UNIVERSITY OF ASIA PACIFIC

CSE - 4.2

CSE - 429 - ASSIGNMENT - 1

18 10 1009

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A SECTION ROLL - 9

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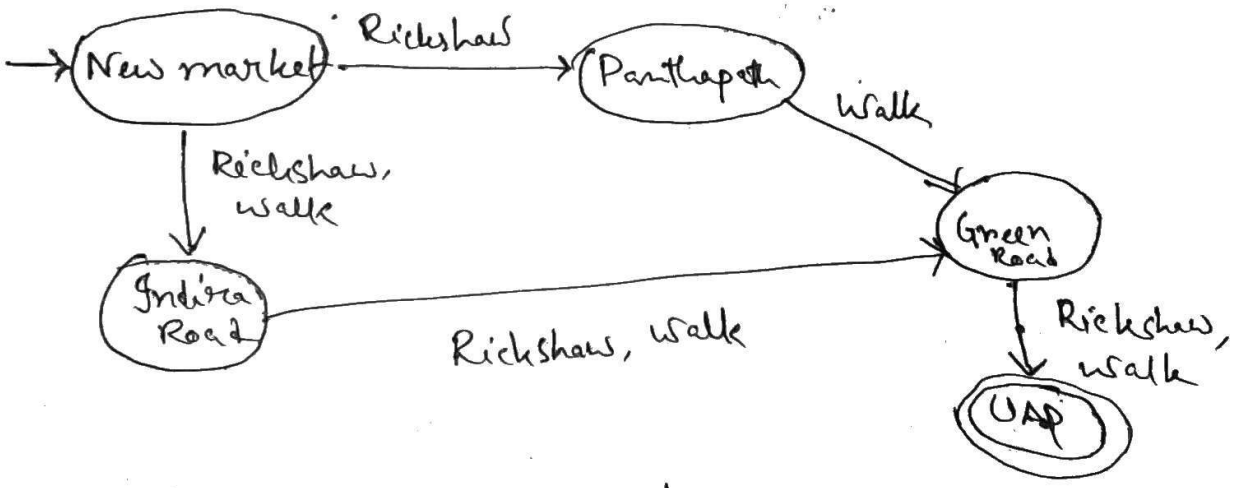
1. Suppose you want to travel from New Market to UAP. Between this location green road is a central point where you could travel via Indira Road or Panthapath. Now, design a NFA and then it's corresponding DFA where, it will accept the string {rickshaw, walk}.

Here, via panthapath the route takes rickshaw and follows by walk string. For other case, it accepts any one of them.



NFA design model.

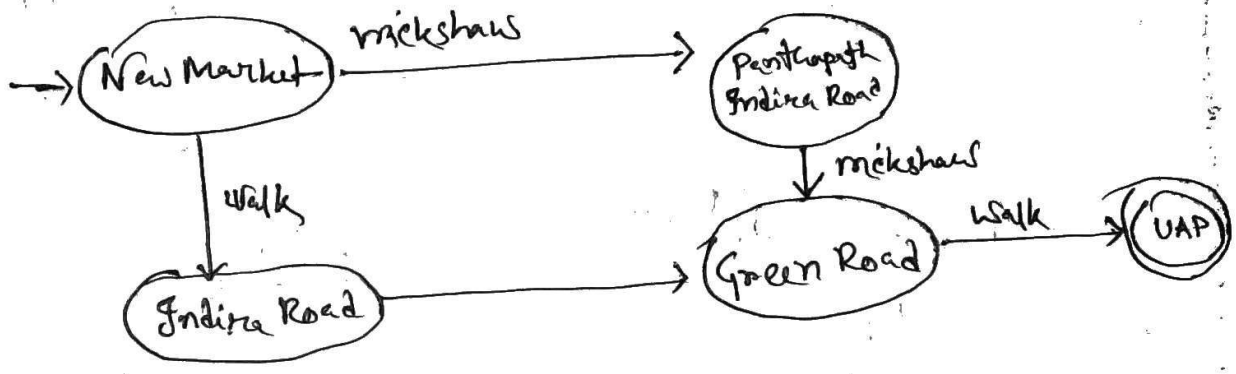
Here, Start state point = New Market
Final state point = UAP.

Here, NFA Transition Table.

	Rickshaw	Walk
→ New Market	{Panthapath, Indira Road}	{Indira Road}
Panthapath	—	{Green Road}
Indira Road	{Green Road}	{Green Road}
Green Road	{UAP}	{UAP}
*UAP	—	—

DFA transition table.

	Rickshaw	Walk
⇒ {New Market}	{Panthapath, Indira Road}	{Indira Road}
{Panthapath, Indira Road}	{Green Road}	{Green Road}
{Green Road}	{UAP}	{UAP}
{UAP}*	—	—



5 tuples for this solution.

Q = finite states = {New Market, Panthapath, Indira Road, Green Road, UAP}.

Σ = alphabet = {rickshaw, walk}

q_0 = initial state = {New Market}

F = {UAP}

σ = trasition functions table / equation.

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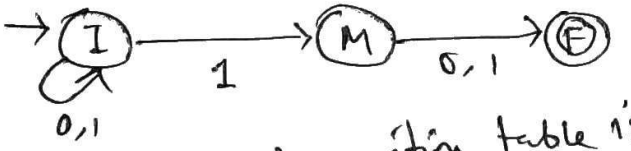
2. Suppose you want to travel from Rajshahi to Dhaka by bus. Between this route there's a place name Bagatipara.
Now design a NFA that accepts all string over {break, move}. Where the second last symbol is always move. Then covert its corresponding DFA with transition table.

Firstly we renamed our states for calculation.

Here, Rajshahi = I, Bagatipara = M, Dhaka = F.

And also break = 0, move = 1.

So, our NFA model



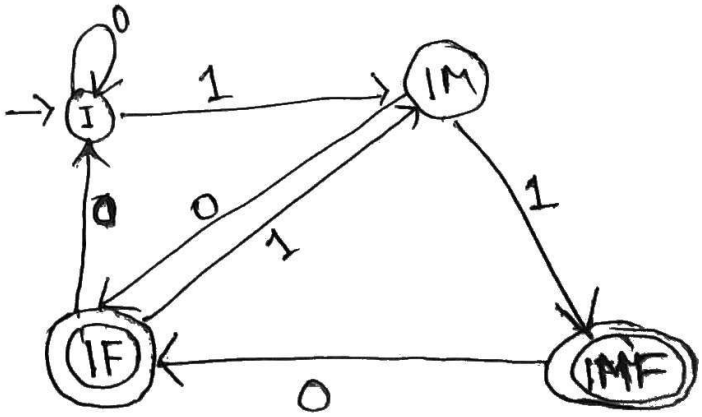
Here, NFA transition table is given.

	0	1
→I	{I}	{I,M}
M	{F}	{F}
*F	ϕ	–

DFA state transition table.

	0	1
→ {I}	{I}	{IM}
{IM}	{IF}	{IMF}
*{IF}	{I}	{IM}
*{IFM}	{IF}	{IMF}

So, the corresponding DFA



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Here, 5-tuples for solutions.

$Q = \{I, M, F\}$.

$\Sigma = \{0, 1\}$

$q_0 = \{I\}$

$F = \{F\}$

σ = transition function states / tables.