Breadth first search

1)
```
#include <stdio.h>
void bfs (int a[10][10], int n, int u)
{
    int f, r, q[10], v;
    int s[10] = {0};
    printf(" The nodes visited from %d :", u);
    f=0;
    r=-1;
    q[++r]=u;
    s[u]=1;
    printf(" %d", u);
    while(f<=r)
    {
        u=q[f++];
        for(v=0; v<n; v++)
        {
            if(a[u][v])
            {
                if(s[v]==0)
                {
                    printf(" %d", v);
                    s[v]=1;
                    q[++r]=v;
                }
            }
        }
    }
}
```

```
    printf("\n");
}

int main()
{
    int n, a[10][10], source, i, j;
    printf("\nEnter no of nodes:");
    scanf("%d", &n);
    printf("\nEnter the adjacency matrix:");
    for(i=0; i<n; i++)
    {
        for(j=0; j<n; j++)
        {
            scanf("%d", &a[i][j]);
        }
    }
    for(source=0; source<n; source++)
        bfs(a, n, source);

    return 0;
}
```

Depth first search

Q)
```
#include<stdio.h>
#include<conio.h>
int a[i][10] ;
void dfs (int n, int cost[10][10], int u, int s[])
{
   int v ;
   s[u] = 1;
   for(v=0 ; v<n; v++)
   {
       if ((cost[u][v] ==1) && (s[v]==0))
       dfs(n, cost, v, s);
   }
}
void main()
{
   int n, i, j, cost[10][10], s[10], con, flag;
   printf(" Enter the number of nodes : \n ");
   scanf("%d", &n);
   printf(" Enter the adjacency matrix : \n");
   for(i=0 ; i<n ; i++)
   {
         for(j=0 ; j<n ; j++)
            scanf("%d", &cost[i][j]);
   }
```

```
con = 0 ;
for(j=0 ; j<n ; j++)
{
    for( i=0 ; i<n ; i++)
     s[i] = 0 ;
    dfs (n, cost, j, s) ;
    flag = 0 ;
    for (i=0 ; i<n ; i++)
    {
          if (s[i] = =0)
              flag = 1 ;
    }
   if (flag = =0)
        con = 1 ;
}
if (con ==1)
     printf(" Graph is connected \n") ;
else
     printf (" Graph is not connected \n") ;
getch() ;
```

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output for program 1 (BFS)

```
Enter no of nodes : 7
Enter the adjacency matrix : 0 1 1 1 1 0 0
1 0 0 1 0 1 0
1 0 0 0 0 0 1
1 1 0 0 0 1 0
1 0 0 0 0 0 1
0 1 0 1 0 0 0
0 0 1 0 1 0 0
The nodes visited from 0 : 0123456
The nodes visited from 1 : 1035246
                       2 : 2061345
                       3 : 3015246
                       4 : 4061235
                       5 : 5130246
                       6 : 6240135
```

output for program 2 (DFS)

```
Enter number of nodes :
4
Enter the adjacency matrix
0100
0010
0001
1000
Graph is connected
```

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