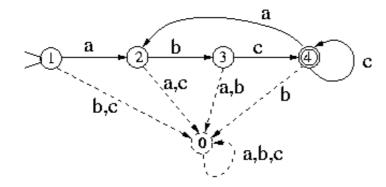
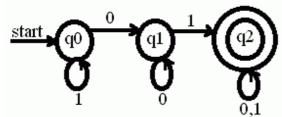
## **Example of Deterministic Finite Automata**

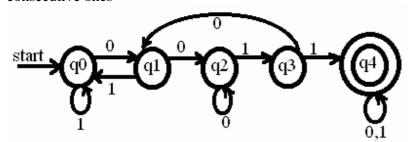
 $(abc^+)^+$ 



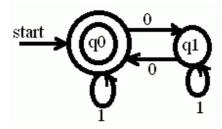
Construct a DFA to accept a string containing a zero followed by a one



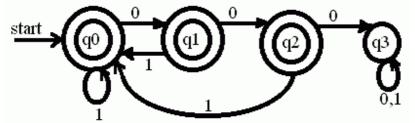
Construct a DFA to accept a string containing two consecutive zeroes followed by two consecutive ones



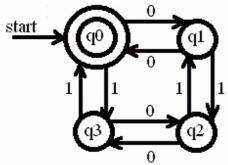
Construct a DFA to accept a string containing even number of zeroes and any number of ones



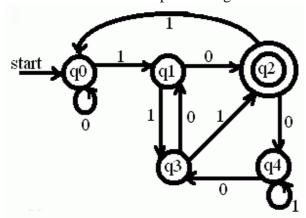
Construct a DFA to accept all strings which do not contain three consecutive zeroes



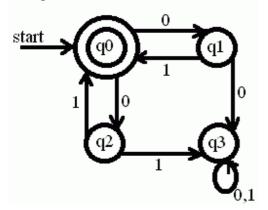
Construct a DFA to accept all strings containing even number of zeroes and even number of ones



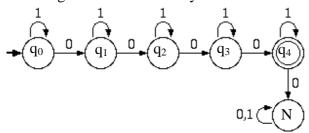
Construct a DFA to accept all strings which satisfies #(x) mod 5=2



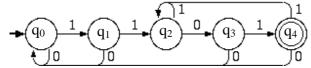
Construct a DFA to accept all strings  $(0+1)^*$  with an equal number of 0's & 1's such that each prefix has at most one more zero than ones and at most one more one than zeroes



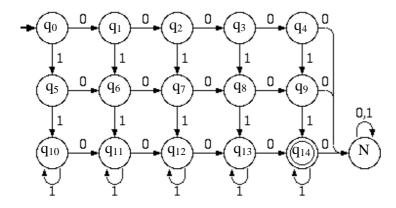
All strings that contain exactly 4 0s.



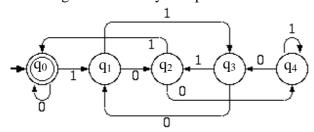
All strings ending in 1101.



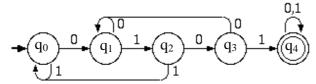
All strings containing exactly 4 0s and at least 2 1s.



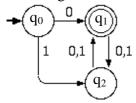
All strings whose binary interpretation is divisible by 5.



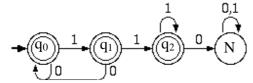
All strings that contain the substring 0101.



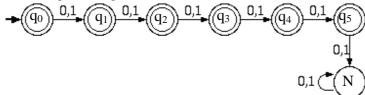
All strings that start with 0 and has odd length or start with 1 and has even length.



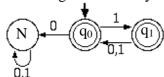
All strings that don't contain the substring 110.



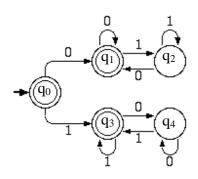
All strings of length at most 5.



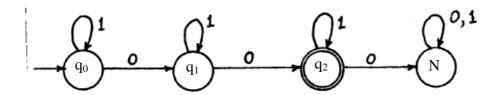
All strings where every odd position is a 1.



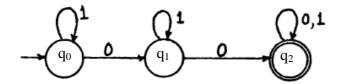
Let  $D = \{w \mid w \text{ contains an equal number of occurrences of } 01 \text{ and } 10\}$ 



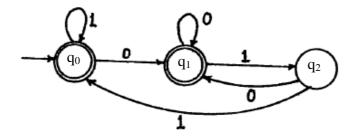
1\*01\*01\*



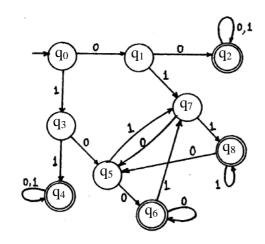
1\*01\*0(0+1)\*



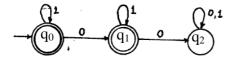
 $(0+1)*(00+11+10) + ^ + 0 + 1$ 



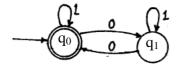
(00+11)(0+1)\* + (0+1)\*(00+11)

