1. **Construction Of NFA**

#include<stdio.h>

#include<string.h>

void main()

{

char re[20];

int q[20][3],i,j,len,a,b;

for(a=0;a<20;a++)

{

for(b=0;b<3;b++)

{

q[a][b]=0;

}

}

printf("Enter the Regular expression:\n");

scanf("%s",re);

len=strlen(re);

i=0;j=1;

while(i<len)

{

if(re[i]=='a'&&re[i+1]!='/'&&re[i+1]!='\*')

{

q[j][0]=j+1;j++;

}

if(re[i]=='b'&&re[i+1]!='/'&&re[i+1]!='\*')

{

q[j][1]=j+1;j++;

}

if(re[i]=='e'&&re[i+1]!='/'&&re[i+1]!='\*')

{

q[j][2]=j+1;j++;

}

if(re[i]=='a'&& re[i+1]=='/'&&re[i+2]=='b')

{

q[j][2]=((j+1)\*10)+(j+3);j++;

q[j][0]=j+1;j++;

q[j][2]=j+3;j++;

q[j][2]=j+1;j++;i=i+2;

}

if(re[i]=='b'&&re[i+1]=='/'&&re[i+2]=='a')

{

q[j][2]=((j+1)\*10)+(j+3);j++;

q[j][1]=j+1;j++;

q[j][2]=j+3;j++;

q[j][0]=j+1;j++;

q[j][2]=j+1;j++;

i=i+2;

}

if(re[i]=='a'&&re[i+1]=='\*')

{

q[j][2]=((j+1)\*10)+(j+3);

j++;

q[j][0]=j+1;

j++;

q[j][2]=((j+1)\*10)+(j-1);

j++;

}

if(re[i]=='b'&&re[i+1]=='\*')

{

q[j][2]=((j+1)\*10)+(j+3);

j++;

q[i][j]=j+1;

j++;

q[j][2]=((j+1)\*10)+(j-1);

j++;

}

if(re[i]==')'&&re[i+1]=='\*')

{

q[0][2]=((j+1)\*10)+1;

q[j][2]=((j+1)\*10)+1;

j++;

}

i++;

}

printf("Transition function:\n");

for(i=0;i<=j;i++)

{

if(q[i][0]!=0)

printf("\n q[%d,a]-->%d",i,q[i][0]);

if(q[i][1]!=0)

printf("\n q[%d,b]-->%d",i,q[i][1]);

if(q[i][2]!=0)

{

if(q[i][2]<10)

printf("\n q[%d,e]-->%d",i,q[i][2]);

else

printf("\n q[%d,e]-->%d & %d",i,q[i][2]/10,q[i][2]%10);

}

}

}

**OUTPUT:**

Enter the Regular expression:

(a/b)\*

Transition function:

q[0,e]-->6 & 1

q[1,e]-->2 & 4

q[2,a]-->3

q[3,e]-->6

q[4,e]-->5

q[5,e]-->6 & 1

Process returned 7 (0x7) execution time : 15.909 s

Press any key to continue.