Experiment No-5

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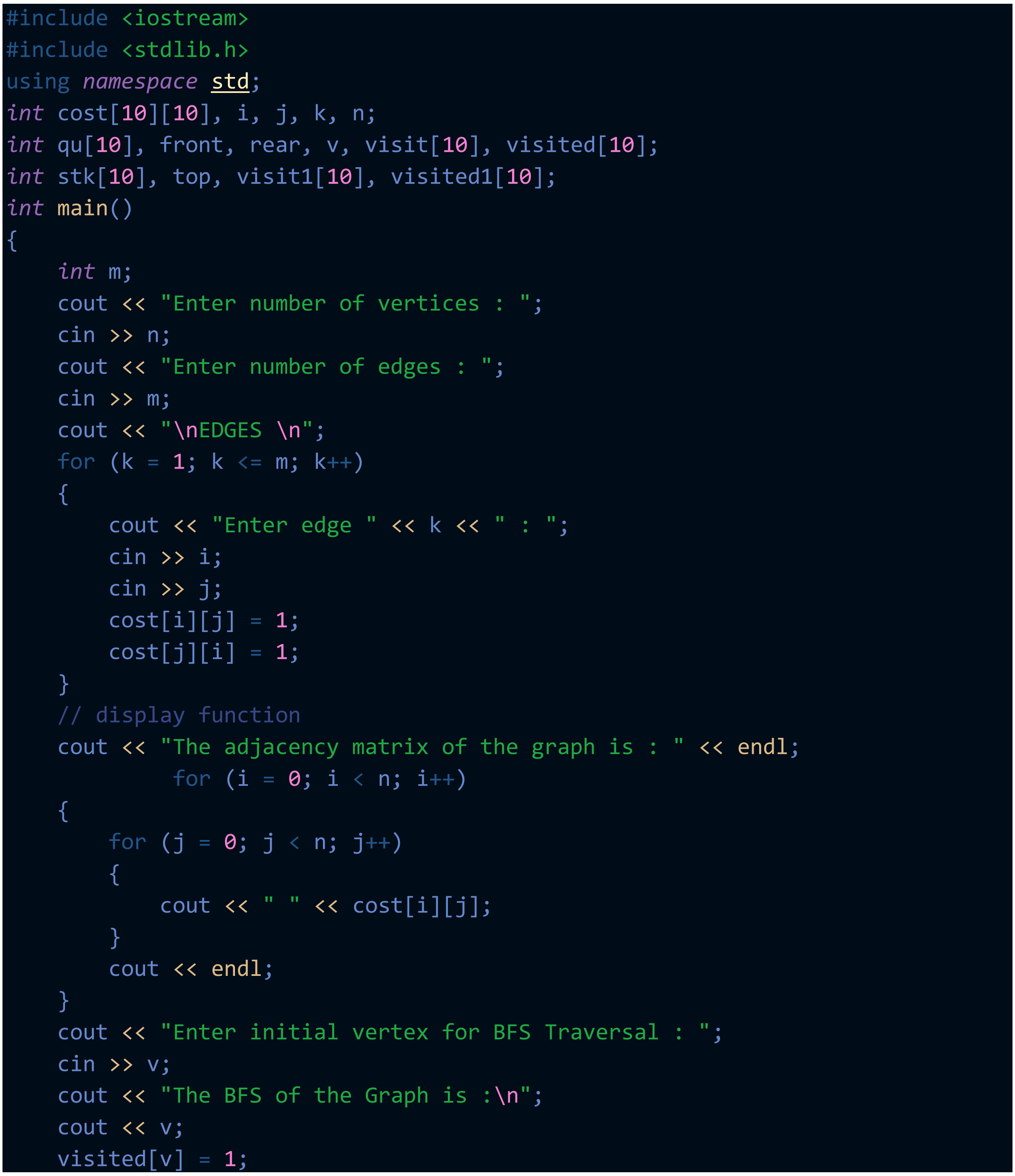
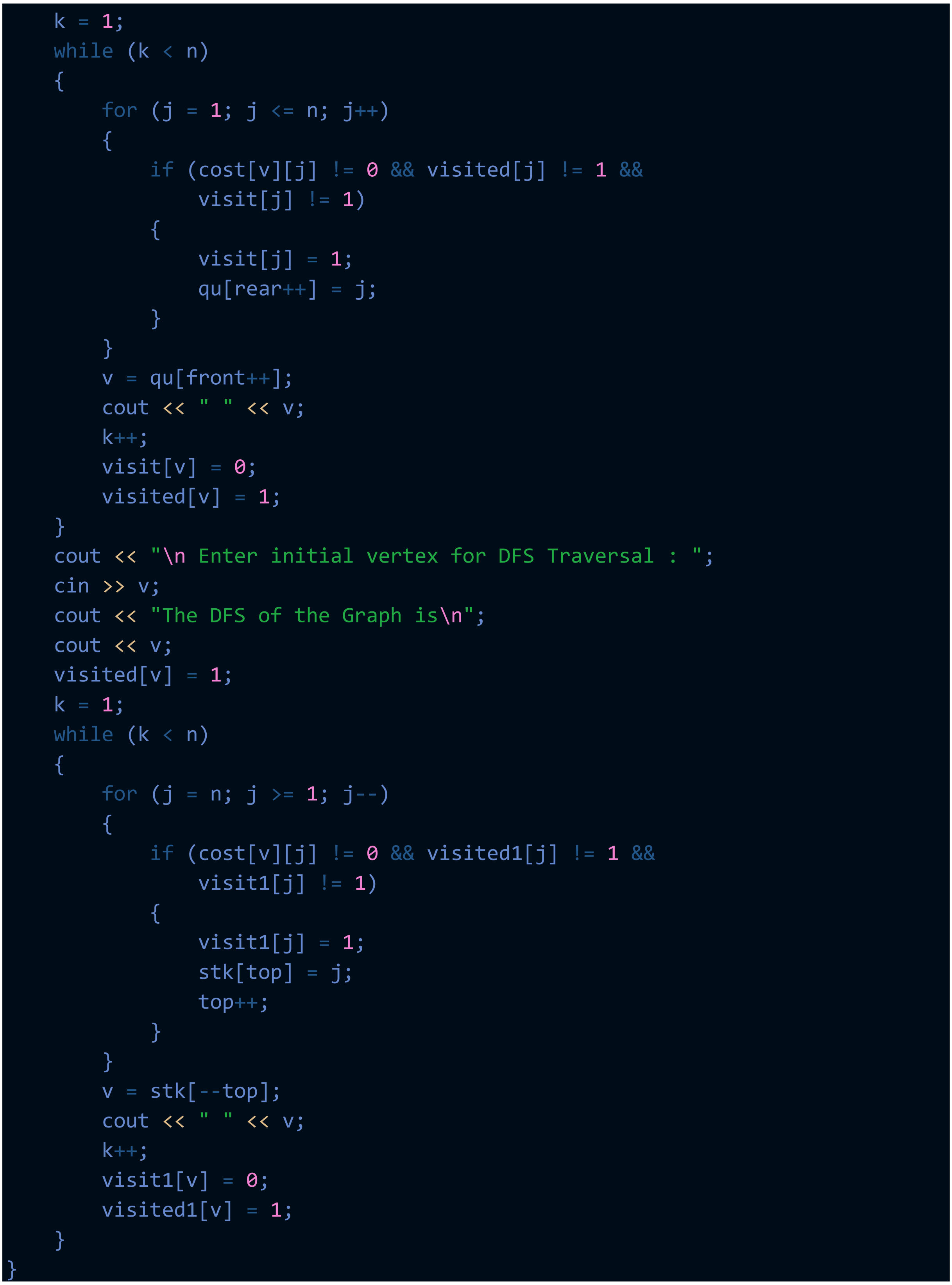
Batch – B

