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| **Implementation of DFA(a/b)\*abb** |
| **Aim:** C program to implement a DFA for the regular expression(a / b) \* a b b  using IF-ELSE. |
| **Program**  #include<stdio.h>  #include<string.h>  int dfa=0;  void state0(char c)  {  if(c=='a')  {  dfa=1;  }  else if(c=='b')  {  dfa=0;  }  else  {  dfa=-1;  }    }  void state1(char c)  {  if(c=='b')  {  dfa=2;  }  else if(c='a')  {  dfa=1;  }  else  {  dfa=-1;  }    }  void state2(char c)  {  if(c=='b')  {  dfa=3;  }  else if(c='a')  {  dfa=2;  }  else  {  dfa=-1;  }    }  void state3(char c)  {  if(c=='a')  {  dfa=1;  }  else if(c=='b')  {  dfa=0;  }  else  {  dfa=-1;  }  }  int isacceptance(char s[],int l)  {  int i;  for(i=0;i<l-3;i++)  {  if(s[i]=='a' || s[i]=='b')  {  dfa=0;  }  else  {  return 0;  }  }  for(i=l-3;i<l;i++)  {  if(dfa==0)  {  state0(s[i]);  }  else if(dfa==1)  {  state1(s[i]);  }  else if(dfa==2)  {  state2(s[i]);  }  else if(dfa==3)  {  state3(s[i]);  }  else  {  return 0;  }  }  if(dfa==3)  {  return 1;  }  else  {  return 0;  }  }  void main()  {  char s[20];  int l;  printf("Enter the string:");  scanf("%s",s);  l=strlen(s);  if(isacceptance(s,l))  {  printf("Accepted\n");  }  else  {  printf("Rejected\n");  }  } |
| **Result:** Implemented a DFA for the regular expression(a / b) \* a b b  using IF-ELSE and executed successfully. |
| **Remarks:**(To be filled by faculty)  **Algorithm**   1. Start 2. Initialize global variable dfa=0 3. Input the string s. 4. Pass the string s to the function isacceptance() 5. In function isacceptance(s) 6. Calculate length of string s as len 7. For each character i in s upto len-1 if i=a or b then set dfa=0 else goto step 11 8. for each element from l-3 to the end,   if dfa=0 goto step 8.1  else if dfa=1 goto 8.2  else if dfa=2 goto 8.3  else if dfa=3 goto 8.4  else goto step 11  8.1.In function state0 if the element is 'a' set dfa as 1,  else if element is 'b' set dfa as 0.  else set dfa as -1.  8.2.function state1 if the element is 'b' set dfa as 2.  else if element is 'a' set dfa as 1.  else set dfa as -1.  8.3.function state2 if the element is 'b' set the dfa as 3.  else if element is 'a' set dfa as 2.  else set dfa as -1.  8.4.function state3 if the element is 'a' set dfa as 1.  else if element is 'b' set dfa as 0.  else set dfa as -1   1. if dfa=3 goto 10 else goto 11 2. print Accepted goto 12 3. print Rejected 4. Stop   **Diagrams and Tables** |
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