GRAPH

#include<iostream.h>

#include<conio.h>

#include<malloc.h>

class graph

{

public:

int front,rear,e,i,j,k,v[50],a[40][40],ver[50],top;

graph()

{

front=rear=0;

top=0;

}

void adj\_mat();

void enque(int j);

int deque();

void sol();

void push(int j);

int pop();

void solution();

};

void graph::adj\_mat()

{

cout<<"Enter no.of elements: ";

cin>>e;

cout<<"Is there a relation between"<<endl;

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

{

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

{

cout<<"("<<i<<","<<j<<")";

cin>>a[i][j];

}

}

cout<<"Your adjacency matrix is"<<endl;

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

{

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

{

cout<<a[i][j];

}

cout<<endl;

}

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

{

v[i]=0;

}

}

void graph::enque(int j)

{

rear++;

v[rear]=j;

if(front==0)

{

front++;

}

}

void graph::push(int j)

{

top++;

ver[top]=j;

}

int graph::deque()

{

int temp;

temp=v[front];

front++;

return(temp);

}

int graph::pop()

{

int temp;

temp=ver[top];

top--;

return(temp);

}

void graph::sol()

{

int x,start,adj[50];

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

{

adj[i]=0;

}

cout<<"Enter the START for BFT: ";

cin>>start;

enque(start);

adj[start]=1;

x=deque();

cout<<"BFT is: ";

cout<<x<<" ";

while(1)

{

int flag=1;

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

{

if(a[x][j]==1)

{

if(adj[j]!=1)

{

enque(j);

adj[j]=1;

}

}

}

x=deque();

cout<<x<<" ";

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

{

if(adj[i]!=1)

{

flag=0;

}

}

if(flag==1 && front==rear)

{

cout<<deque();

break;

}

}

cout<<endl;

}

void graph::solution()

{

int x,start,adj[50];

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

{

adj[i]=0;

}

cout<<"Enter the START for DFT: ";

cin>>start;

push(start);

adj[start]=1;

x=pop();

cout<<"DFT is: ";

cout<<x<<" ";

while(1)

{

int flag=1;

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

{

if(a[x][j]==1)

{

if(adj[j]!=1)

{

push(j);

adj[j]=1;

}

}

}

x=pop();

cout<<x<<" ";

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

{

if(adj[i]!=1)

{

flag=0;

}

}

if(flag==1&&top==0)

{

break;

}

}

}

void main()

{

clrscr();

gotoxy(33,2);

cout<<"GRAPH"<<endl;

graph o;

o.adj\_mat();

o.sol();

o.solution();

getch();

}