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

Code:

```
#include<stdio.h>
#include<conio.h>
int a[20][20], reach[20], n;
void dfs(int v) {
    int i;
    reach[v] = 1;
    for (i = 1; i <= n; i++)
        if (a[v][i] && !reach[i]) {
            printf("\n %d->%d", v, i);
            dfs(i);
        }
}

int main(int argc, char **argv) {
    int i, j, count = 0;
    printf("\n Enter number of vertices:");
    scanf("%d", &n);
    for (i = 1; i <= n; i++) {
        reach[i] = 0;
        for (j = 1; j <= n; j++)
            a[i][j] = 0;
    }
    printf("\n Enter the adjacency matrix:\n");
    for (i = 1; i <= n; i++)
        for (j = 1; j <= n; j++)
            scanf("%d", &a[i][j]);
    dfs(1);
```

```
    printf("\n");
    for (i = 1; i <= n; i++) {
        if (reach[i])
            count++;
    }
    if (count == n)
        printf("\n Graph is connected");
    else
        printf("\n Graph is not connected");
    return 0;
}
```

Output:

```
 Enter number of vertices:4

 Enter the adjacency matrix:
1 0 0 1
1 1 0 0
0 1 0 1
1 1 1 1

 1->4
 4->2
 4->3

 Graph is connected
```

```
 Enter number of vertices:4

 Enter the adjacency matrix:
1 0 0 0
0 0 0 0
0 0 1 1
0 0 1 1


 Graph is not connected
```