

Draw the following DFA using table filling algorithm where A is the start state. The states C, F and I are the final states.

δ	0	1
A	B	E
B	C	F
*C	D	H
D	E	H
E	F	I
*F	G	B
G	H	B
H	I	C
*I	A	E

C F F F
H B NF NF

C F F F
I C F F

E H NF NF
I C F F

B	X							
*C	X	X						
D		X	X					
E	X		X	X				
*F	X	X		X	X			
G		X	X	-	X	X		
H	X		X	X		X	X	
*I	X	X		X	X		X	X
	A	B	C	D	E	F	G	H

Step 1: Cross combination of final and non-final states.

combination of A & B

	0	1	
A	B	E	(NF, NF)
B	C	F	(F, F)

A & D

	0	1
A	B	E
D	E	H

NF NF
NF NF

A & E	0	1
A	B	E
E	F	I

NF NF
F F

A & G

	0	1
A	B	E
G	H	B

NF NF
F F

A & H

	0	1
A	B	E
H	I	C

NF NF
F F

	0	1
B	C	F
D	E	H

F F
NF NF

	0	1
B	C	F
E	F	I

F F
F F

	0	1
B	B	E
G	H	B

NF NF
NF NF

	0	1
B	B	E
H	I	C

NF NF
F F

	0	1
C	D	H
F	G	B

NF NF
NF NF

	0	1
C	D	H
I	A	E

NF NF
NF NF

	0	1
D	E	H
E	F	I

NF NF
F F

	0	1
D	E	H
G	H	B

NF NF
NF NF

	0	1
D	E	H
H	I	C

NF NF
F F

	0	1
E	F	I
G	H	B

F F
NF NF

	0	1
E	F	I
H	I	C

F F
F F

	0	1
G	H	B
H	I	C

NF NF
F F

Pairs -

(A, D) (A, G)

(B, H) (B, E)

(C, F) (C, I)

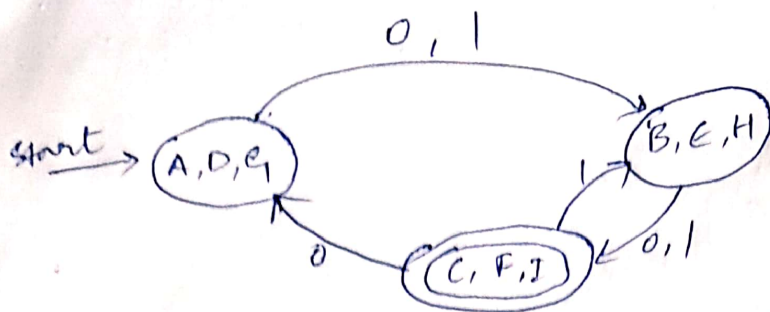
(D, H) ⇒

(D, G) ⇒ (A, D, G)

(E, H) ⇒ (B, H, E)

(F, I) ⇒ (C, F, I)

⇒ (D, H)



2) Consider the DFA given by the transition table.

δ	0	1
$\rightarrow q_1$	q_2	q_3
q_2	q_3	q_5
$\times q_3$	q_4	q_3
q_4	q_3	q_5
$\times q_5$	q_2	q_5

q_2	X			
q_3	X	X		
q_4	X		X	
q_5	X	X		X
	q_1	q_2	q_3	q_4

(q_1, q_4)

(q_3, q_5)

	0	1
q_2	q_3	q_5
q_4	q_3	q_5

F F

F F

	0	1
q_1	q_2	q_3
q_4	q_3	q_5



	0	1
q_1	q_2	q_3
q_2	q_3	q_5



	0	1
q_3	q_4	q_3
q_5	q_2	q_5

NF F
NF F

(q_2, q_4) is equivalent because they read same destination.