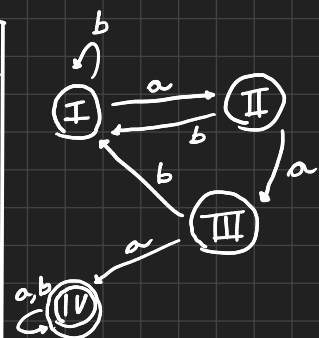
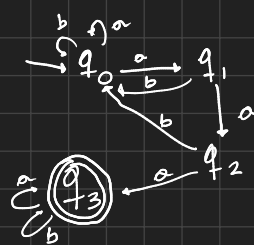


Ejercicio 1. Para los siguientes autómatas finitos no determinísticos, dar un autómata determinístico mínimo que reconozca el mismo lenguaje:

a. $M_0 = (\{q_0, q_1, q_2, q_3\}, \{a, b\}, \delta_0, q_0, \{q_3\})$,

	a	b	λ
$\delta_0 =$			
q_0	$\{q_0, q_1\}$	$\{q_0\}$	\emptyset
q_1	$\{q_2\}$	$\{q_0\}$	\emptyset
q_2	$\{q_3\}$	$\{q_0\}$	\emptyset
q_3	$\{q_3\}$	$\{q_3\}$	\emptyset

	a	b	\equiv_0	a	b	\equiv_1	a	b	\equiv_2	a	b	\equiv_3
q_0	NF	NF	NF	*	*	*	A	B	A	F		I
q_1	NF	NF	NF	*	Δ	*	B	C	A	II		II
q_2	F	F	NF	Δ	\square	*	C	D	A	III		III
q_3	F	F	F	\square	\square	\square	D	D	D	IV		IV
q_4	F	F	F	\square	\square	\square	D	D	D	IV		IV
q_5	F	F	F	\square	\square	\square	D	D	D	IV		IV



b. $M_0 = (\{0, 1, 2, 3, 4, 5, 6\}, \{a, b\}, \delta_0, 0, \{6\})$,

	a	b	λ
$\delta_0 =$			
0	{1}	{2}	{4}
1	\emptyset	\emptyset	{0, 3}
2	\emptyset	\emptyset	{0, 3}
3	{4}	\emptyset	\emptyset
4	\emptyset	\emptyset	{5}
5	{6}	{6}	\emptyset
6	\emptyset	\emptyset	{5}

$$\mathcal{C}_2(\{q_0\}) = \{0, 4, 5\}$$

$$\mathcal{C}_2(\{q_4\}) = \{4, 5\}$$

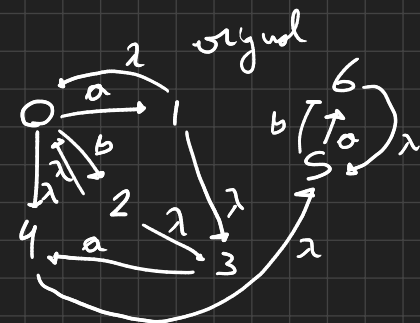
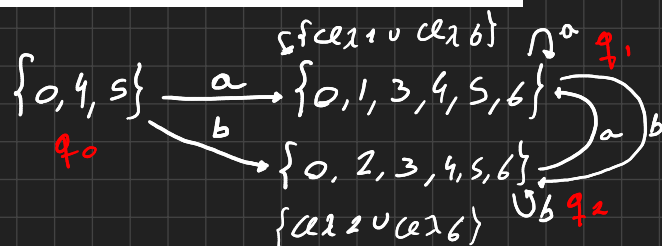
$$\mathcal{C}_2(\{q_1\}) = \{0, 1, 4, 5, 3\}$$

$$\mathcal{C}_2(\{q_5\}) = \{5\}$$

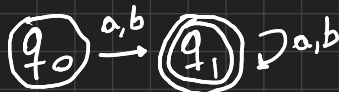
$$\mathcal{C}_2(\{q_2\}) = \{0, 2, 4, 5, 3\}$$

