HOME TASK #05

Date: _____

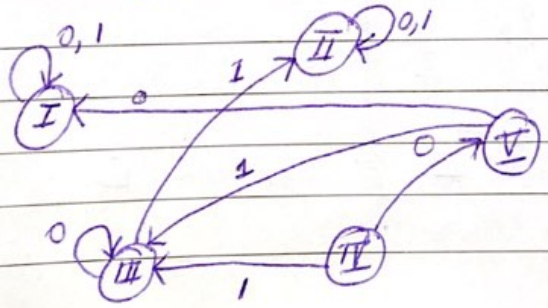
BASIL ALI KHAN
20K-0477

Minimization of DFA (1)

	0	1	
q_0	q_1 I	q_2 I	Partition I
q_1	q_2 I	q_3 I	
q_2	q_2 I	q_4 II	
q_3	q_3 I	q_3 I	
q_4	q_4 II	q_4 II	Partition II
q_5	q_5 II	q_4 II	

	0	1	
q_0	q_1 I	q_2 III	Partition I
q_1	q_2 III	q_3 I	
q_3	q_3 I	q_3 I	
q_4	q_4 II	q_4 II	Partition II
q_5	q_5 II	q_4 II	
q_2	q_2 III	q_4 II	Partition III

	0	1	
q_3	q_3 I	q_3 I	Partition I
q_4	q_4 II	q_4 II	Partition II
q_5	q_5 II	q_4 II	
q_2	q_2 III	q_4 II	Partition III
q_0	q_1 IV	q_2 III	Partition IV
q_1	q_2 III	q_3 I	Partition V



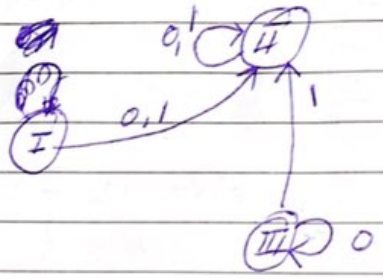
2017-0477

Date:

(2)

	0		1		
q_0	q_1	I	q_3	I	Partition I
q_1	q_2	I	q_4	II	
q_2	q_1	I	q_4	II	
q_3	q_2	I	q_4	II	
q_4	q_4	II	q_4	II	Partition II

	0		1		
q_0	q_1	III	q_3	III	Partition I
q_1	q_2	III	q_4	II	Partition III
q_2	q_1	III	q_4	II	
q_3	q_2	III	q_4	II	
q_4	q_4	II	q_4	II	Partition II



(3)

	a		b		
q_0	q_1	I	q_0	I	Partition I
q_1	q_0	I	q_2	I	
q_2	q_3	II	q_1	I	
q_4	q_3	III	q_5	I	
q_5	q_6	II	q_4	I	
q_6	q_5	I	q_6	II	
q_7	q_6	I	q_3	II	
q_3	q_3	II	q_0	I	Partition II

20K-0477

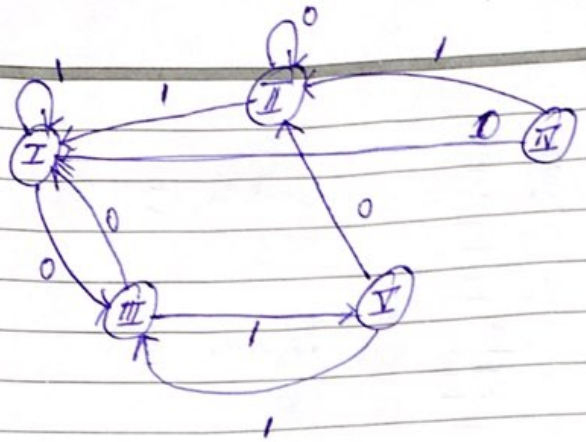
Date:

	a		b		
q_0	q_1	I	q_0	I	Partition I
q_1	q_0	I	q_2	II	
q_5	q_6	I	q_4	II	
q_6	q_5	I	q_6	I	
q_3	q_3	II	q_0	I	Partition II
q_2	q_3	II	q_1	I	
q_4	q_3	II	q_5	I	
q_7	q_6	I	q_3	II	Partition III

	a		b		
q_0	q_1	III	q_0	I	Partition I
q_6	q_5	III	q_6	I	
q_3	q_3	II	q_0	I	Partition II
q_2	q_3	II	q_1	III	Partition V
q_4	q_3	II	q_5	III	
q_7	q_6	I	q_3	II	Partition IV
q_1	q_0	I	q_2	V	
q_5	q_6	I	q_4	V	
q_7	q_6	I	q_3	IV	Partition IV

