

Construction

of

DFA...



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Construction of DFA_z

Type-01 :- For strings ending with a particular substring

Steps Involved

Step-01 :- Decide the minimum number of states required in the DFA and draw them.

Rule:- All strings ending with 'n' length substring will always require minimum $(n+1)$ states in its DFA.

Example :- consider the regular expression -

$(a+b)^*z$

over $\Sigma = \{a, b\}$

The strings of above language will always end on 'z'.

So, if $|z|=n$, then the DFA requires minimum $(n+1)$ states.

Step-02:- Decide the strings for which you will construct the DFA.

Step-03:- Construct the DFA for the above decided strings.

Remember:-

Always prefer to go with the existing path. Create a new path only when you can't ^{find} a path to go with.

Step-04:- After drawing the DFA for the above decided strings, send the left possible combinations to the starting state not over the dead configuration.

————— x x x x x x x —————

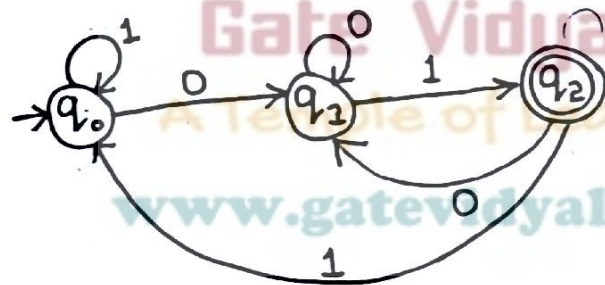
Problem-01:- Draw the DFA for the language accepting strings ending with '01' over input alphabet $\Sigma = \{0,1\}$

Solution:-

Regular expression for the given language is-
 $(0+1)^*01$

Minimum number of states in the DFA = 3

Required DFA is-



strings we will check -

- 01
- 001
- 0101

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Problem-02:- Draw the DFA for the language accepting strings ending with 'abb' over input alphabet $\Sigma = \{a, b\}$

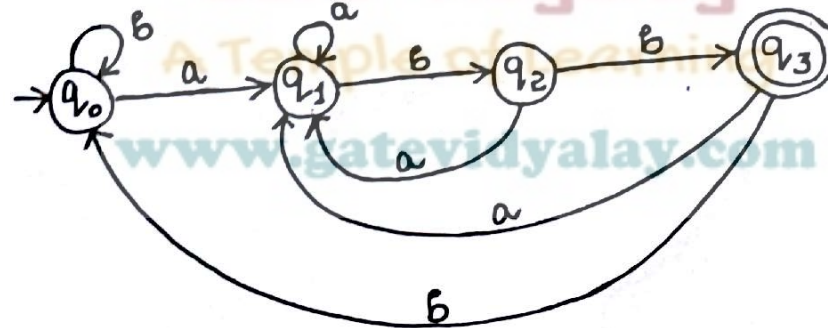
Solution:-

Regular expression for the given language is-

$$(a+b)^*abb$$

Minimum number of states in the DFA = 4

Required DFA is-



Strings, we will check-

- abb
- aabb
- ababb
- abbaabb

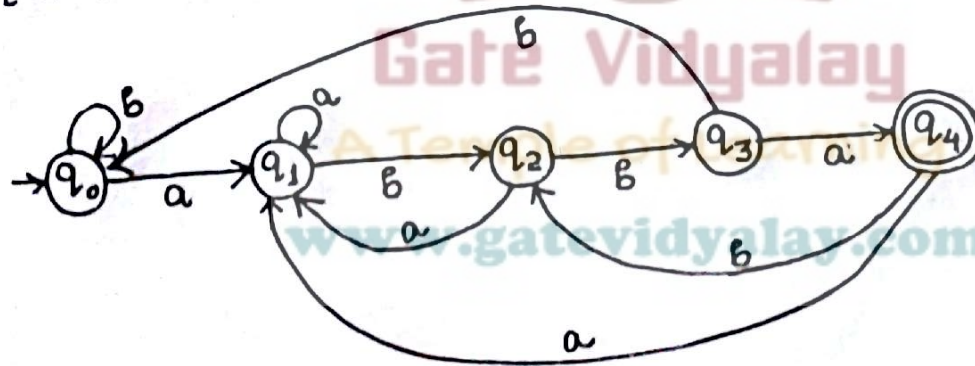
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Problem-03:- Draw the DFA for the language accepting strings ending with 'abba' over $\Sigma = \{a, b\}$.

Solution:- Regular expression for the given language is-
 $(a+b)^*abba$

Minimum number of states in the DFA = 5

Required DFA is-



Strings we will check-

- abba
- aabba
- ababba
- abbaabba
- abbaabba

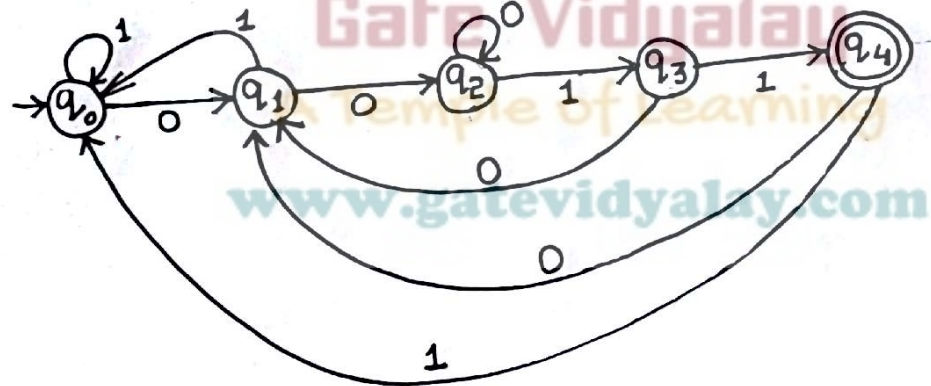
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Problem-04:- Draw the DFA for language accepting strings ending with '0011'
over $\Sigma = \{0,1\}$

Solution:- Regular expression for the given language is-
 $(0+1)^*0011$

Minimum number of states in the DFA = 5

Required DFA is-



strings we will check -

- 0011
- 00011
- 000011
- 0010011
- 00110011