ADA LAB-2

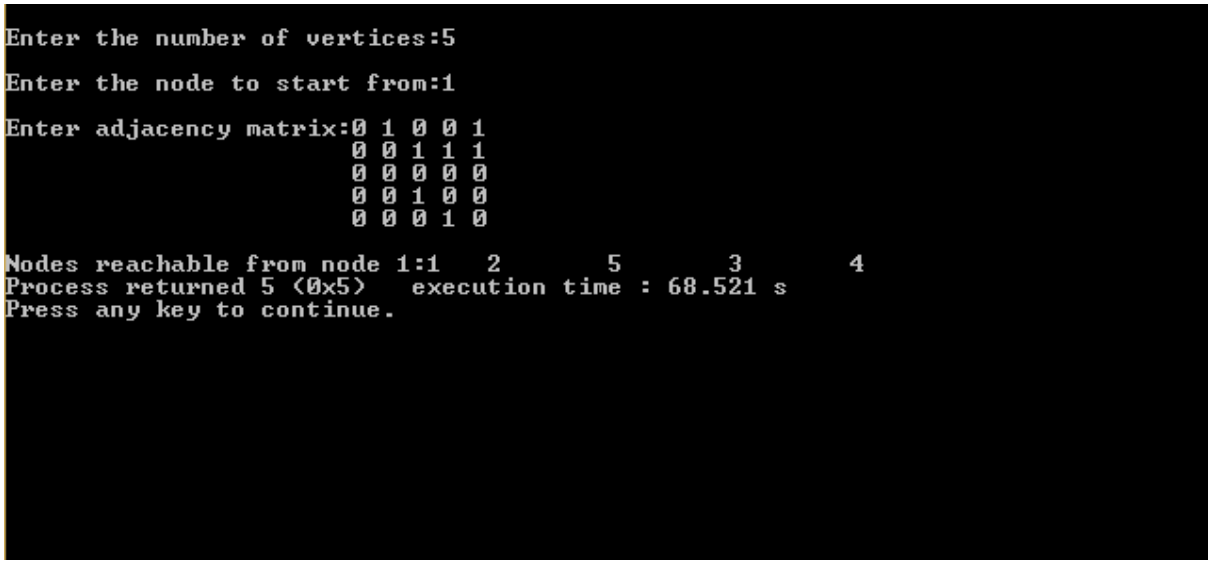
1.BFS:

CODE:

```
#include<stdio.h>
void bfs(int);
int a[10][10],vis[10],n;// a is adjescency matrix ,n is no vertices
void main()
{
 int i,j,start;
 printf("\nEnter the number of vertices:");
 scanf("%d",&n);
 printf("\nEnter the node to start from:");
 scanf("%d",&start);
 printf("\nEnter adjacency matrix:");
 for(i=1;i<=n;i++)
 {
  for(j=1;j<=n;j++)
  {
    scanf("%d",&a[i][j]);
  }
 }
 //initialise all vertices to 0-not visited initially
 for(i=1;i<=n;i++)
 {
  vis[i]=0;
 }

 bfs(start);//call function bfs
```

```
}

void bfs(int v)
{
 int q[10],f=0,r=0,u,i;
 vis[v]=1;
 q[r]=v;
 printf("\nNodes reachable from node %d:",v);
 while(f<=r)
 {
    u=q[f];
    printf("%d\t",u);
  for(i=1;i<=n;i++)
  {
     if(a[u][i]==1&&vis[i]==0)
     {
       r=r+1;
       q[r]=i;
       vis[i]=1;
     }

    }
    f=f+1;
 }
}
```

OUTPUT:



2.TOPOLOGICAL SORTING:

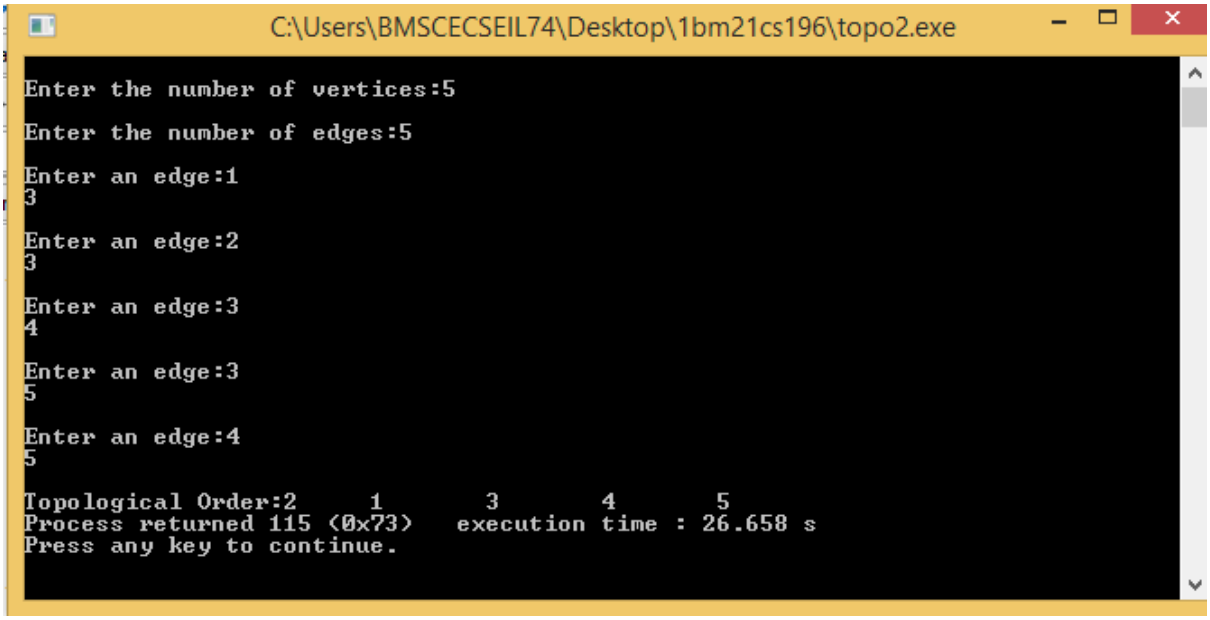
CODE:

```
#include<stdio.h>
#include<conio.h>

int a[10][10],n,exp[10],vis[10],J=0;
void dfs(int);

void main()
{
 int m,u,v,i,j;
 printf("\nEnter the number of vertices:");
 scanf("%d",&n);
 for(i=1;i<=n;i++)
 {
  for(j=1;j<=n;j++)
  {
    a[i][j]=0;
  }
 }
```

```
 printf("\nEnter the number of edges:");
 scanf("%d",&m);
 for(i=1;i<=m;i++)
 {
   printf("\nEnter an edge:");
   scanf("%d%d",&u,&v);
   a[u][v]=1;
 }
 for(i=1;i<=n;i++)
 {
  vis[i]=0;
 }
 for(i=1;i<=n;i++)
 {
  if(vis[i]==0)
  {
    dfs(i);
  }
 }
 printf("\nTopological Order:");
 for(i=n-1;i>=0;i--)
 {
   printf("%d\t",exp[i]);
 }
 getch();
}

void dfs(int v)
{
 int i;
 vis[v]=1;
```

```
 for(i=1;i<=n;i++)
 {
  if(a[v][i]==1&&vis[i]==0)
  {
    dfs(i);
  }
 }
exp[J++]=v;
}//dfs function
```

OUTPUT:



BY,

SHANA DIYA SUJIT

1BM21CS196

SECTION:4D