Name: Dhruv Rupareliya (DSY)

Roll No: 71

Experiment no: 7

Code:

```
#include <stdio.h>
#include <stdlib.h>
#define MAX_VERTICES 20
int V, E;
int G[MAX_VERTICES][MAX_VERTICES];
int visited[MAX_VERTICES];
void DFS(int i);
void bfs(int v);
int main() {
 int i, j, v1, v2, source;
 printf("GRAPH\n");
 printf("Enter the number of vertices: ");
 scanf("%d", &V);
 printf("Enter the number of edges: ");
 scanf("%d", &E);
 for (i = 0; i < V; i++) {
 for (j = 0; j < V; j++) {
 G[i][j] = 0;
 }
 }
 for (i = 0; i < E; i++) {
 printf("Enter edge (format: V1, V2): ");
 scanf("%d %d", &v1, &v2);
 G[v1 - 1][v2 - 1] = 1;
 G[v2 - 1][v1 - 1] = 1;
 }
```

```
 for (i = 0; i < V; i++) {
 for (j = 0; j < V; j++) {
 printf("%d", G[i][j]);
 }
 printf("\n");
 }
 printf("Enter the source vertex: ");
 scanf("%d", &source);
 printf("DFS traversal starting from vertex %d: ", source);
 DFS(source - 1);
 for (i = 0; i < V; i++) {
 visited[i] = 0;
 }
 printf("\nBFS traversal starting from vertex %d: ", source);
 bfs(source - 1);
 printf("\n");
 return 0;
}
void DFS(int i) {
 int j;
 visited[i] = 1;
 printf("%d->", i + 1);
 for (j = 0; j < V; j++) {
 if (G[i][j] == 1 && visited[j] == 0) {
 DFS(j);
 }
 }
}
void bfs(int v) {
 int q[MAX_VERTICES];
 int r = -1, f = -1;
```

```
q[++r] = v;
while (f < r) {
v = q[++f];
visited[v] = 1;
printf("%d->", v + 1);
for (int i = 0; i < V; i++) {
if (G[v][i] != 0 && visited[i] == 0) {
q[++r] = i;
visited[i] = 1;
}
}
}
}
```

Output:

```
GRAPH
Enter the number of vertices: 9
Enter the number of edges: 8
Enter edge (format: V1, V2): 1 2
Enter edge (format: V1, V2): 8 3
Enter edge (format: V1, V2): 7 5
Enter edge (format: V1, V2): 1 4
Enter edge (format: V1, V2): 3 2
Enter edge (format: V1, V2): 5 4
Enter edge (format: V1, V2): 6 7
Enter edge (format: V1, V2): 4 1
010100000
101000000
010000010
100010000
000100100
000000100
000011000
001000000
000000000
Enter the source vertex: 7
DFS traversal starting from vertex 7: 7->5->4->1->2->3->8->6->
BFS traversal starting from vertex 7: 7->5->6->4->1->2->3->8->


...Program finished with exit code 0
Press ENTER to exit console.
```