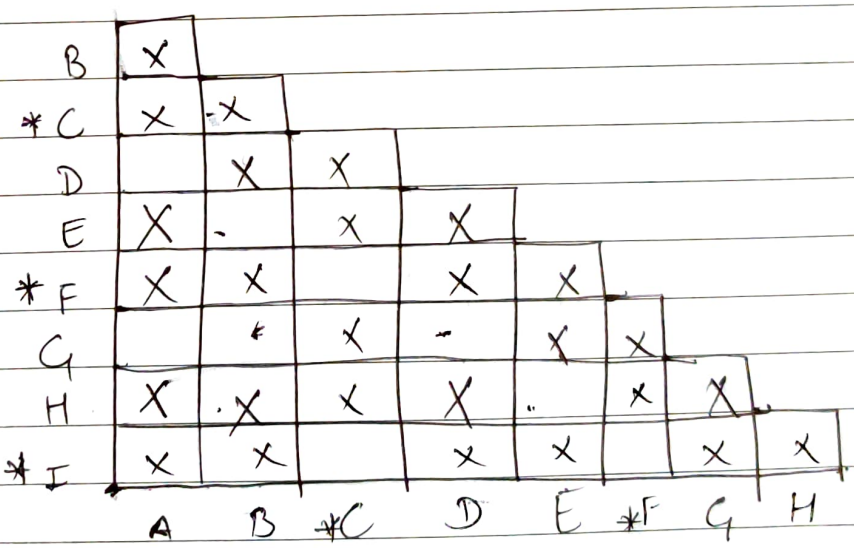
1) Draw the following DFA using table filling algorithm where A is the start state. The states C, F and I are the final states.

S	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



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

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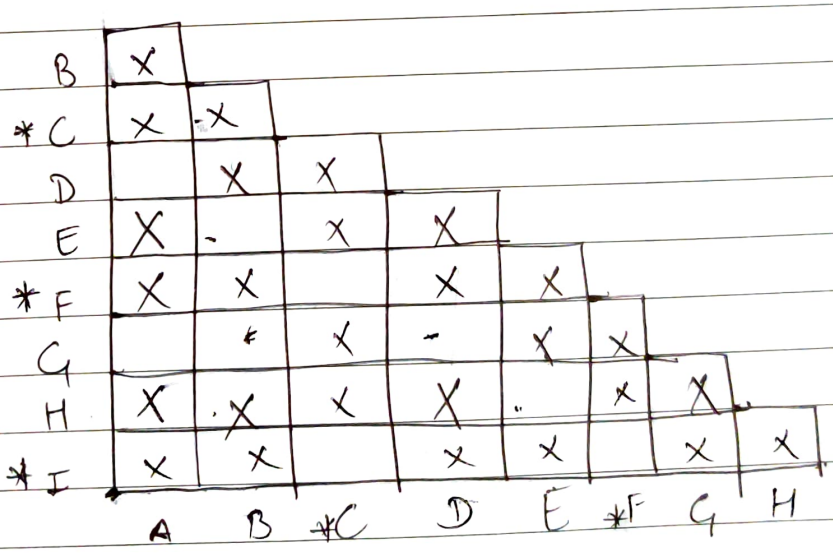
S	0	1
A	B	E
B	C	F
*C	D	H
D	E	H
E	F	I
*F	G	B
G	H	B
H	I	C
*I	A	E



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

cont. of ~~A~~ B

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

A & D

	0	1	
A	B	E	(NF, NF)
D	E	H	(NF, NF)

A & E

	0	1		
A	B	E	NF	NF
E	F	I	F	F

A & G

	0	1		
A	B	E	NF	NF
G	H	B	F	F

A & H

	0	1		
A	B	E	NF	NF
H	I	C	F	F

	0	1		
B	C	F	F	F
D	E	H	NF	NF

	0	1
B	C	F

E

	0	1
B		
G		

__/__/___

B

	0	1	
A	B	E	NF NF
D	E	H	NF NF

	0	1	
A	B	E	NF NF
G	H	B	NF NF

	0	1	X	
X A	B	E		NF F
H	I	C		NF F

	0	1	
X B	C	F	F F
D	E	H	NF NF

	0	1	
B	C	F	F F
E	F	I	F F

	0	1	
B	B	E	NF NF
G	H	B	NF NF

	0	1	
X B	B	E	NF NF
H	I	C	F F

__/__/__

	0	1		
C	D	H	NF	NF
F	G	B	NF	NF

	0	1		
C	D	H	NF	NF
I	A	E	NF	NF

		0	1		
X	D	E	H	NF	NF
	E	F	I	F	F

	0	1		
D	E	H	NF	NF
G	H	B	NF	NF

		0	1		
X	D	E	H	NF	NF
	H	I	C	F	F

		0	1		
X	E	F	I	F	F
	G	H	B	NF	NF

	0	1		
E	F	I	F	F
H	I	C	F	F

		0	1		
X	G	H	B	NF	NF
	H	I	C	NF	F

Q. Consider the DFA given by the transition table.

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

	q_1	q_2	$*q_3$	q_4
q_2	x			
$*q_3$	x	x		
q_4	x		x	
$*q_5$	x	x		x

	0	1		
q_2	q_3	q_5	NF	F
q_4	q_3	q_5	F	F

	0	1		
q_1	q_2	q_3	NF	F
q_2	q_3	q_5	F	F

	0	1		
q_1	q_2	q_3	NF	F
q_4	q_3	q_5	F	F

	0	1		
q_3	q_4	q_3	NF	F
q_5	q_2	q_5	NF	F

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