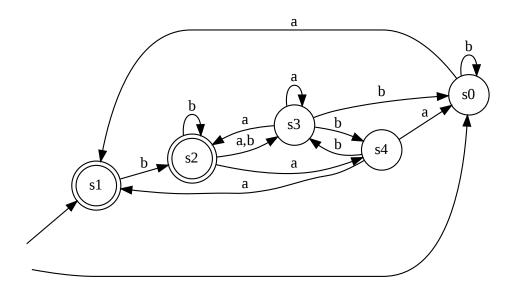
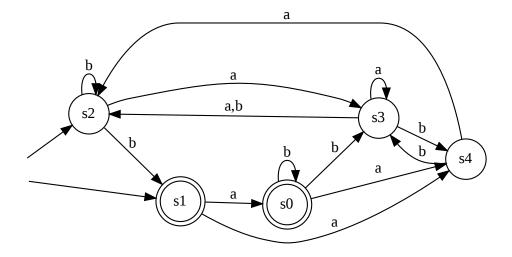
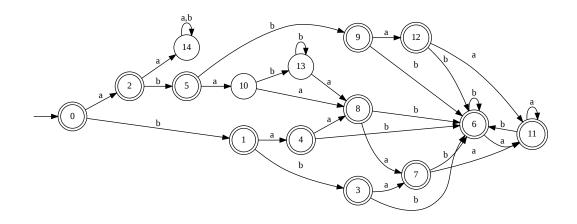
1 Original NFA



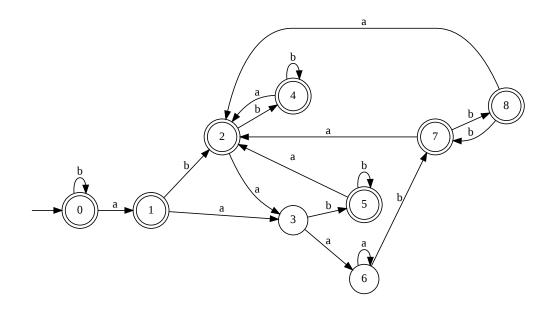
2 Reverse NFA



3 DFA



4 Dual of DFA



5 States Map Reduction

5.1 States Map 1

	{0}	{1}	{2}	{3}	{4}	{5}	{6}	{7}	{8}
{0}	{s1}	{s0}	{s0}	Ø	$\{s0, s1\}$	{s1}	Ø	{s1}	{s1}
{1}	{s2}	{s0}	$\{s0, s2\}$	{s2}	$\{s0, s2\}$	{s2}	{s2}	$\{s2\}$	{s2}
{2}	{s1}	Ø	Ø	Ø	{s1}	{s1}	Ø	$\{s1\}$	{s1}
{3}	{s2}	$\{s0, s3\}$	$\{s0, s2, s3\}$	$\{s2, s3\}$	$\{s0, s2, s3\}$	$\{s2, s3\}$	$\{s2, s3\}$	$\{s2\}$	$\{s2, s3\}$
{4}	{s1}	$\{s3, s4\}$	$\{s3, s4\}$	$\{s3, s4\}$	$\{s1, s3, s4\}$	$\{s1, s3, s4\}$	$\{s3\}$	$\{s1, s4\}$	$\{s1, s3\}$
{5}	{s2}	Ø	{s2}	{s2}	{s2}	{s2}	{s2}	$\{s2\}$	{s2}
{6}	{s2}	$\{s0, s3, s4\}$	$\{s0, s2, s3, s4\}$	$\{s2, s3, s4\}$	$\{s0, s2, s3, s4\}$	$\{s2, s3, s4\}$	$\{s2, s3\}$	$\{s2, s4\}$	$\{s2, s3\}$
{7}	$\{s1, s2\}$	$\{s3, s4\}$	$\{s2, s3, s4\}$	$\{s2, s3, s4\}$	$\{s1, s2, s3, s4\}$	$\{s1, s2, s3, s4\}$	$\{s2, s3\}$	$\{s1, s2, s4\}$	$\{s1, s2, s3\}$
{8}	$\{s1, s2\}$	$\{s0, s3\}$	$\{s0, s2, s3\}$	$\{s2, s3\}$	$\{s0, s1, s2, s3\}$	$\{s1, s2, s3\}$	$\{s2, s3\}$	$\{s1, s2\}$	$\{s1, s2, s3\}$
{9}	{s2}	{s3}	$\{s2, s3\}$	$\{s2, s3\}$	$\{s2, s3\}$	$\{s2, s3\}$	$\{s2, s3\}$	$\{s2\}$	$\{s2, s3\}$
{10}	Ø	$\{s3, s4\}$	$\{s3, s4\}$	$\{s3, s4\}$	$\{s3, s4\}$	$\{s3, s4\}$	$\{s3\}$	$\{s4\}$	{s3}
{11}	$\{s1, s2\}$	$\{s0, s3, s4\}$	$\{s0, s2, s3, s4\}$	$\{s2, s3, s4\}$	$\{s0, s1, s2, s3, s4\}$	$\{s1, s2, s3, s4\}$	$\{s2, s3\}$	$\{s1, s2, s4\}$	$\{s1, s2, s3\}$
{12}	{s2}	$\{s3, s4\}$	$\{s2, s3, s4\}$	$\{s2, s3, s4\}$	$\{s2, s3, s4\}$	$\{s2, s3, s4\}$	$\{s2, s3\}$	$\{s2, s4\}$	$\{s2, s3\}$
{13}	Ø	$\{s0, s3, s4\}$	$\{s0, s3, s4\}$	$\{s3, s4\}$	$\{s0, s3, s4\}$	$\{s3, s4\}$	$\{s3\}$	$\{s4\}$	{s3}
{14}	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø

5.2 States Map 2

	{0}	{1}	{2}	{3}	{4}	{5}	{6}	{7}	{8}
{0}	{s1}	{s0}	{s0}	Ø	{s0, s1}	{s1}	Ø	{s1}	{s1}
{1}	$\{s2\}$	{s0}	$\{s0, s2\}$	{s2}	$\{s0, s2\}$	{s2}	{s2}	{s2}	{s2}
{2}	{s1}	Ø	Ø	Ø	{s1}	{s1}	Ø	{s1}	{s1}
{3}	$\{s2\}$	$\{s0, s3\}$	$\{s0, s2, s3\}$	$\{s2, s3\}$	$\{s0, s2, s3\}$	$\{s2, s3\}$	$\{s2, s3\}$	{s2}	$\{s2, s3\}$
{4}	{s1}	$\{s3, s4\}$	$\{s3, s4\}$	$\{s3, s4\}$	$\{s1, s3, s4\}$	$\{s1, s3, s4\}$	$\{s3\}$	$\{s1, s4\}$	$\{s1, s3\}$
{5}	$\{s2\}$	Ø	{s2}	{s2}	{s2}	{s2}	{s2}	{s2}	{s2}
{6}	$\{s2\}$	$\{s0, s3, s4\}$	$\{s0, s2, s3, s4\}$	$\{s2, s3, s4\}$	$\{s0, s2, s3, s4\}$	$\{s2, s3, s4\}$	$\{s2, s3\}$	$\{s2, s4\}$	$\{s2, s3\}$
{7}	$\{s1, s2\}$	$\{s3, s4\}$	$\{s2, s3, s4\}$	$\{s2, s3, s4\}$	$\{s1, s2, s3, s4\}$	$\{s1, s2, s3, s4\}$	$\{s2, s3\}$	$\{s1, s2, s4\}$	$\{s1, s2, s3\}$
{8}	$\{s1, s2\}$	$\{s0, s3\}$	$\{s0, s2, s3\}$	$\{s2, s3\}$	$\{s0, s1, s2, s3\}$	$\{s1, s2, s3\}$	$\{s2, s3\}$	$\{s1, s2\}$	$\{s1, s2, s3\}$
{9}	$\{s2\}$	{s3}	$\{s2, s3\}$	$\{s2, s3\}$	$\{s2, s3\}$	$\{s2, s3\}$	$\{s2, s3\}$	{s2}	$\{s2, s3\}$
{10}	Ø	$\{s3, s4\}$	$\{s3, s4\}$	$\{s3, s4\}$	$\{s3, s4\}$	$\{s3, s4\}$	$\{s3\}$	$\{s4\}$	{s3}
{11}	$\{s1, s2\}$	$\{s0, s3, s4\}$	$\{s0, s2, s3, s4\}$	$\{s2, s3, s4\}$	$\{s0, s1, s2, s3, s4\}$	$\{s1, s2, s3, s4\}$	$\{s2, s3\}$	$\{s1, s2, s4\}$	$\{s1, s2, s3\}$
{12}	$\{s2\}$	$\{s3, s4\}$	$\{s2, s3, s4\}$	$\{s2, s3, s4\}$	$\{s2, s3, s4\}$	$\{s2, s3, s4\}$	$\{s2, s3\}$	$\{s2, s4\}$	$\{s2, s3\}$
{13}	Ø	$\{s0, s3, s4\}$	$\{s0, s3, s4\}$	$\{s3, s4\}$	$\{s0, s3, s4\}$	$\{s3, s4\}$	$\{s3\}$	$\{s4\}$	{s3}
{14}	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø

5.3 States Map 3

		{0}	{1}	{2}	{3}	{4}	{5}	{6}	{7}	{8}
	{0}	{s1}	{s0}	{s0}	Ø	$\{s0, s1\}$	{s1}	Ø	{s1}	{s1}
{1,	11, 12, 3, 4, 6, 7, 8, 9	$\{s1, s2\}$	$\{s0, s3, s4\}$	$\{s0, s2, s3, s4\}$	$\{s2, s3, s4\}$	$\{s0, s1, s2, s3, s4\}$	$\{s1, s2, s3, s4\}$	$\{s2, s3\}$	$\{s1, s2, s4\}$	$\{s1, s2, s3\}$
	{2}	{s1}	Ø	Ø	Ø	{s1}	{s1}	Ø	{s1}	{s1}
	{5}	{s2}	Ø	{s2}	{s2}	{s2}	{s2}	{s2}	{s2}	{s2}
	{10}	Ø	$\{s3, s4\}$	$\{s3, s4\}$	$\{s3, s4\}$	$\{s3, s4\}$	$\{s3, s4\}$	{s3}	{s4}	{s3}
	{13}	Ø	$\{s0, s3, s4\}$	$\{s0, s3, s4\}$	$\{s3, s4\}$	$\{s0, s3, s4\}$	$\{s3, s4\}$	{s3}	{s4}	{s3}
	{14}	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø

5.4 States Map 4

		{0}	{1}	$\{2\}$	{3}	{4}	{5}	{6}	[{7}	{8}
	{0}	{s1}	$\{s0\}$	$\{s0\}$	Ø	$\{s0, s1\}$	{s1}	Ø	{s1}	{s1}
	$\{1, 11, 12, 3, 4, 6, 7, 8, 9\}$	$\{s1, s2\}$	$\{s0, s3, s4\}$	$\{s0, s2, s3, s4\}$	$\{s2, s3, s4\}$	$\{s0, s1, s2, s3, s4\}$	$\{s1, s2, s3, s4\}$	$\{s2, s3\}$	$\{s1, s2, s4\}$	$\{s1, s2, s3\}$
	{2}	{s1}	Ø	Ø	Ø	{s1}	{s1}	Ø	{s1}	{s1}
	{5}	{s2}	Ø	{s2}	{s2}	$\{s2\}$	{s2}	{s2}	{s2}	{s2}
	$\{10, 13\}$	Ø	$\{s0, s3, s4\}$	$\{s0, s3, s4\}$	$\{s3, s4\}$	$\{s0, s3, s4\}$	$\{s3, s4\}$	{s3}	{s4}	{s3}
L	{14}	Ø	Ø	Ø	Ø	Ø	Ø	0	0	Ø

5.5 States Map 5

	{0}	{1}	{2}	$\{3, 6\}$	{4}	{5}	{7}	{8}
{0}	{s1}	{s0}	$\{s0\}$	Ø	$\{s0, s1\}$	{s1}	{s1}	{s1}
{1, 11, 12, 3, 4, 6, 7, 8, 9}	$\{s1, s2\}$	$\{s0, s3, s4\}$	$\{s0, s2, s3, s4\}$	$\{s2, s3, s4\}$	$\{s0, s1, s2, s3, s4\}$	$\{s1, s2, s3, s4\}$	$\{s1, s2, s4\}$	$\{s1, s2, s3\}$
{2}	{s1}	Ø	Ø	Ø	{s1}	{s1}	{s1}	{s1}
{5}	{s2}	Ø	{s2}	{s2}	{s2}	{s2}	{s2}	{s2}
{10, 13}	Ø	$\{s0, s3, s4\}$	$\{s0, s3, s4\}$	$\{s3, s4\}$	$\{s0, s3, s4\}$	$\{s3, s4\}$	{s4}	{s3}
{14}	Ø	Ø	Ø	Ø	Ø	Ø	Ø	Ø