2011-0477

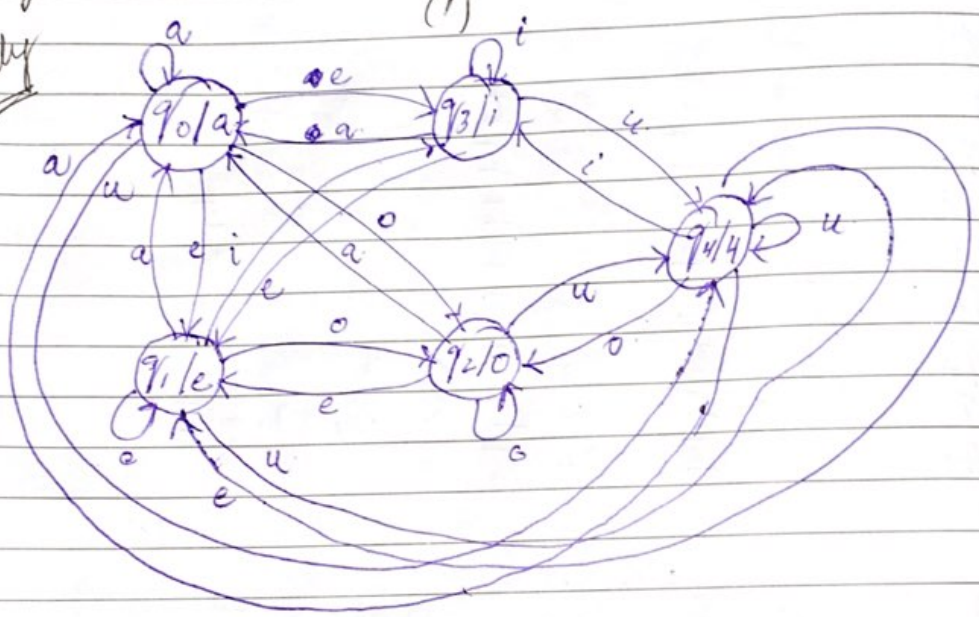
Date:



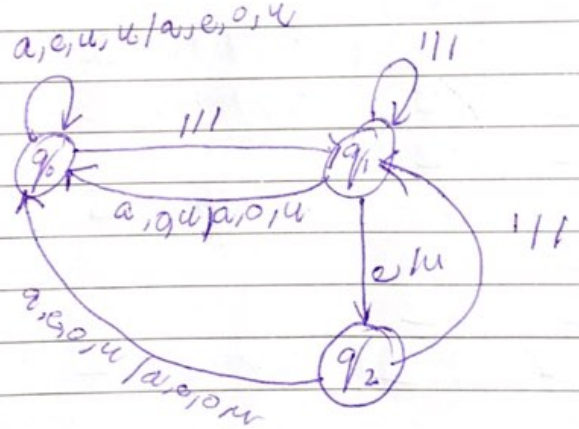
Mealy and Moore Machine

(1)

