

DFA

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#include<stdio.h>
int main()
{
    int s1,s2;
    int i,j;
    int final[10],state[10],delta[10][10],nos,p,flag;
    char symbol[10],str[10],ch;

    printf("\nEnter number of states:");
    scanf("%d",&s1);
    for(i=0;i<s1;i++)
    {
        printf("\nEnter states:");
        scanf("%d",&state[i]);
    }

    printf("\nEnter number of symbols:");
    scanf("%d",&s2);
    for(i=0;i<s2;i++)
    {
        printf("\nEnter symbol :");
        scanf(" %c",&symbol[i]);
    }

    printf("\nStates are as follows:\n");
    for(i=0;i<s1;i++)
        printf("q%d ",i);

    printf("\n\nSymbols are as follows:");
    for(i=0;i<s2;i++)
        printf("%c ",symbol[i]);

    for(i=0;i<s1;i++)
    {
        for(j=0;j<s2;j++)
        {
            printf("\n\nFrom q%d state, enter state for %c symbol : ",i,symbol[j]);
            scanf("%d",&delta[i][j]);
        }
    }
}
```

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printf("\n\nDelta is \n\t");
for(i=0;i<s2;i++)
    printf("\t%c",symbol[i]);
for(i=0;i<s1;i++)
{
    printf("\n\tq%d",i);
    for(j=0;j<s2;j++)
        printf("\t%d",delta[i][j]);
}

printf("\n\nEnter number of final states:");
scanf("%d",&nos);
for(i=0;i<nos;i++)
{
    printf("\nEnter final states:");
    scanf("%d",&final[i]);
}

printf("\nInitial state is : q%d",state[0]);

printf("\nFinal states are : ");
for(i=0;i<nos;i++)
    printf("q%d ",final[i]);
```

```
do
{
    printf("\n\nEnter string to test:");
    scanf("%s",str);

    p=0,flag=0;
    i=0;

    while(str[i]!='\0')
    {
        ch=str[i];
        for(j=0;j<s2;j++)
        {
            if(ch==symbol[j])
                p=delta[p][j];
        }
        i++;
    }

    printf("\nCurrent State Is : q%d",p);
    for(i=0;i<nos;i++)
    {
        if(p==final[i])
            flag=1;
    }

    if(flag==1)
        printf("\nString Is Valid");
    else
        printf("\nString Is Invalid");

    printf("\nDo you want to continue?(y/n):");
    scanf(" %c",&ch);

    }while(ch=='y' || ch=='Y');

return 0;
}
```