5.6 States Map 6

	{0}	{1}	{2}	${\{3,6\}}$	$\{4, 5, 7, 8\}$
{0}	{s1}	$\{s0\}$	${s0}$	Ø	$\{s0, s1\}$
$\{1, 11, 12, 3, 4, 6, 7, 8, 9\}$	$\{s1, s2\}$	$\{s0, s3, s4\}$	$\{s0, s2, s3, s4\}$	$\{s2, s3, s4\}$	$\{s0, s1, s2, s3, s4\}$
{2}	{s1}	Ø	Ø	Ø	{s1}
{5}	$\{s2\}$	Ø	$\{s2\}$	$\{s2\}$	$\{s2\}$
{10, 13}	Ø	$\{s0, s3, s4\}$	$\{s0, s3, s4\}$	$\{s3, s4\}$	$\{s0, s3, s4\}$
{14}	Ø	Ø	Ø	Ø	Ø

5.7 States Map 7

	{0}	{1}	{2}	${\{3,6\}}$	$\{4, 5, 7, 8\}$
{0}	{s1}	{s0}	$\{s0\}$	Ø	$\{s0, s1\}$
$\{1, 11, 12, 3, 4, 6, 7, 8, 9\}$	$\{s1, s2\}$	$\{s0, s3, s4\}$	$\{s0, s2, s3, s4\}$	$\{s2, s3, s4\}$	$\{s0, s1, s2, s3, s4\}$
{2}	{s1}	Ø	Ø	Ø	{s1}
{5}	$\{s2\}$	Ø	$\{s2\}$	$\{s2\}$	$\{s2\}$
{10, 13}	Ø	$\{s0, s3, s4\}$	$\{s0, s3, s4\}$	$\{s3, s4\}$	$\{s0, s3, s4\}$
{14}	Ø	Ø	Ø	Ø	Ø

6 Maximal Prime Grids

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0,1,3\}$, Cols: $\{0,2,4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{0, 1, 2, 3, 4\}$, Cols: $\{4\}$
- Rows: $\{0, 1, 4\}$, Cols: $\{1, 2, 4\}$
- Rows: $\{1,3\}$, Cols: $\{0,2,3,4\}$
- Rows: $\{0, 1, 3, 4\}$, Cols: $\{2, 4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$
- Rows: $\{1\}$, Cols: $\{0, 1, 2, 3, 4\}$
- Rows: $\{0,1\}$, Cols: $\{0,1,2,4\}$

7 Cover Enumeration

7.1 Cover 1

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$

7.2 Cover 2

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0,1,3\}$, Cols: $\{0,2,4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$

7.3 Cover 3

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3\}$, Cols: $\{0,2,3,4\}$

7.4 Cover 4

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$

7.5 Cover 5

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{1,3\}$, Cols: $\{0,2,3,4\}$
- Rows: $\{0,1\}$, Cols: $\{0,1,2,4\}$

7.6 Cover 6

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$
- Rows: $\{0,1\}$, Cols: $\{0,1,2,4\}$

7.7 Cover 7

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0, 1, 2, 3, 4\}$, Cols: $\{4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$

7.8 Cover 8

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3\}$, Cols: $\{0,2,3,4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$

7.9 Cover 9

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0, 1, 4\}$, Cols: $\{1, 2, 4\}$
- Rows: $\{0, 1, 3, 4\}$, Cols: $\{2, 4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$

7.10 Cover 10

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1, 3, 4\}$, Cols: $\{2, 3, 4\}$
- Rows: $\{1\}$, Cols: $\{0, 1, 2, 3, 4\}$

7.11 Cover 11

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$
- Rows: $\{0,1\}$, Cols: $\{0,1,2,4\}$

7.12 Cover 12

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0,1,3\}$, Cols: $\{0,2,4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3\}$, Cols: $\{0,2,3,4\}$

7.13 Cover 13

- Rows: $\{0,1,2,3\}$, Cols: $\{0,4\}$
- Rows: $\{0,1,3\}$, Cols: $\{0,2,4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$

7.14 Cover 14

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0,1,3\}$, Cols: $\{0,2,4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{1,3\}$, Cols: $\{0,2,3,4\}$
- Rows: $\{0,1\}$, Cols: $\{0,1,2,4\}$

7.15 Cover 15

- Rows: $\{0,1,2,3\}$, Cols: $\{0,4\}$
- Rows: $\{0,1,3\}$, Cols: $\{0,2,4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$
- Rows: $\{0,1\}$, Cols: $\{0,1,2,4\}$

7.16 Cover 16

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0,1,3\}$, Cols: $\{0,2,4\}$
- Rows: $\{0, 1, 2, 3, 4\}$, Cols: $\{4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1, 3, 4\}$, Cols: $\{2, 3, 4\}$

7.17 Cover 17

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0,1,3\}$, Cols: $\{0,2,4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3\}$, Cols: $\{0,2,3,4\}$
- Rows: $\{1, 3, 4\}$, Cols: $\{2, 3, 4\}$

7.18 Cover 18

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0,1,3\}$, Cols: $\{0,2,4\}$
- Rows: $\{0, 1, 4\}$, Cols: $\{1, 2, 4\}$
- Rows: $\{0, 1, 3, 4\}$, Cols: $\{2, 4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$

7.19 Cover 19

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0,1,3\}$, Cols: $\{0,2,4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$
- Rows: $\{1\}$, Cols: $\{0, 1, 2, 3, 4\}$

7.20 Cover 20

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0,1,3\}$, Cols: $\{0,2,4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$
- Rows: $\{0,1\}$, Cols: $\{0,1,2,4\}$

7.21 Cover 21

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{0, 1, 2, 3, 4\}$, Cols: $\{4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3\}$, Cols: $\{0,2,3,4\}$

7.22 Cover 22

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{0, 1, 2, 3, 4\}$, Cols: $\{4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$

7.23 Cover 23

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{0, 1, 2, 3, 4\}$, Cols: $\{4\}$
- Rows: $\{1,3\}$, Cols: $\{0,2,3,4\}$
- Rows: $\{0,1\}$, Cols: $\{0,1,2,4\}$

7.24 Cover 24

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{0, 1, 2, 3, 4\}$, Cols: $\{4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$
- Rows: $\{0,1\}$, Cols: $\{0,1,2,4\}$

7.25 Cover 25

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3\}$, Cols: $\{0,2,3,4\}$
- Rows: $\{0, 1, 3, 4\}$, Cols: $\{2, 4\}$

7.26 Cover 26

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3\}$, Cols: $\{0,2,3,4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$

7.27 Cover 27

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3\}$, Cols: $\{0,2,3,4\}$
- Rows: $\{1\}$, Cols: $\{0, 1, 2, 3, 4\}$

7.28 Cover 28

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3\}$, Cols: $\{0,2,3,4\}$
- Rows: $\{0,1\}$, Cols: $\{0,1,2,4\}$

7.29 Cover 29

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{0, 1, 3, 4\}$, Cols: $\{2, 4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$

7.30 Cover 30

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{0, 1, 4\}$, Cols: $\{1, 2, 4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$
- Rows: $\{1\}$, Cols: $\{0, 1, 2, 3, 4\}$

