RGPV 2015,14,02,03 Q. What do you understand by DFA (Deterministic Finite Automata) and how is it represented ?

Ans. A DFA means Deterministic finite automata or a finite state automata or a deterministic finite state machine (DFSM) or deterministic finite acceptor (DFA).

It is a 5 tuple machine,

 $M = (Q, \Sigma, \delta, q0, F)$

- 1. Q is a finite non empty set of states.
- 2. Σ is a finite non empty set of input symbols.
- 3. δ is a transition function, $QX\Sigma$ int to Q
- 4. q0 is an initial state belong to Q.
- 5. F is the set of final states belong to Q.

Lets take and example to under statnd DFA,

Construct a DFA for the language accepting strings starting with '01' over input alphabets $\sum = \{0, 1\}$.

Sol. Examples of strings accepted,

- 01
- 0101
- 0100000
- 01111111, etc

Here 01 consist 2 characters, so length is 2. So minimum number of states required = 2+1 = 3.



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