

Two Example With Beamer

Page 97 to 100

Mohammadamin Raisi

Student Number :970087192

Unit : Tehran Shomal - Shahriar

January 12, 2021

Example 6 - Page 97

6. Convert the following NFA to an equivalent DFA.

Solution :

Σ		
States	0	1
q_0	q_0	q_0, q_1
q_1	q_2	q_2
q_2	-	q_1

($[q_0]$ is the initial state and $[q_1]$ is the final state)

Solution: Conversion is done in the following ways:

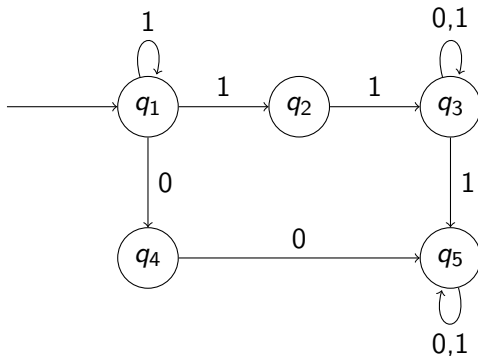
Σ		
	0	1
States		
$[q_0]$	$[q_0]$	$[q_0, q_1]$
$[q_0, q_1]$	$[q_0, q_2]$	$[q_0, q_1, q_2]$
$[q_0, q_1, q_2]$	$[q_0, q_2]$	$[q_0, q_1, q_2]$
$[q_0, q_2]$	$[q_0]$	$[q_0, q_1, q_2]$

Rename $[q_0]$ as A, $[q_0, q_1]$ as B, $[q_0, q_1, q_2]$ as C, and $[q_0, q_2]$ as D. The beginning state is A, and final states are B and C.

Σ		
States	0	1
A	A	B
B	D	C
C	D	C
D	A	C

Example 9 - Page 99

8. Construct a DFA equivalent to the following N DFA given in the following figure. [UPTU 2004]



Solution: The tabular representation of the NDFA is

Present State	Next State	
	0	1
q_0	q_3	$\{q_0, q_1\}$
q_1	\emptyset	q_2
q_2	q_2	$\{q_2, q_4\}$
q_3	q_4	\emptyset
q_4	q_4	q_4

(q_0 is the initial state and q_4 is the final state)

The corresponding DFA is

Σ		
States	0	1
$\{q_0\}$	$\{q_3\}$	$\{q_0, q_1\}$
$\{q_3\}$	$\{q_4\}$	$\{\emptyset\}$
$\{q_4\}$	$\{q_4\}$	$\{q_4\}$
$\{q_0, q_1\}$	$\{q_2\}$	$\{q_2, q_4\}$
$\{q_2\}$	$\{q_2\}$	$\{q_2, q_4\}$
$\{q_2, q_4\}$	$\{q_2, q_4\}$	$\{q_2, q_4\}$
$\{\emptyset\}$	$\{\emptyset\}$	$\{\emptyset\}$

Here $\{q_0\}$ is the beginning state, and $\{q_4\}$, and $\{q_0, q_1\}$ are the final states.

(Draw a transitional diagram to complete the answer.)