7.31 Cover 31

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$
- Rows: $\{0,1\}$, Cols: $\{0,1,2,4\}$

7.32 Cover 32

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{1,3\}$, Cols: $\{0,2,3,4\}$
- Rows: $\{0, 1, 3, 4\}$, Cols: $\{2, 4\}$
- Rows: $\{0,1\}$, Cols: $\{0,1,2,4\}$

7.33 Cover 33

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{1,3\}$, Cols: $\{0,2,3,4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$
- Rows: $\{0,1\}$, Cols: $\{0,1,2,4\}$

7.34 Cover 34

- Rows: $\{0,1,2,3\}$, Cols: $\{0,4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{1,3\}$, Cols: $\{0,2,3,4\}$
- Rows: $\{1\}$, Cols: $\{0, 1, 2, 3, 4\}$
- Rows: $\{0,1\}$, Cols: $\{0,1,2,4\}$

7.35 Cover 35

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{0, 1, 3, 4\}$, Cols: $\{2, 4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$
- Rows: $\{0,1\}$, Cols: $\{0,1,2,4\}$

7.36 Cover 36

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{1,4\}$, Cols: $\{1,2,3,4\}$
- Rows: $\{1, 3, 4\}$, Cols: $\{2, 3, 4\}$
- Rows: $\{1\}$, Cols: $\{0, 1, 2, 3, 4\}$
- Rows: $\{0,1\}$, Cols: $\{0,1,2,4\}$

7.37 Cover 37

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0, 1, 2, 3, 4\}$, Cols: $\{4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3\}$, Cols: $\{0,2,3,4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$

7.38 Cover 38

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0, 1, 2, 3, 4\}$, Cols: $\{4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{0, 1, 3, 4\}$, Cols: $\{2, 4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$

7.39 Cover 39

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0, 1, 2, 3, 4\}$, Cols: $\{4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$
- Rows: $\{1\}$, Cols: $\{0, 1, 2, 3, 4\}$

7.40 Cover 40

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0, 1, 2, 3, 4\}$, Cols: $\{4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$
- Rows: $\{0,1\}$, Cols: $\{0,1,2,4\}$

7.41 Cover 41

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3\}$, Cols: $\{0,2,3,4\}$
- Rows: $\{0, 1, 3, 4\}$, Cols: $\{2, 4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$

7.42 Cover 42

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3\}$, Cols: $\{0,2,3,4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$
- Rows: $\{1\}$, Cols: $\{0, 1, 2, 3, 4\}$

7.43 Cover 43

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{1,3\}$, Cols: $\{0,2,3,4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$
- Rows: $\{0,1\}$, Cols: $\{0,1,2,4\}$

7.44 Cover 44

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{0,1,3,4\}$, Cols: $\{2,4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$
- Rows: $\{1\}$, Cols: $\{0, 1, 2, 3, 4\}$

7.45 Cover 45

- Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$
- Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$
- Rows: $\{0, 1, 3, 4\}$, Cols: $\{2, 4\}$
- Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$
- Rows: $\{0,1\}$, Cols: $\{0,1,2,4\}$

7.46 Cover 46

• Rows: $\{0, 1, 2, 3\}$, Cols: $\{0, 4\}$

• Rows: $\{0,1,4\}$, Cols: $\{1,2,4\}$

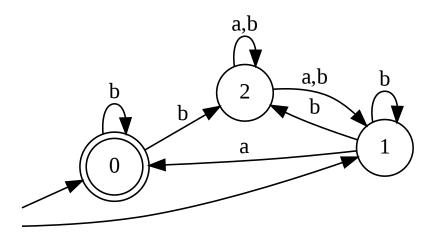
• Rows: $\{1,3,4\}$, Cols: $\{2,3,4\}$

• Rows: $\{1\}$, Cols: $\{0, 1, 2, 3, 4\}$

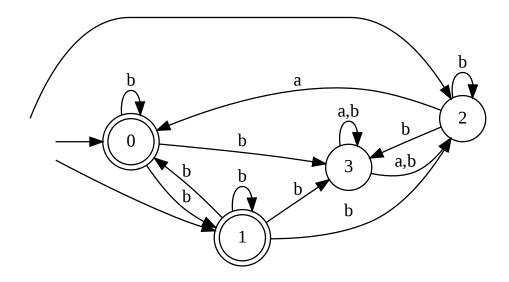
• Rows: $\{0,1\}$, Cols: $\{0,1,2,4\}$

8 Intersection Rule Result

8.1 NFA 1

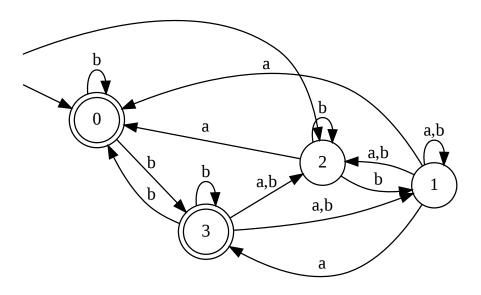


8.2 NFA 2

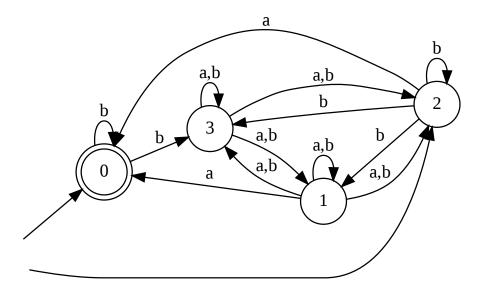


This NFA is legitimate.

8.3 NFA 3

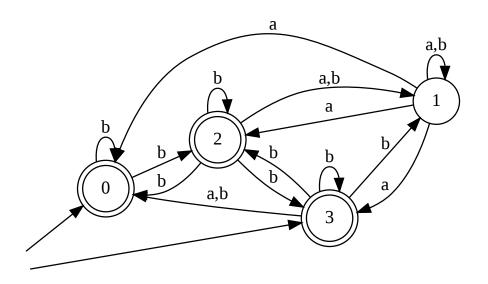


8.4 NFA 4



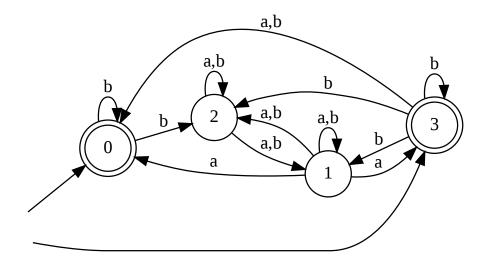
This NFA is legitimate.

