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FA TT1

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Q1 Which of the following is not a part of 5-tuple finite automata

ANS d] output alphabet

Q2 Which of the following will not be accepted by the following DFA

ANS b] abababab

Q3 Is the given figure a DFA ?

ANS b] No

Q4 NFA in its name has 'non-deterministic' because of which of the following

ANS b] The choice of path is non-deterministic

Q5 what should be the accepting state in order to accept 1*00

ANS b] {z}

Q6 Let L = {ab, aa}, then which of the following doesn't belong to L*

ANS c] abbaa

Q7 Define Finite automata

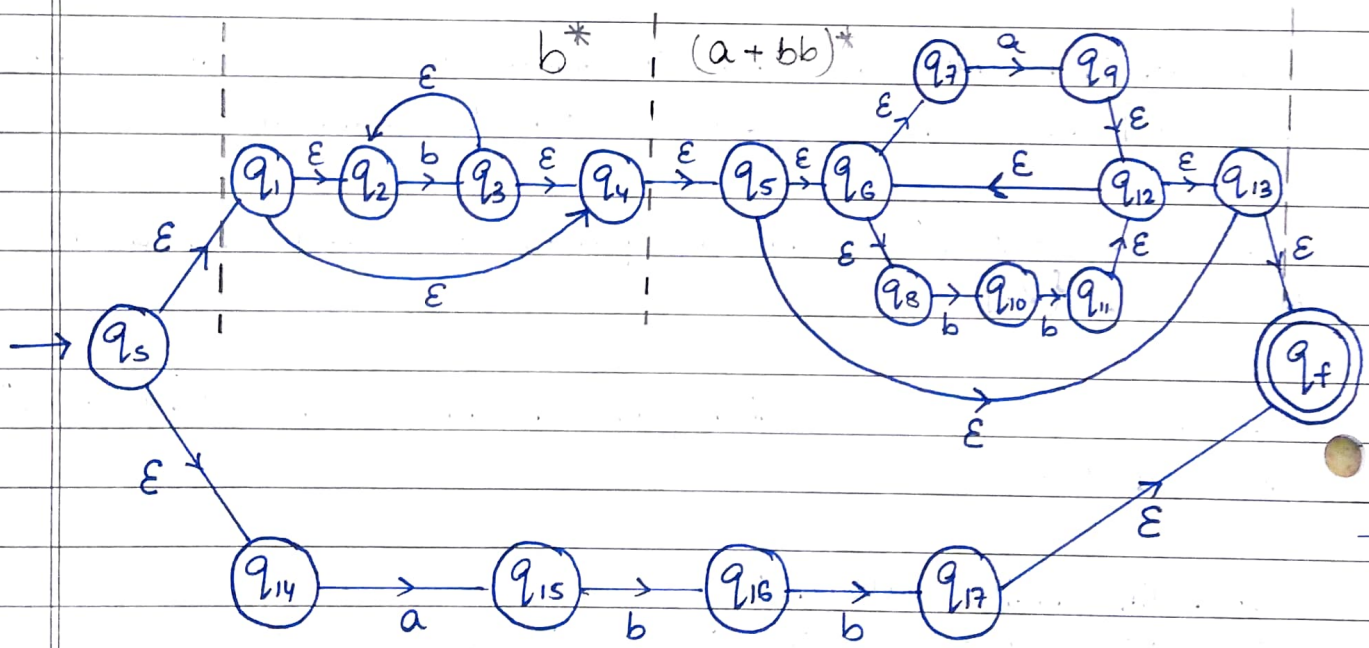
ANS Finite Automata (FA) is the simplest machine to recognize patterns. The finite automata or finite state machine is an abstract machine which have five elements or tuple. It has a set of states and rules for moving from one state to another but it depends upon the applied input symbol. Basically it is an abstract model of digital computer.

A finite automation is a collection of 5 tuples (Q, Σ, δ, q0, F where:

Q : finite set of states
Σ : finite set of the input symbol
q_0 : Initial state
F : Final state
δ : Transition function.

