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| **Implementation of DFA-101 as substring** |
| **Aim:** C program to implement a DFA accepting binary strings with 101 as substring. |
| **Program**  #include<stdio.h>  #include<string.h>  int dfa=0;  void state0(char c)  {  if(c == '0')  {  dfa=0;  }  else if(c == '1')  {  dfa=1;  }  }  void state1(char c)  {  if(c == '0')  {  dfa=2;  }  else if(c == '1')  {  dfa=1;  }  }  void state2(char c)  {  if(c == '0')  {  dfa=0;  }  else if(c == '1')  {  dfa=3;  }  }  void state3(char c)  {  if(c == '0')  {  dfa=4;  }  else if(c == '1')  {  dfa=3;  }  }  void state4(char c)  {  if(c == '0')  {  dfa=5;  }  else if(c == '1')  {  dfa=3;  }  }  void state5(char c)  {  if(c == '0')  {  dfa=5;  }  else if(c == '1')  {  dfa=3;  }  }  int isacceptance(char ch[])  {  int i,len;  len=strlen(ch);  for(i=0;i<len;i++)  {  if (dfa == 0)  {  state0(ch[i]);  }  else if (dfa == 1)  {  state1(ch[i]);  }  else if(dfa == 2)  {  state2(ch[i]);  }  else if (dfa == 3)  {  state3(ch[i]);  }  else if (dfa == 4)  {  state4(ch[i]);  }  else if(dfa == 5)  {  state5(ch[i]);  }  else  {  return 0;  }  }  if(dfa == 3 || dfa == 4 || dfa == 5)  {  return 1;  }  else  {  return 0;  }  }  void main()  {  char ch[20];  printf("Enter the binary string");  scanf("%s",ch);  if(isacceptance(ch))  {  printf("Accepted\n");  }  else  {  printf("Rejected\n");  }  } |
| **Result:** Implemented a DFA that is accepting binary strings with 101 as substring and output is obtained successfully. |
| **Remarks:**(To be filled by faculty) |
| **Algorithm**   1. Start 2. Initialize global variable dfa = 0 3. Input the binary string str 4. Pass string str to the function isaccepetance(str) 5. In function isacceptance(str) calculate length len of str 6. For every element a in str   if dfa = 0 goto step 7  else if dfa = 1 goto step 8  else if dfa = 2 goto step 9  else if dfa = 3 goto step 10  else if dfa = 4 goto step 11  else if dfa = 5 goto step 12  else goto step 15   1. In state0 if a = 1 dfa = 1   else if a = 0 dfa = 0   1. In state1 if a = 1 dfa = 1   else if a = 0 dfa = 2   1. In state2 if a = 1 dfa = 3   else if a = 0 dfa = 0   1. In state3 if a = 1 dfa = 3   else if a = 0 dfa = 4   1. In state4 if a = 1 dfa = 3   else if a = 0 dfa = 5   1. In state5 if a = 1 dfa = 3   else if a = 0 dfa = 5   1. If dfa = 3 or 4 or 5 goto step 14 else goto step 15 2. Print Accepted goto 16 3. Print Rejected 4. Stop       **Sample Input and Output**    **NFA , DFA Transition Tables** |