8.5 NFA 5



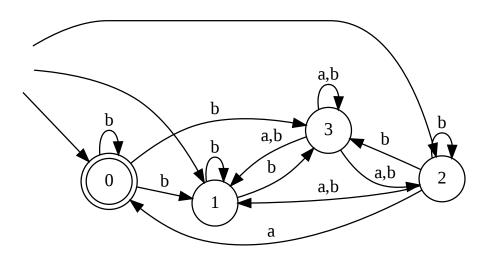
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8.6 NFA 6

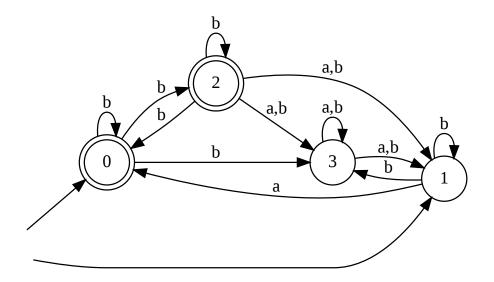


This NFA is legitimate.

8.7 NFA 7

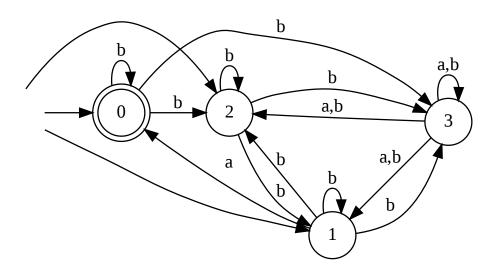


8.8 NFA 8

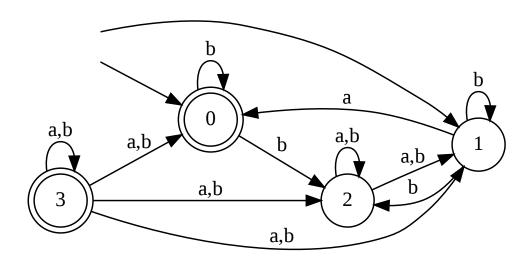


This NFA is legitimate.

8.9 NFA 9



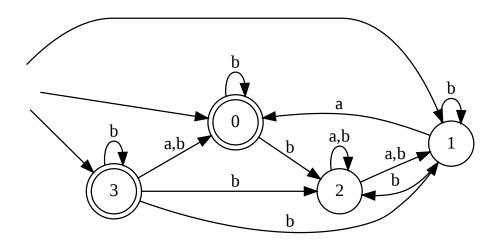
8.10 NFA 10



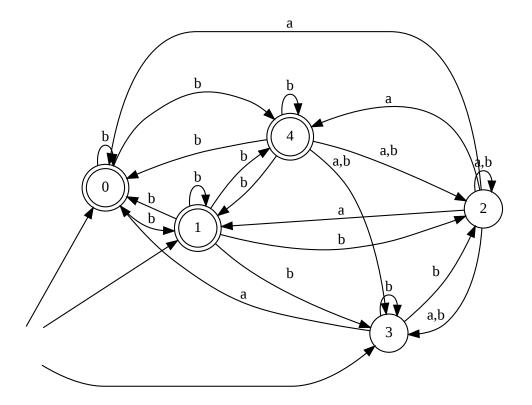
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NFA is legitimate.

8.11 NFA 11

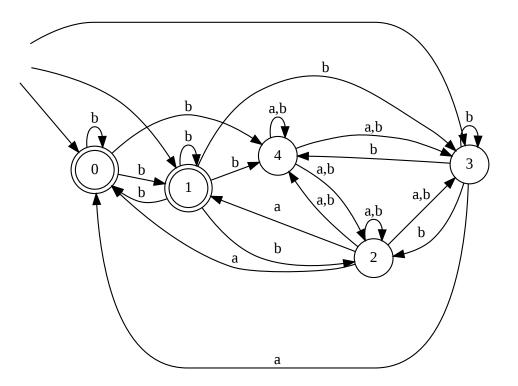


8.12 NFA 12



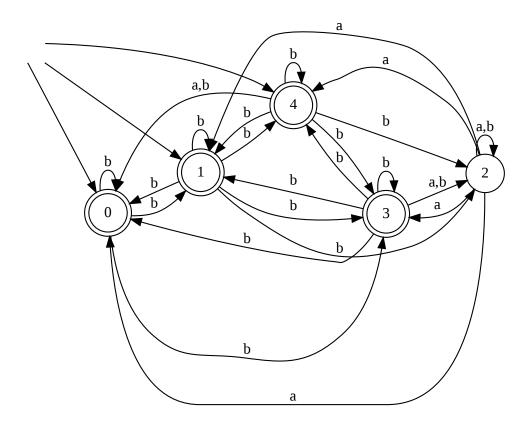
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8.13 NFA 13



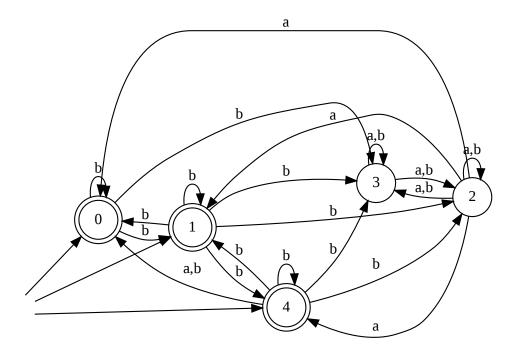
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8.14 NFA 14



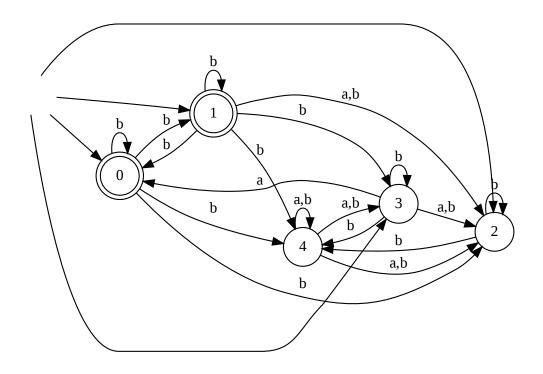
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8.15 NFA 15



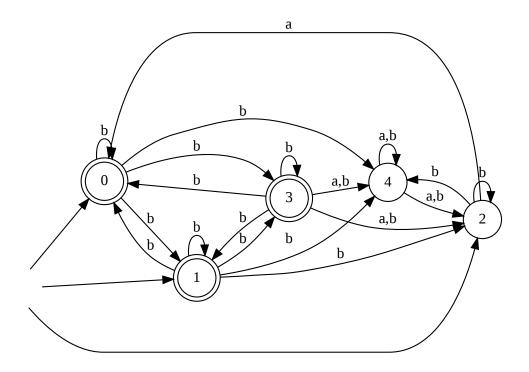
This NFA is legitimate.