Mealy



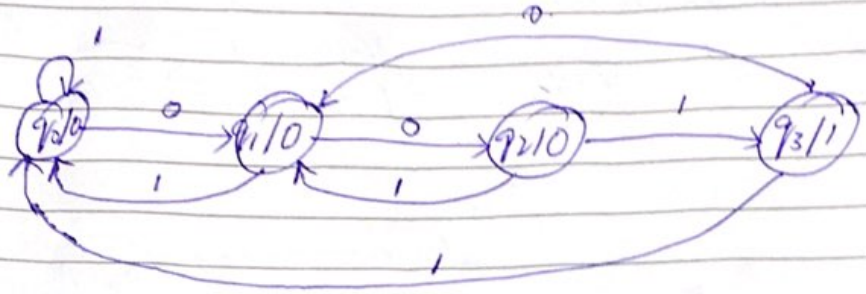
Moore



2011-0477

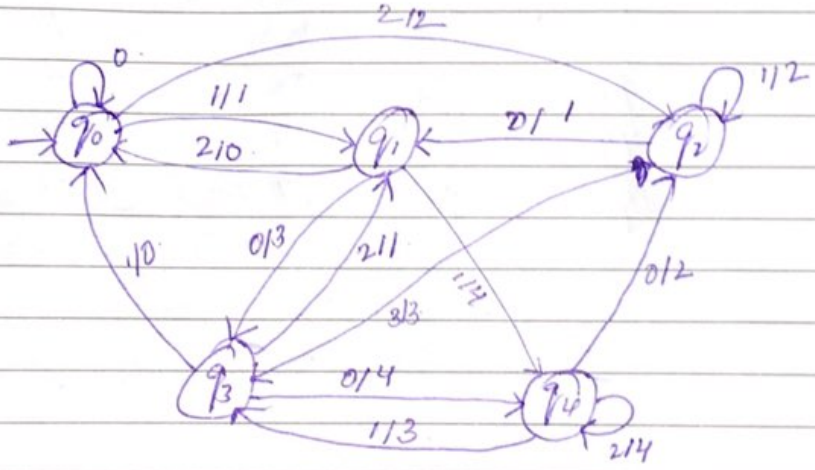
Date:

(2)



(3)

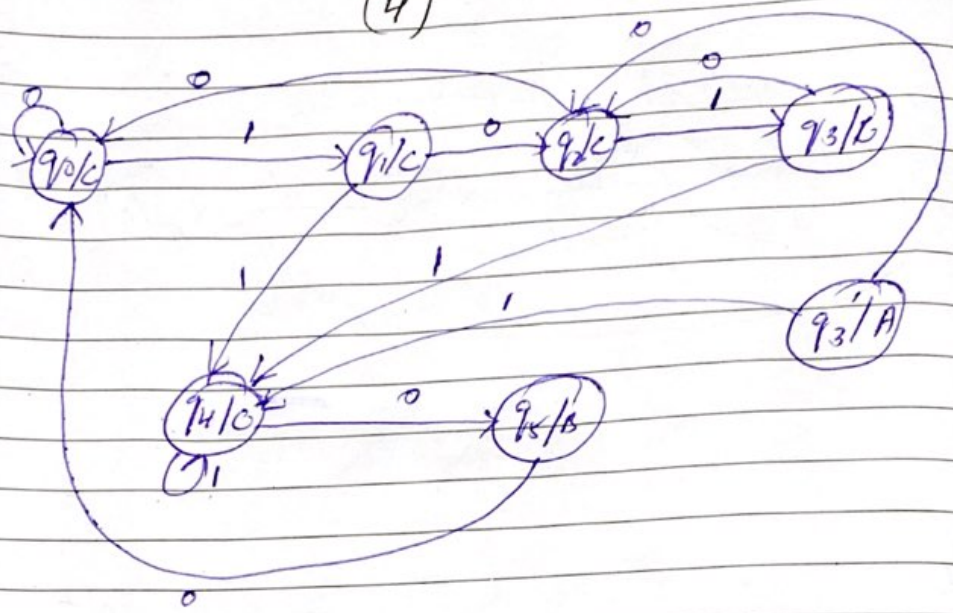
States	0	1	2	Output
q_0	q_0	q_1	q_2	0
q_1	q_3	q_4	q_0	1
q_2	q_1	q_2	q_3	2
q_3	q_4	q_0	q_1	3
q_4	q_2	q_3	q_4	4



20K-0477

Date:

(4)



(5)

States	0	1	2	Output
q_0	q_0	q_1	q_2	0
q_1	q_3	q_4	q_0	1
q_2	q_1	q_2	q_3	2
q_3	q_4	q_0	q_1	3
q_4	q_3	q_3	q_4	4

20K-0477

Date: _____

(6)

States	0	1
q_0	q_0, C	q_1, C
q_1	q_2, C	q_4, C
q_2	q_0, C	q_3, C
q_3	q_2, C	q_4, C
q_4	q_5, B	q_4, C
q_5	q_0, C	q_3, A

Pumping lemma.

(1)

$L = a^n b a^n$

$x = a \quad y = b \quad z = a$

$n = 1$

$a\,(b)^1\,a = aba$

$n = 2$

$a\,(b)^2\,a = abba$

Not regular

(2)

$L = a^n b^n c^n d^{2n}$

$x = a \quad y = bc \quad z = dd$

$n = 1$

$a\,(bc)^1\,dd = abcdd$

$n = 2$

$a\,(bc)^2\,dd = abbbccdd$

not a regular.

2011-0477

Date:

(3)

$L = a(b)^* a$

$x = a \quad y = b \quad z = a$

$n = 0$

$a(b)^0 a = aba$

$n = 2$

$a(b)^2 a = abbaa$

$n = 3$

$a(b)^3 a = abbbaa$

Regular

(4)

$L = a^n b^n$

aabb

$x = a \quad y = ab \quad z = b$

$n = 1$

$a(ab)^1 b = aabb$

$n = 2$

$a(ab)^2 b = aabbb$

Not regular.