Equivalence of two DFA's

Algorithm for checking equivalence :

Step 1. In both get rid of unreachable states.

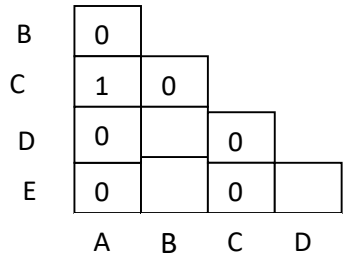
Step 2. Name the states of the two DFA's differently and join the two transition tables.

Step 3. Keep track of the pair of start states.

Step 4. Carry out the Table Filling Algorithm.

Step 5. If the two start states are equivalent then the DFA's are equivalent else not.

Ex 1 M1	0	1		0	1	
→*q1	q1	q2	*A	A	B	st state pair
q2	q1	q2	B	A	B	(A,C)
M2 →*q1	q2	q3	*C	D	E	
q2	q2	q3	D	D	E	
q3	q1	q3	E	C	E	



ITR 1 st state pair (A,C)

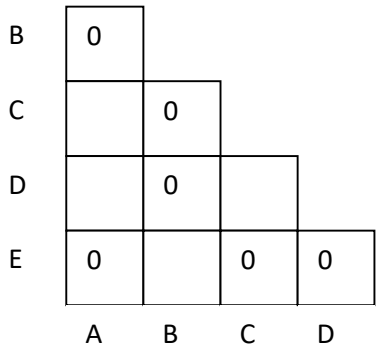
0 1 gets marked hence

A A M1, M2 not equivalent

C D

Ex 2

M1	0	1		0	1
→*q1	q1	q2	*A	A	B
	q2	q1	q2	B	A	B
M2 →*q1	q2	q3	*C	D	E
* q2	q2	q3	*D	D	E
	q3	q1	q3	E	C	E



Itr 1	0	1
A	A	B
C	D	E
A	A	B
D	D	E
B	A	B
E	C	E
C	D	E
D	D	E

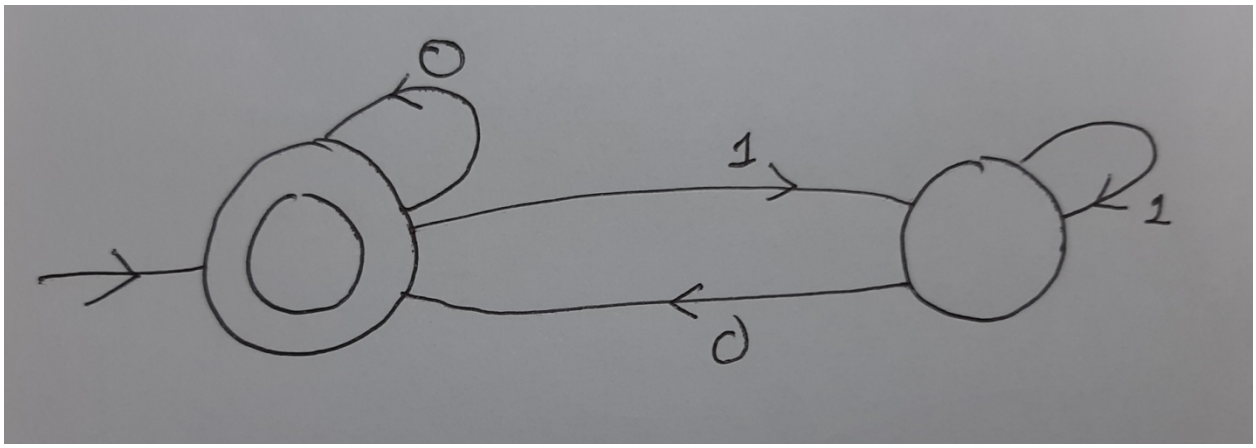
No pairs marked in Itr 1. Marking ends. St state pair (A, C) unmarked and hence equivalent.

Equivalent states : (A,C),(A,D),(B,E),(C,D)

Equivalence classes : (A,C,D), (B,E)

Equivalent DFA

	0	1
→*(A,C,D)	(A,C,D)	(B,E)
(B,E)	(A,C,D)	(B,E)



All strings not ending with 1 ie empty or ends with 0.