8.16 NFA 16



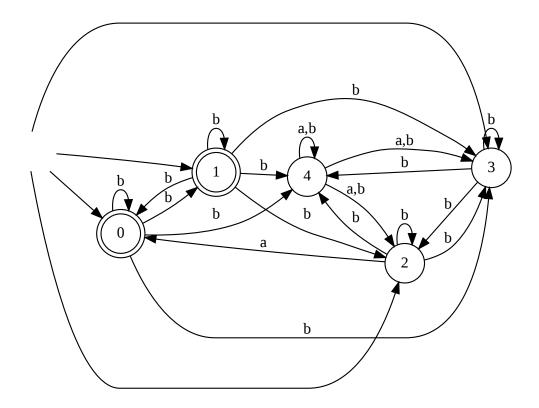
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8.17 NFA 17



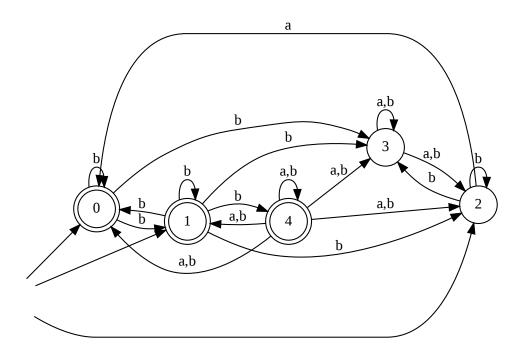
This NFA is legitimate.

8.18 NFA 18



This NFA is legitimate.

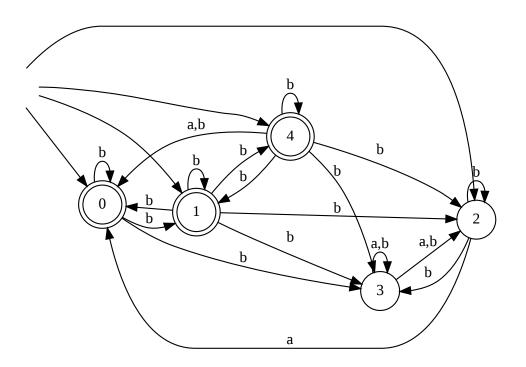
8.19 NFA 19



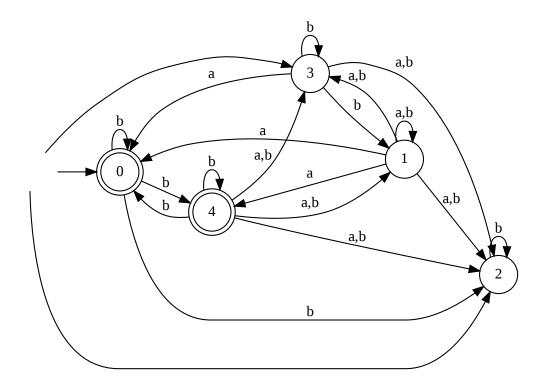
NFA is legitimate.

 $\quad \text{This} \quad$

8.20 NFA 20

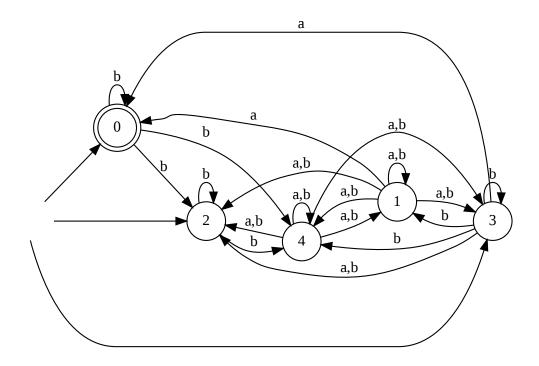


8.21 NFA 21



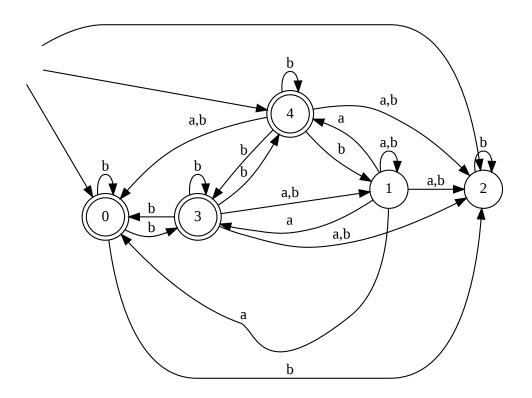
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8.22 NFA 22



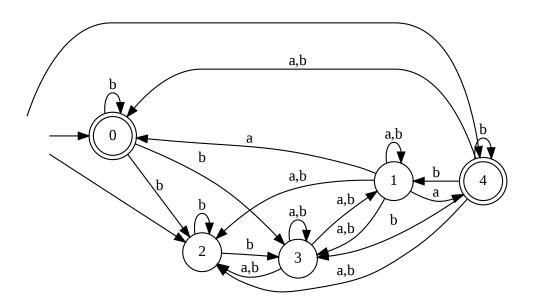
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8.23 NFA 23



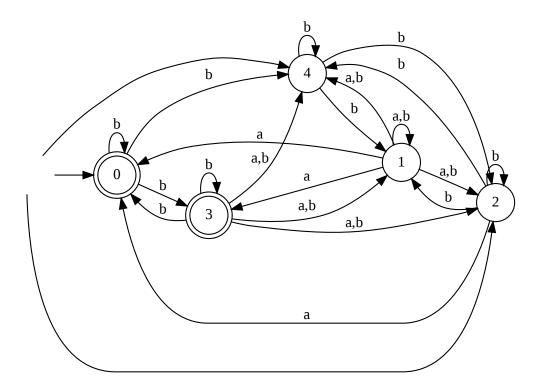
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8.24 NFA 24



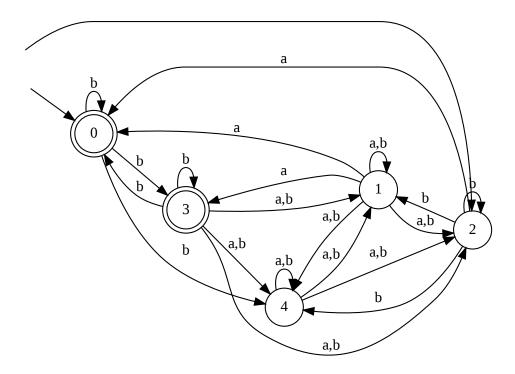
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8.25 NFA 25

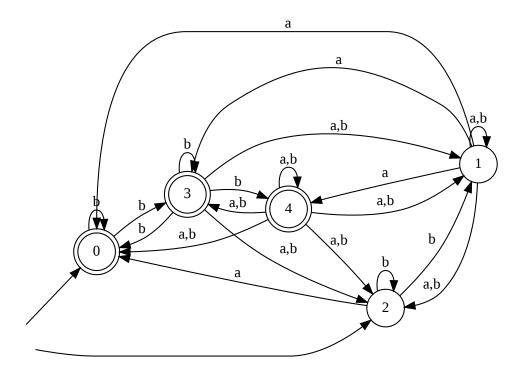


This NFA is legitimate.