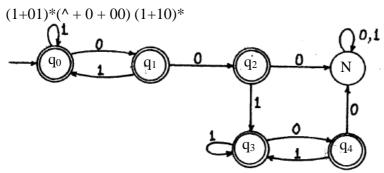


 $(1+01)*(0+^{\circ})$  or  $(0+^{\circ})(1+10)*$ 

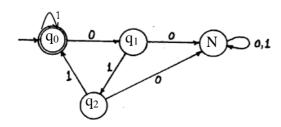


1\*(01\*01\*)\*

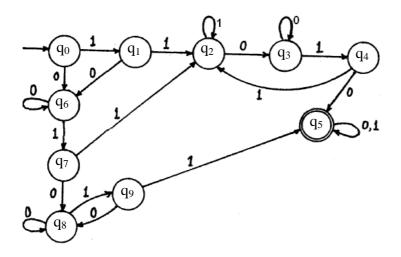




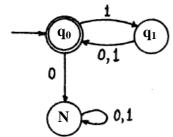
(1+011)\*

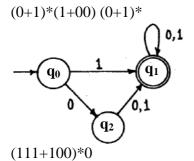


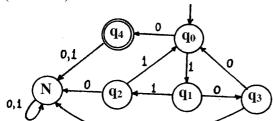
 $(0+1)^*$  11  $(0+1)^*$  010  $(0+1)^*$  +  $(0+1)^*$  010  $(0+1)^*$  11  $(0+1)^*$ 

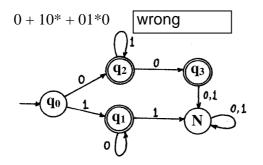


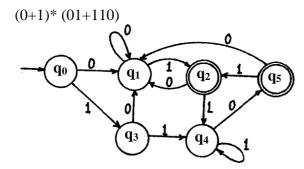
(10+11)\*



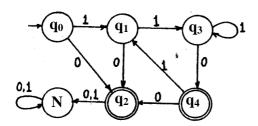




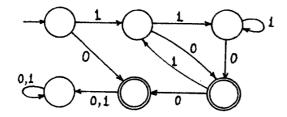




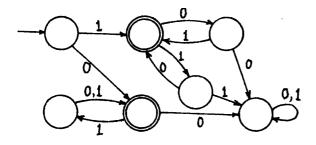
(1+110)\*0



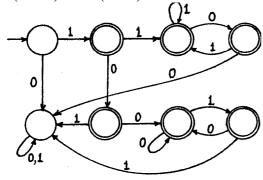
## (1+10+110)\*0



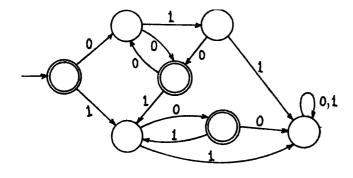
## 1(01+10)\* + 0 (11+10)\*



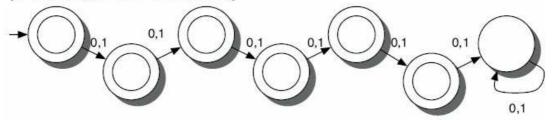
1(1+10)\* + 10(0+01)\*



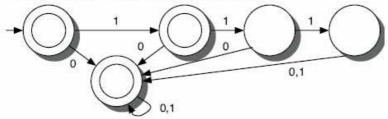
(010+00)\* (10)\*



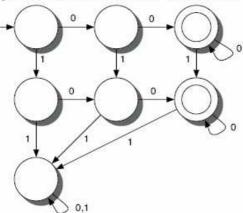
 $\{w: \text{the length of } w \text{ is at most 5}\}$ 



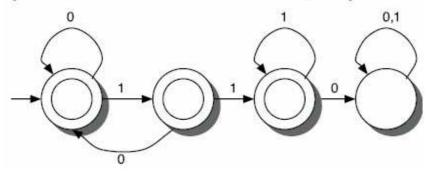
 $\{w: w \text{ is any string except } 11 \text{ and } 111\}$ 



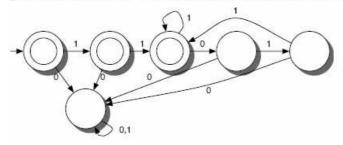
 $\{w: w \text{ contains at least two 0s and at most one 1}\}$ 



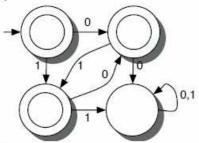
 $\{w: w \text{ does not contain the substring } 110\}$ 



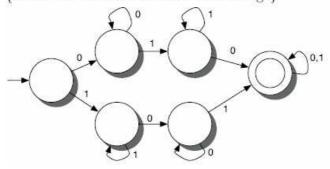
 $\{w: {\rm each}\ 0 \ {\rm in}\ w \ {\rm is}\ {\rm immediately}\ {\rm preceded}\ {\rm and}\ {\rm immediately}\ {\rm followed}\ {\rm by}\ 11\}$ 



 $\{w: w \text{ has neither } 00 \text{ nor } 11 \text{ as a substring}\}$ 



 $\{w: w \text{ has both } 01 \text{ and } 10 \text{ as substrings}\}$ 



 $\{w: w \text{ contains an equal number of occurances of the substrings } 01 \text{ and } 10\}$ 

