = r_1 \rightarrow M_3$

$r_4 = r_2 \rightarrow M_4$

$r \rightarrow M :=$