8.26 NFA 26

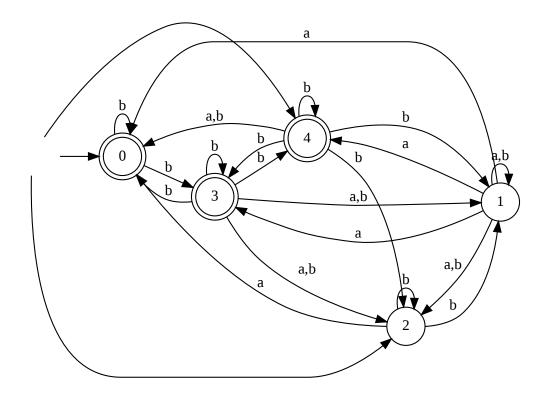


8.27 NFA 27

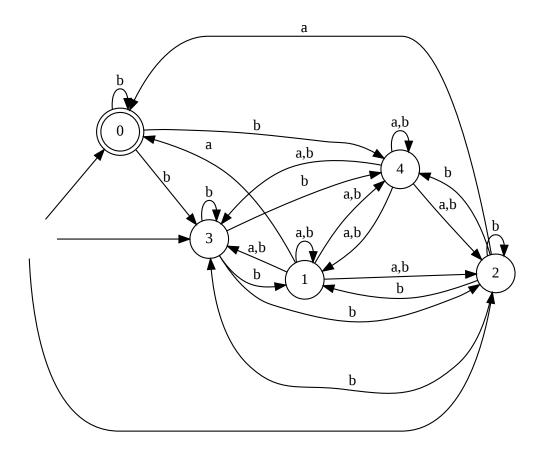


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8.28 NFA 28

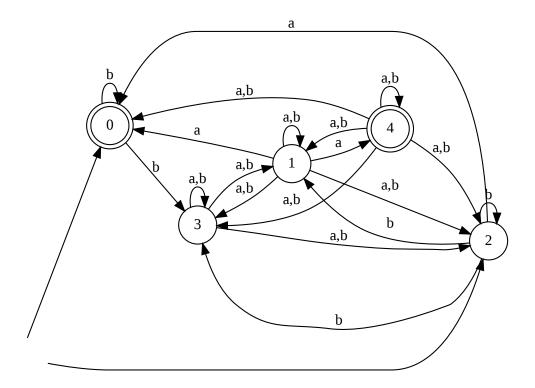


This NFA is legitimate.

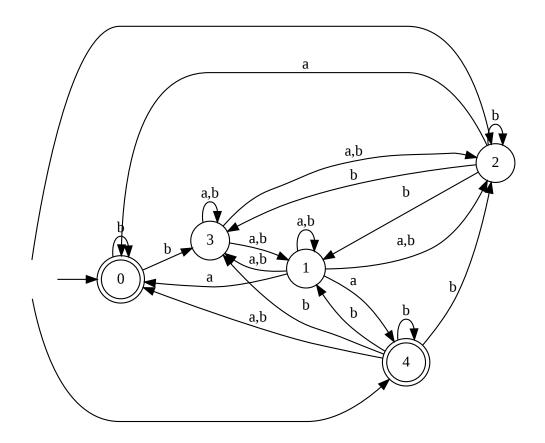


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8.30 NFA 30

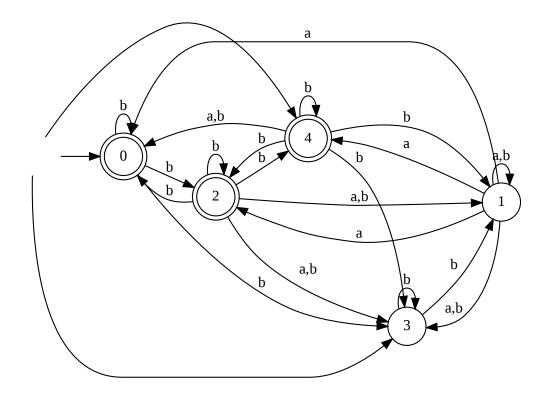


8.31 NFA 31



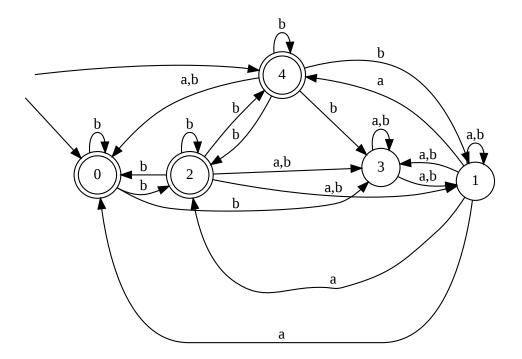
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8.32 NFA 32



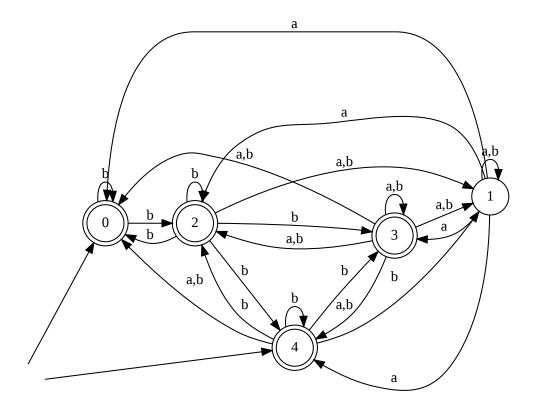
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8.33 NFA 33



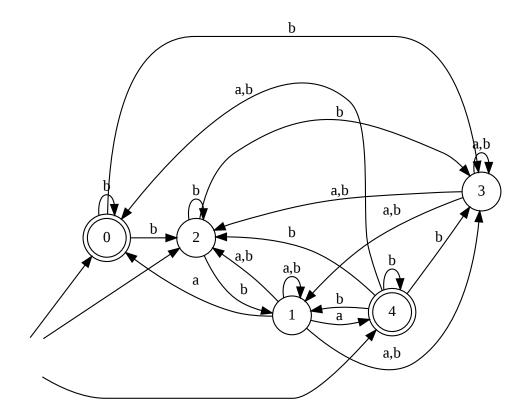
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8.34 NFA 34

