

9.b) Write a program to check whether given graph is connected or not using DFS method.

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

struct node {
    int data;
    struct node *next;
};

struct node *adj[10];
int visited[10];

/* Create new node */
struct node* create(int v) {
    struct node *n = (struct node*)malloc(sizeof(struct node));
    n->data = v;
    n->next = NULL;
    return n;
}

/* Add edge */
void addEdge(int u, int v) {
    struct node *n = create(v);
    n->next = adj[u];
    adj[u] = n;

    n = create(u);
    n->next = adj[v];
    adj[v] = n;
}
```

```
/* DFS */

void DFS(int v) {
    struct node *temp;
    visited[v] = 1;

    temp = adj[v];
    while (temp != NULL) {
        if (!visited[temp->data])
            DFS(temp->data);
        temp = temp->next;
    }
}

int main() {
    int n, e, i, u, v, flag = 1;

    printf("Enter number of vertices: ");
    scanf("%d", &n);

    printf("Enter number of edges: ");
    scanf("%d", &e);

    for (i = 0; i < n; i++) {
        adj[i] = NULL;
        visited[i] = 0;
    }

    printf("Enter edges (u v):\n");
    for (i = 0; i < e; i++) {
        scanf("%d %d", &u, &v);
        addEdge(u, v);
    }
}
```

```
}
```

```
DFS(0);
```

```
for (i = 0; i < n; i++) {
```

```
    if (!visited[i]) {
```

```
        flag = 0;
```

```
        break;
```

```
}
```

```
}
```

```
if (flag)
```

```
    printf("Graph is CONNECTED\n");
```

```
else
```

```
    printf("Graph is NOT CONNECTED\n");
```

```
return 0;
```

```
}
```

OUTPUT:

```
File Edit Selection View Go Run Terminal Help ↺ → C:\ C Tutorial
C 9b.c Code X
Microsoft Windows [Version 10.0.26200.7462]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Mohammed Javeed\OneDrive\Desktop\Javeed\C Tutorial>cd "c:\Users\Mohammed Javeed\OneDrive\Desktop\Javeed\C Tutorial"\> && gcc 9b.c -o 9b && "c:\Users\Mohammed Javeed\OneDrive\Desktop\Javeed\C Tutorial"\9b
Enter number of vertices: 4
Enter number of edges: 3
Enter edges (u v):
0 1
1 2
2 3
Graph is CONNECTED

C:\Users\Mohammed Javeed\OneDrive\Desktop\Javeed\C Tutorial>cd "c:\Users\Mohammed Javeed\OneDrive\Desktop\Javeed\C Tutorial"\> && gcc 9b.c -o 9b && "c:\Users\Mohammed Javeed\OneDrive\Desktop\Javeed\C Tutorial"\9b
Enter number of vertices: 4
Enter number of edges: 1
Enter edges (u v):
0 1
Graph is NOT CONNECTED

C:\Users\Mohammed Javeed\OneDrive\Desktop\Javeed\C Tutorial>cd "c:\Users\Mohammed Javeed\OneDrive\Desktop\Javeed\C Tutorial"\> && gcc 9b.c -o 9b && "c:\Users\Mohammed Javeed\OneDrive\Desktop\Javeed\C Tutorial"\9b
Enter number of vertices: 0
Enter number of edges: 0
Enter edges (u v):
Graph is CONNECTED

C:\Users\Mohammed Javeed\OneDrive\Desktop\Javeed\C Tutorial>cd "c:\Users\Mohammed Javeed\OneDrive\Desktop\Javeed\C Tutorial"\> && gcc 9b.c -o 9b && "c:\Users\Mohammed Javeed\OneDrive\Desktop\Javeed\C Tutorial"\9b
Enter number of vertices: -1
Enter number of edges: -1
Enter edges (u v):
Graph is CONNECTED

C:\Users\Mohammed Javeed\OneDrive\Desktop\Javeed\C Tutorial>
```

