EXPERIMENT:-3

PROGRAM:-

```
#include<stdio.h>
#include<string.h> int
trans_table[10][5][3]; char
symbol[5],a; int
e_closure[10][10],ptr,sta
te; void
find_e_closure(int x); int
main()
{
        int i,j,k,n,num_states,num_symbols;
        for(i=0;i<10;i++)
        {
                for(j=0;j<5;j++)
                {
                        for(k=0;k<3;k++)
                        {
                                trans_table[i][j][k]=-1;
                        }
                }
        }
        printf("How may states in the NFA with e-moves:");
        scanf("%d",&num_states);
        printf("How many symbols in the input alphabet including e :");
        scanf("%d",&num_symbols);       printf("Enter
the symbols without space. Give 'e'
first:");       scanf("%s",symbol);
 for(i=0;i<num_states;i++)
        {
                for(j=0;j<num_symbols;j++)
                {
                        printf("How many transitions from state %d for the input
%c:",i,symbol[j]);
                        scanf("%d",&n);
                        for(k=0;k<n;k++)
                        {
                                printf("Enter the transitions %d from state %d for the input
%c :", k+1,i,symbol[j]);
                                scanf("%d",&trans_table[i][j][k]);
                        }
                }
        }
```

```
	for(i=0;i<10;i++)
	{
		for(j=0;j<10;j++)
		{
			e_closure[i][j]=-1;
		}
	}
	for(i=0;i<num_states;i++)
e_closure[i][0]=i;
	for(i=0;i<num_states;i++)
	{


		if(trans_table[i][0][0]==-1)

 continue;
 else
		{
			 state=i;
	 ptr=1;
find_e_closure(i);
		}
	}
	for(i=0;i<num_states;i++)
	{
		printf("e-closure(%d)= {",i);
		for(j=0;j<num_states;j++)
		{
			if(e_closure[i][j]!=-1)
			{
				printf("%d, ",e_closure[i][j]);
			}
		}
		printf("}\n");
	}
}
void find_e_closure(int x)
{
	int i,j,y[10],num_trans;
	i=0;
	while(trans_table[x][0][i]!=-1)
	{
		y[i]=trans_table[x][0][i];
		i=i+1;
	}
```

```
        num_trans=i;
        for(j=0;j<num_trans;j++)
        {
                e_closure[state][ptr]=y[j];
                ptr++;
                find_e_closure(y[j]);
        }
}
```

OUTPUT:-