There are two types of finite automata :-
1. DFA : Deterministic finite automata
2. NFA : Non - deterministic finite automata

Q8 Construct NFA with ε moves for $b^*(a+bb)^*+abb$



Q9 Write a regular expression for set of strings consisting of even numbers of a's followed by odd numbers of b's.

ANS Even number of a's : $\{\varepsilon, aa, aaaa, aaaaaa, \ldots\} \rightarrow (aa)^*$

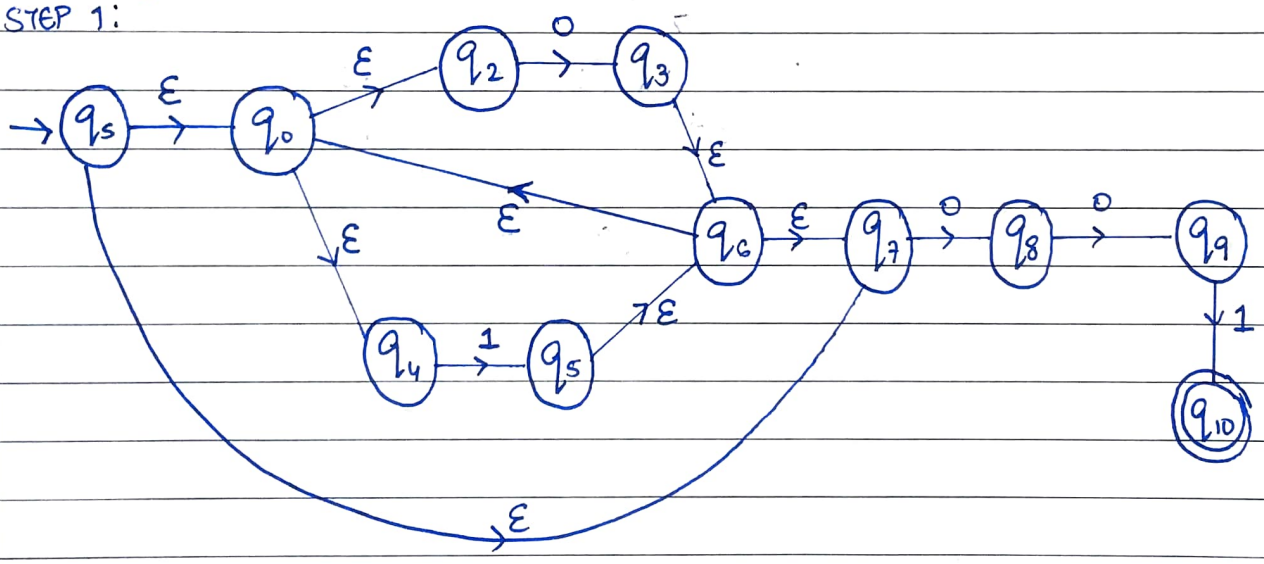
odd number of b's : $\{b, bbb, bbbbb, \ldots\} \rightarrow b.(bb)^*$

Even numbers of a's followed by odd number of b's : $(aa)^* b (bb)^*$

REGULAR EXPRESSION : $(aa)^* b (bb)^*$

Q10 DFA for $(0+1)^* 001$

ANS STEP 1:



STEP 2:

	n	y ← closure(n)	δ(y,0)		δ(y,1)	
A	{0}	{0,1,2,4,7}	{3,8}	B	{5}	C
B	{3,8}	{3,6,7,1,2,4,8}	{8,3,9}	D	{5}	C
C	{5}	{5,6,7,1,2,4}	{8,3}	B	{5}	C
D	{3,8,9}	{3,6,7,1,2,4,8,9}	{3,8,9}	D	{5,10}	E
E	{5,10}	{5,6,7,1,2,4,10}	{8,3}	B	{5}	C

STEP 3:

	Q \ Σ	0	1
→	A	B	C
	B	D	C
	C	B	C
	D	D	E
*	E	B	C

STEP 4: