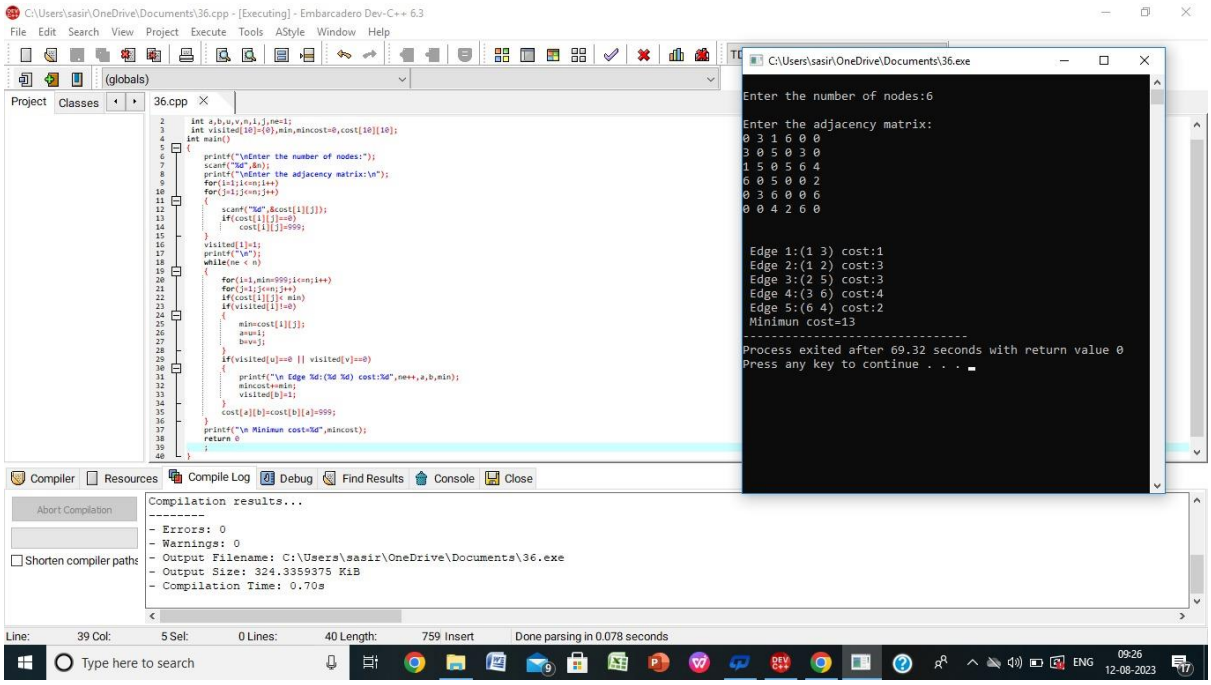
35.write a c program to implement single shortest distance?

PROGRAM:

```
#include<stdio.h>
 int a,b,u,v,n,i,j,ne=1;
 int visited[10]={0},min,mincost=0,cost[10][10];
void main()
{
                printf("\nEnter the number of nodes:");
                scanf("%d",&n);
                printf("\nEnter the adjacency matrix:\n");
                for(i=1;i<=n;i++)
                for(j=1;j<=n;j++)
                {
                        scanf("%d",&cost[i][j]);
                        if(cost[i][j]==0)
                                cost[i][j]=999;
                }
                visited[1]=1;
                printf("\n");
                while(ne < n)
                {
                        for(i=1,min=999;i<=n;i++)
                        for(j=1;j<=n;j++)
                        if(cost[i][j]< min)
                        if(visited[i]!=0)
                        {
                                min=cost[i][j];
                                a=u=i;
                                b=v=j;
```

```
            }
            if(visited[u]==0 || visited[v]==0)
            {
                printf("\n Edge %d:(%d %d) cost:%d",ne++,a,b,min);
                mincost+=min;
                visited[b]=1;
            }
            cost[a][b]=cost[b][a]=999;
        }
        printf("\n Minimun cost=%d",mincost);
        getch();
}
```

OUTPUT:



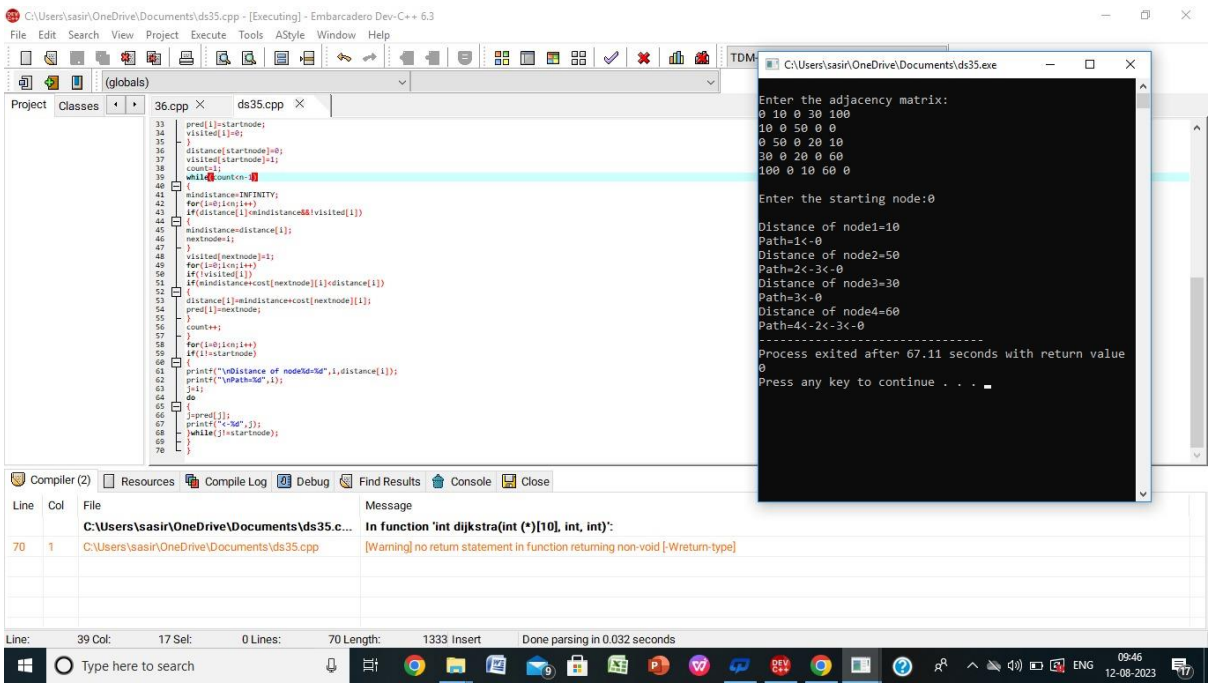
36.write a c program to implement minimum spanning tree using PRIM'S?

PROGRAM:

```
#include<stdio.h>
 int a,b,u,v,n,i,j,ne=1;
 int visited[10]={0},min,mincost=0,cost[10][10];
int main()
{
        printf("\nEnter the number of nodes:");
        scanf("%d",&n);
        printf("\nEnter the adjacency matrix:\n");
        for(i=1;i<=n;i++)
        for(j=1;j<=n;j++)
        {
                scanf("%d",&cost[i][j]);
                if(cost[i][j]==0)
                        cost[i][j]=999;
        }
        visited[1]=1;
        printf("\n");
        while(ne < n)
        {
                for(i=1,min=999;i<=n;i++)
                for(j=1;j<=n;j++)
                if(cost[i][j]< min)
                if(visited[i]!=0)
                {
                        min=cost[i][j];
                        a=u=i;
```

```
                b=v=j;
            }
            if(visited[u]==0 || visited[v]==0)
            {
                printf("\n Edge %d:(%d %d) cost:%d",ne++,a,b,min);
                mincost+=min;
                visited[b]=1;
            }
            cost[a][b]=cost[b][a]=999;
        }
        printf("\n Minimun cost=%d",mincost);
        return 0
        ;
}
```

OUTPUT:

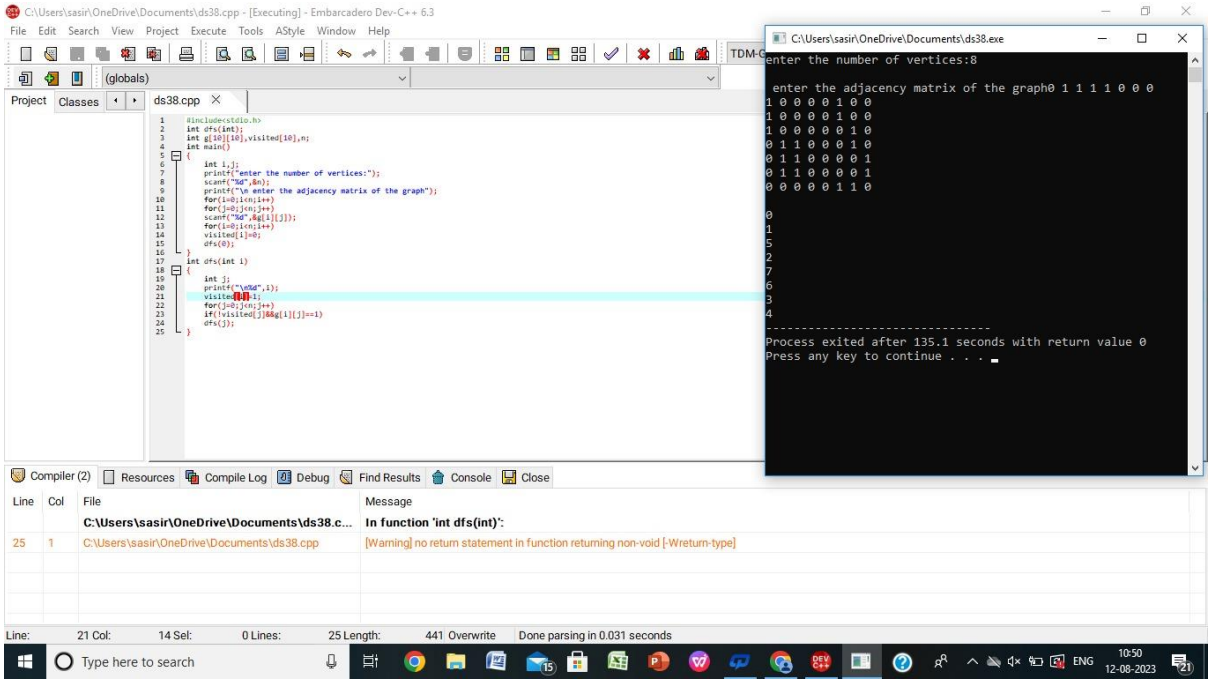


38.write a c program to implement depth first search?

PROGRAM:

```
#include<stdio.h>
int dfs(int);
int g[10][10],visited[10],n;
int main()
{
        int i,j;
        printf("enter the number of vertices:");
        scanf("%d",&n);
        printf("\n enter the adjacency matrix of the graph");
        for(i=0;i<n;i++)
        for(j=0;j<n;j++)
        scanf("%d",&g[i][j]);
        for(i=0;i<n;i++)
        visited[i]=0;
        dfs(0);
}
int dfs(int i)
{
        int j;
        printf("\n%d",i);
        visited[i]=1;
        for(j=0;j<n;j++)
        if(!visited[j]&&g[i][j]==1)
        dfs(j);
}
```

OUTPUT:


C:\Users\sasir\OneDrive\Documents\ds38.cpp - [Executing] - Embarcadero Dev-C++ 6.3
File Edit Search View Project Execute Tools AStyle Window Help
Project Classes
ds38.cpp
#include<stdio.h>
int dfs(int);
int g[10][10],visited[10],n;
int main()
{
int i,j;
printf("enter the number of vertices:");
scanf("%d",&n);
printf("\n enter the adjacency matrix of the graph");
for(i=0;i<n;i++)
for(j=0;j<n;j++)
scanf("%d",&g[i][j]);
for(i=0;i<n;i++)
visited[i]=0;
dfs(0);
}
int dfs(int i)
{
int j;
printf("\n%d",i);
visited[i]=1;
for(j=0;j<n;j++)
if(!visited[j]&&g[i][j]==1)
dfs(j);
}
C:\Users\sasir\OneDrive\Documents\ds38.exe
enter the number of vertices:8
enter the adjacency matrix of the graph0 1 1 1 1 0 0 0
1 0 0 0 0 1 0 0
1 0 0 0 0 1 0 0
1 0 0 0 0 0 1 0
0 1 1 0 0 0 1 0
0 1 1 0 0 0 0 1
0 1 1 0 0 0 0 1
0 0 0 0 0 1 1 0
0
1
5
2
7
6
3
4
Process exited after 135.1 seconds with return value 0
Press any key to continue . . .
Compiler (2) Resources Compile Log Debug Find Results Console Close
Line Col File Message
C:\Users\sasir\OneDrive\Documents\ds38.c... In function 'int dfs(int)':
25 1 C:\Users\sasir\OneDrive\Documents\ds38.cpp [Warning] no return statement in function returning non-void [-Wreturn-type]
Line: 21 Col: 14 Sel: 0 Lines: 25 Length: 441 Overwrite Done parsing in 0.031 seconds
Type here to search
ENG
10:50
12-08-2023

