Varun K   A016   29-8-20

Camlin Page
Date / /

FLAT

Team Work I (b)

Q1. $R = \{(1,2); (2,3); (3,4); (5,4)\}$

Transitive Closure

$R^+ = \{(1,2); (2,3); (3,4); (5,4); (1,3); (2,4); (1,4)\}$

Symmetric Closure

$R^* = \{(1,2); (2,3); (3,4); (5,4); (2,1); (3,2); (4,3); (4,5)\}$

Q 4. $\Sigma = \{0, 1, \ldots, 9\}$ divisible by 3.

$I = \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\}$

Let divide I in parts of on basis of remainder of 0, 1, 2.

$\therefore I = \{(0,3,6,9); (1,4,7); (2,5,8)\}$

$O = \{0, 1\}$

$S = \{S_0, S_1, S_2\}$

S_0 = 0 remainder

S_1 = 1 remainder

S_2 = 2 remainder

Varun K A016 29-8-20

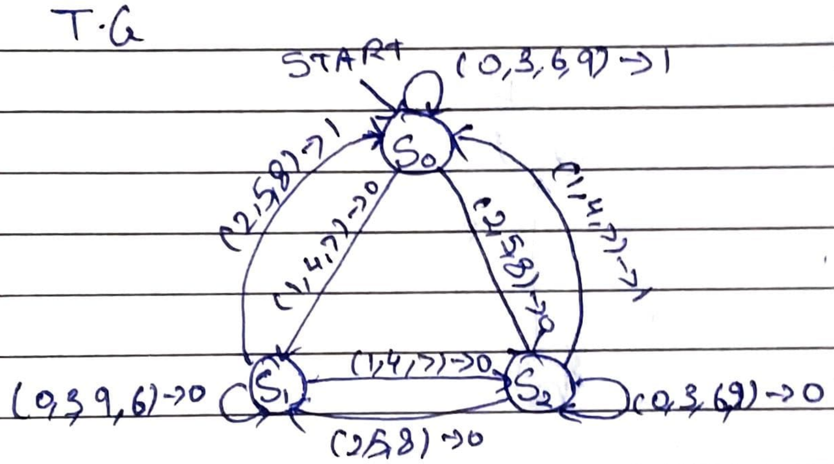
STF: $I \times S \rightarrow S$

S\I	(0,3,6,9)	(1,4,7)	(2,5,8)
S_0	S_0	S_1	S_2
S_1	S_1	S_2	S_0
S_2	S_2	S_0	S_1

MAF: $I \times S \rightarrow O$

S\I	(0,3,6,9)	(1,4,7)	(2,5,8)
S_0	1	0	0
S_1	0	0	1
S_2	0	1	0

T.G



T.M

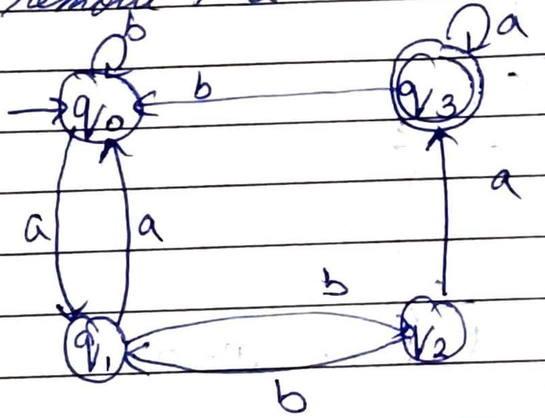
C.S \ N.S	S_0	S_1	S_2
S_0	0/1 V 3/1 V 6/1 V 9/1	1/0 V 4/0 V 7/0	2/0 V 5/0 V 8/0
S_1	2/1 V 5/1 V 8/1	0/0 V 3/0 V 6/0	1/0 V 4/0 V 7/0
S_2	1/1 V 4/1 V 7/1	2/0 V 5/0 V 8/0	0/0 V 3/0 V 6/0 V 9/0

Varun K 29-8-20 A016

Q2 A set of 2 Real no. is uncountable since in between of these 2 no. there exist infinite no. of other real numbers. And, for a set to be countable, the set should be countable which is not in case of this example.

Q3 ~~NFA and DFA are equivalent to each other. In other words for every NFA, there exist an equivalent DFA accepting the same set of words. A DFA is in a way, a generalization of an NFA. Hence, NFA and DFA have equal power.~~

Q5. In the digram q_4, q_5, q_6, q_7 are unreachable state as no path is shown is from initial state. Hence, we can easily remove these



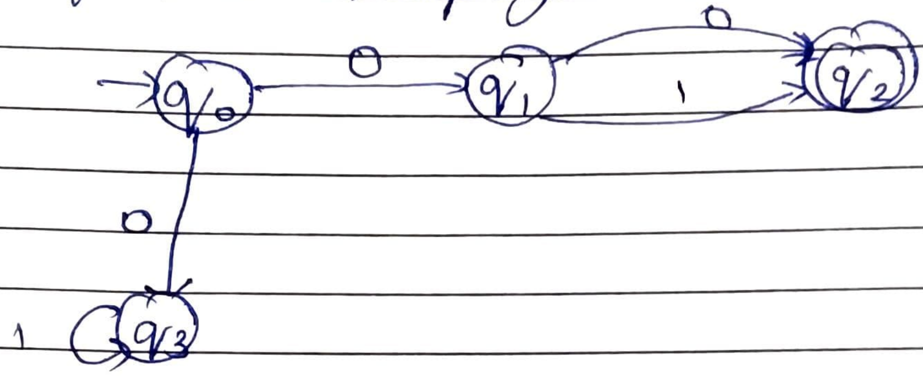
STF

$Q \backslash \Sigma$	a	b
q_0	q_1	q_0
q_1	q_0	q_2
q_2	q_3	q_1
q_3^*	q_3	q_0

Varun K 29-8-20 A016

Q3 NFA and DFA are equivalent to each other. In other words, for every NFA there excist an equivalent DFA accepting the same set of words / language. A DFA is in a way, a specialization of an NFA. Hence, NFA and DFA have equal power.

NFA for {00, 01} accepting



DFA for accepting {00, 01}