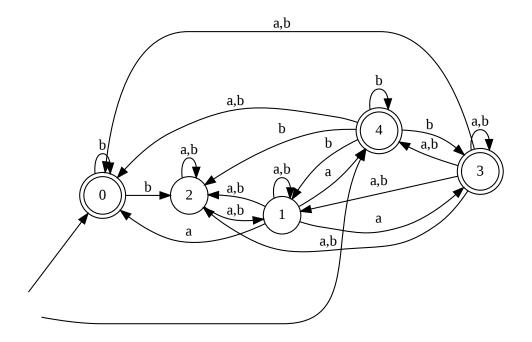


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8.35 NFA 35



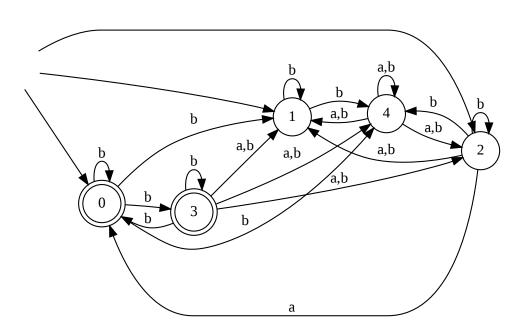
8.36 NFA 36



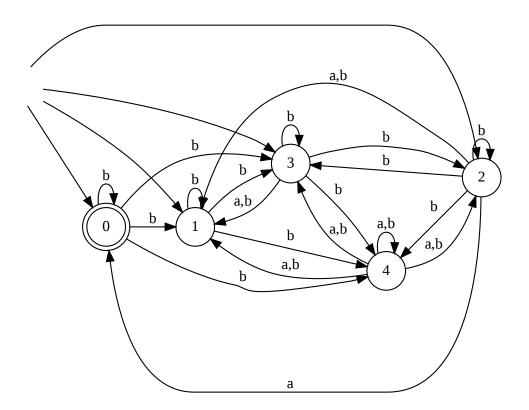
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NFA is legitimate.

8.37 NFA 37

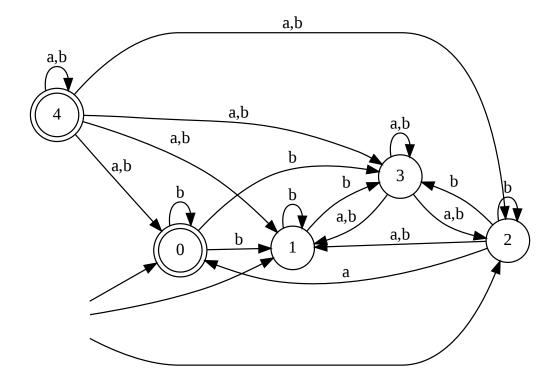


8.38 NFA 38



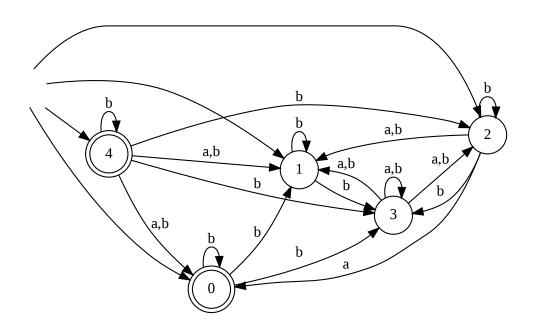
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8.39 NFA 39

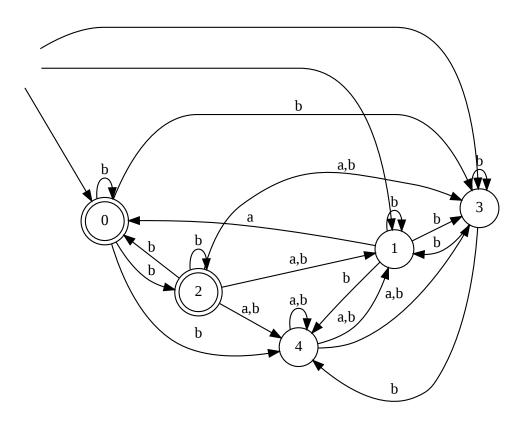


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8.40 NFA 40



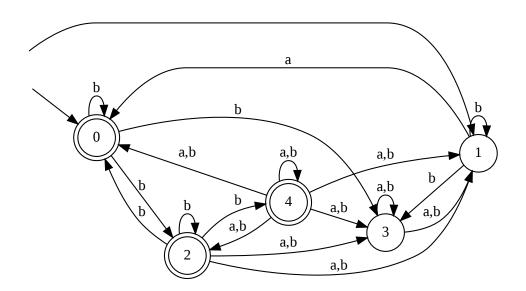
8.41 NFA 41



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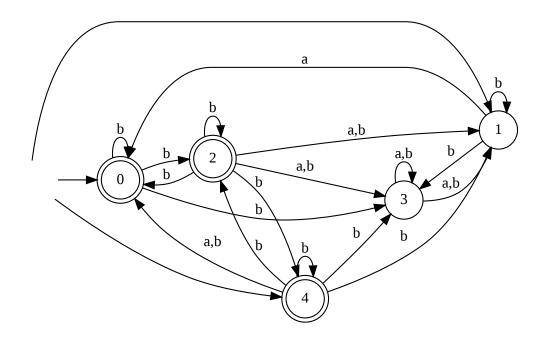
NFA is legitimate.

8.42 NFA 42



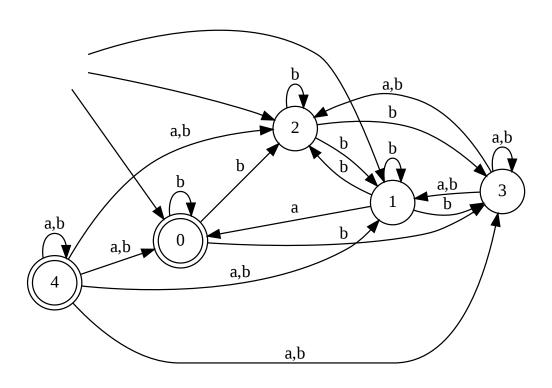
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8.43 NFA 43

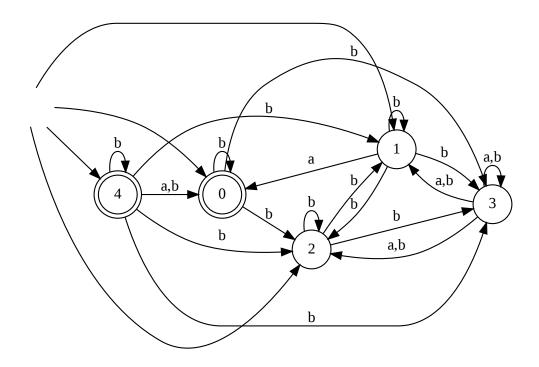


This NFA is legitimate.

8.44 NFA 44



8.45 NFA 45



This

NFA is legitimate.

8.46 NFA 46