$$\mathcal{C}_2(\{q_6\}) = \{5, 6\}$$

$$\mathcal{C}_2(\{q_3\}) = \{3\}$$



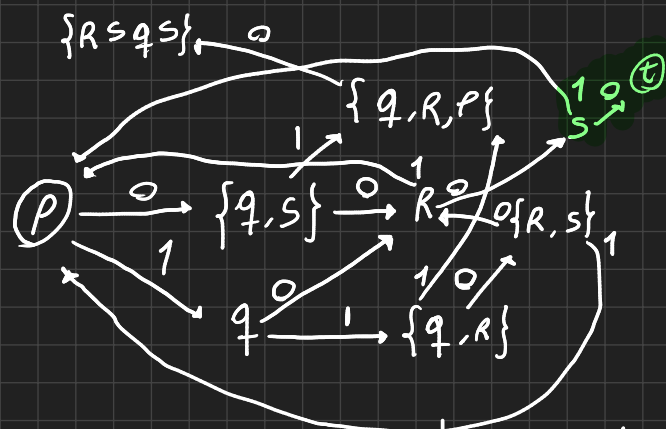
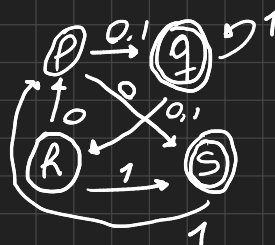
	\equiv_0	a	b	\equiv_1
q_0	NF	F	F	III
q_1	F	F	F	*
q_2	F	F	F	*



c. $M_0 = (\{p, q, r, s\}, \{0, 1\}, \delta_0, p, \{q, s\})$,

	0	1	λ
$\delta_0 =$			
p	{q, s}	{q}	\emptyset
q	{r}	{q, r}	\emptyset
r	{s}	{p}	\emptyset
s	\emptyset	{p}	\emptyset

Dado que no es -1



	\equiv_0	0	1	\equiv_1	0	1	\equiv_2	0	1
p	NF	F	F	A	B	B	1	2	2
qs	F	N	F	B	C	D	2	3	4
q	F	N	F	B	C	D	2	3	5
r	N	F	N	C	E	A	3	6	7
qrp	F	F	F	D	D	F	4	5	4
qr	F	F	F	D	F	D	5	8	4
s	F	N	F	E	E	A	6	7	7
p	N	F	F	A	B	B	7	2	2
rsa	F	F	F	D	F	D	5	8	4
rs	F	F	N	F	E	A	8	6	7

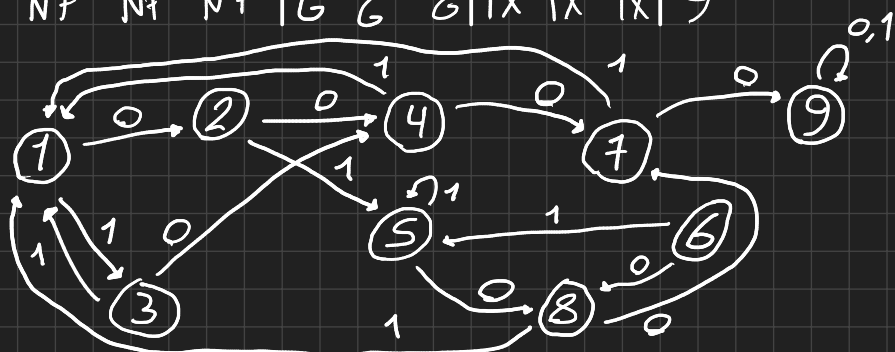
	0	1
p	{q, s}	{q}
qs	{r}	{q, r, p}
q	{r}	{q, r}
r	{s}	{p}
qrp	{r, s, q}	{q, r, p}
qr	{r, s}	{q, r, p}
s	\emptyset	{p}
p	{q, s}	{q}
rsa	{r, s}	{q, r, p}
rs	{s}	{p}

c. $M_0 = \langle \{p, q, r, s\}, \{0, 1\}, \delta_0, p, \{q, s\} \rangle$,

	0	1	λ
$\delta_0 =$			
p	$\{q, s\}$	$\{q\}$	\emptyset
q	$\{r\}$	$\{q, r\}$	\emptyset
r	$\{s\}$	$\{p\}$	\emptyset
s	\emptyset	$\{p\}$	\emptyset

