1BM21CS255

Vibha Hugar ADA LAB

WEEK 3

CODE FOR BFS

```c
#include<stdio.h>
void bfs(int);
int a[10][10],vis[10],n;

void main()
{
  int i,j,src;

  printf("enter the number of vertices\n");
  scanf("%d",&n);
  printf("enter the adjacency matrix\n");
  for(i=1;i<=n;i++)
  {
    for(j=1;j<=n;j++)
    {
        scanf("%d",&a[i][j]);


    }


    vis[i]=0;
  }

  printf("enter the src vertex\n");
```

```c
    scanf("%d",&src);

    printf("nodes reachable from src vertex\n");

    bfs(src);


}


void bfs(int v)
{
    int q[10],f=1,r=1,u,i;

    q[r]=v;

    vis[v]=1;

    while(f<=r)

    {

        u=q[f];

        printf("%d",u);

        for(i=1;i<=n;i++)

        {

            if(a[u][i]==1 && vis[i]==0)

            {

                vis[i]=1;

                r=r+1;

                q[r]=i;

            }

        }

        f=f+1;

    }
}
```

OUTPUT FOR BFS


```
"C:\Users\Admin\Desktop\cs255\4th sem ada lab\bfs.exe"

enter the number of vertices
3
enter the adjacency matrix
0
1
1
1
0
9
1
9
0
enter the src vertex
1
nodes reachable from src vertex
123
Process returned 4 (0x4)   execution time : 188.313 s
Press any key to continue.
```

CODE FOR TOPOLOGICAL SORT

```c
#include<stdio.h>

#include<conio.h>


void dfs(int);

int a[10][10],vis[10],exp[10],n,j,m;


void main()

{

  int i,x,y;

  printf("enter the number of vertices\n");

  scanf("%d",&n);

  for(i=1;i<=n;i++)

  {

    for(j=1;j<=n;j++)

    {

        a[i][j]=0;

    }

    vis[i]=0;

  }

  printf("enter the number of edges\n");

  scanf("%d",&m);

  for(i=1;i<=m;i++)

  {

    printf("enter an edge\n");

    scanf("%d %d",&x,&y);

    a[x][y]=1;

  }

  j=0;
```

```c
    for(i=1;i<=n;i++)
    {
       if(vis[i]==0)
            dfs(i);
    }
    printf("topological sort\n");
    for(i=n-1;i>=0;i--)
    {
       printf("%d",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;
}
```

OUTPUT FOR TOPOLOGICAL SORT

"C:\Users\Admin\Desktop\cs255\4th sem ada lab\topologicalsort.exe"

```
enter the number of vertices
3
enter the number of edges
2
enter an edge
1 2
enter an edge
2 3
topological sort
123
```