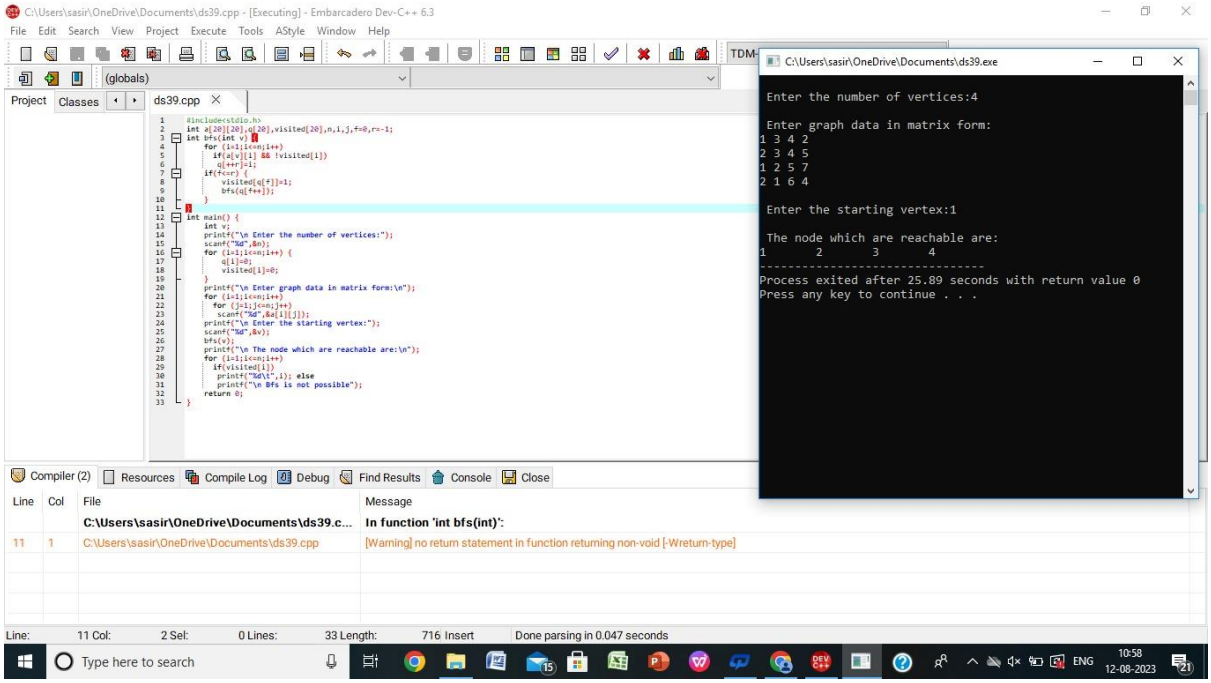
39.write a c program to implement breadth first search?

PROGRAM:

```
#include<stdio.h>
int a[20][20],q[20],visited[20],n,i,j,f=0,r=-1;
int bfs(int v) {
        for (i=1;i<=n;i++)
          if(a[v][i] && !visited[i])
            q[++r]=i;
        if(f<=r) {
          visited[q[f]]=1;
          bfs(q[f++]);
        }
}
int main() {
        int v;
        printf("\n Enter the number of vertices:");
        scanf("%d",&n);
        for (i=1;i<=n;i++) {
          q[i]=0;
          visited[i]=0;
        }
        printf("\n Enter graph data in matrix form:\n");
        for (i=1;i<=n;i++)
          for (j=1;j<=n;j++)
            scanf("%d",&a[i][j]);
        printf("\n Enter the starting vertex:");
        scanf("%d",&v);
        bfs(v);
        printf("\n The node which are reachable are:\n");
        for (i=1;i<=n;i++)
  if(visited[i])
```

```
        printf("%d\t",i); else
        printf("\n Bfs is not possible");
    return 0;
}
```

OUTPUT:



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