Mim

	\equiv_0	0	1	\equiv_1	0	1	\equiv_2	0	1	\equiv_3	
Q_0	F	F	N	A	B	C	I	II	III	1	
Q_1	F	N	F	B	D	E	II	N	V	2	
Q_2	N	F	N	F	C	D	F	III	IV	3	
Q_3	N	F	F	D	B	A	IV	VII	I	4	
Q_4	F	F	F	E	E	E	V	VIII	V	5	
Q_5	N	F	F	F	E	E	VI	VII	V	6	
Q_6	F	N	F	B	G	A	VII	IX	I	7	
Q_7	F	F	F	E	B	A	VIII	VII	I	8	
ϵ	N	F	N	F	G	G	G	IX	IX	IX	9



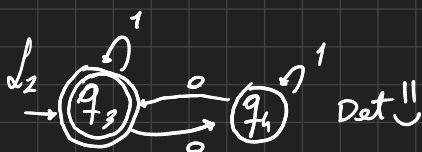
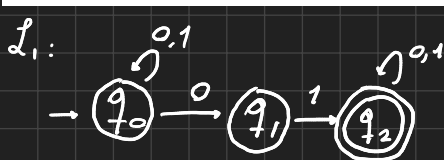
Det

	0	1
0	$\{q, s\}$	$\{q\}$
1	$\{q, r, p\}$	$\{q, r, p\}$
2	$\{q, r\}$	$\{q, r\}$
3	$\{s\}$	$\{p\}$
4	$\{q, r, p\}$	$\{q, r, p\}$
5	$\{q, r, p\}$	$\{q, r, p\}$
6	$\{s\}$	$\{p\}$
7	$\{s\}$	$\{p\}$
8	$\{s\}$	$\{p\}$
9	$\{s\}$	$\{p\}$

Ejercicio 3. Dado el alfabeto $\Sigma = \{0,1\}$ y los siguientes lenguajes \mathcal{L}_1 y \mathcal{L}_2 , dar un autómata finito determinístico mínimo para $\mathcal{L}_1 \cap \mathcal{L}_2$:

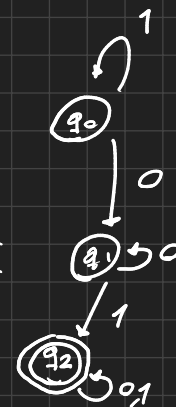
$\mathcal{L}_1 = \{\alpha \mid \alpha \in \Sigma^* \wedge 01 \text{ es subcadena de } \alpha\}$.

$\mathcal{L}_2 = \{\alpha \mid \alpha \in \Sigma^* \wedge \alpha \text{ tiene una cantidad par de ceros}\}$.



Det

	0	1	Min	\equiv_0	0	1	\equiv_1	0	1	\equiv_2
q_0	q_0	q_1	q_0	NF	NF	NF	A	B	A	I
q_1	q_1	q_1	q_1	NF	NF	F	B	B	C	II
q_2	q_1	q_2	q_1	F	F	F	C	C	C	III
q_3	q_3	q_4	q_3	F	F	F	C	C	C	III



$\mathcal{L}_1 \cap \mathcal{L}_2$:

	0	1	
q_0	q_3	q_1	q_0
q_1	q_3	q_1	q_1
q_2	q_1	q_2	q_1
q_3	q_3	q_4	q_3
q_4	q_3	q_4	q_3

	0	1	
q_0	q_3	q_1	q_0
q_1	q_3	q_1	q_1
q_2	q_1	q_2	q_1
q_3	q_3	q_4	q_3
q_4	q_3	q_4	q_3

Lo habia Copiado Mal

Para Minimizar
Pero he quedado S estropeado
yo lo era Minimizar