Problem statement: Represent a given graph using an adjacency list/matrix and perform DFS or BFS traversal.

Code:

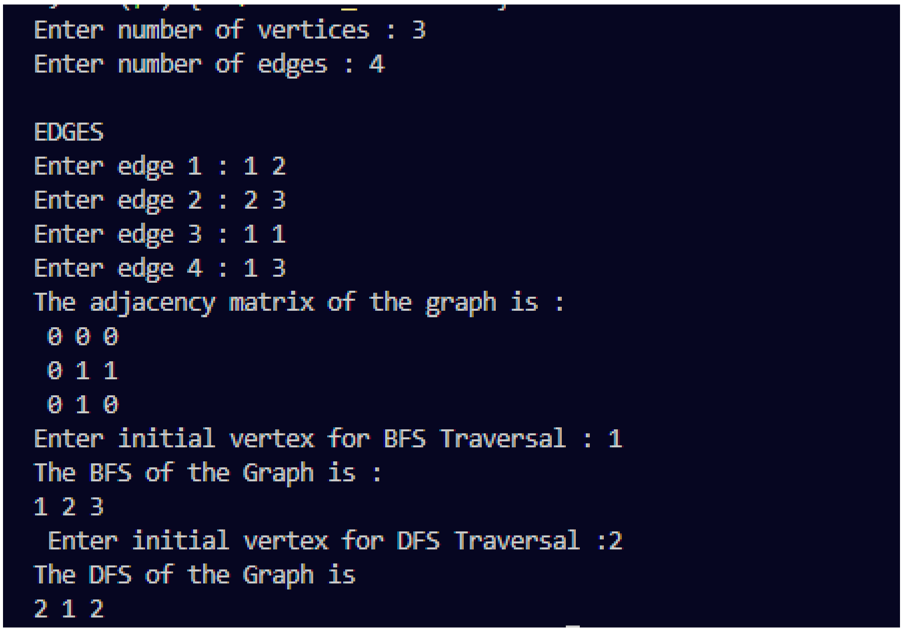


```
#include <iostream>
#include <stdlib.h>
using namespace std;
int cost[10][10], i, j, k, n;
int qu[10], front, rear, v, visit[10], visited[10];
int stk[10], top, visit1[10], visited1[10];
int main()
{
    int m;
    cout << "Enter number of vertices : ";
    cin >> n;
    cout << "Enter number of edges : ";
    cin >> m;
    cout << "\nEDGES \n";
    for (k = 1; k <= m; k++)
    {
        cout << "Enter edge " << k << " : ";
        cin >> i;
        cin >> j;
        cost[i][j] = 1;
        cost[j][i] = 1;
    }
    // display function
    cout << "The adjacency matrix of the graph is : " << endl;
             for (i = 0; i < n; i++)
    {
        for (j = 0; j < n; j++)
        {
            cout << " " << cost[i][j];
        }
        cout << endl;
    }
    cout << "Enter initial vertex for BFS Traversal : ";
    cin >> v;
    cout << "The BFS of the Graph is :\n";
    cout << v;
    visited[v] = 1;
```



```
    k = 1;
    while (k < n)
    {
        for (j = 1; j <= n; j++)
        {
            if (cost[v][j] != 0 && visited[j] != 1 &&
                visit[j] != 1)
            {
                visit[j] = 1;
                qu[rear++] = j;
            }
        }
        v = qu[front++];
        cout << " " << v;
        k++;
        visit[v] = 0;
        visited[v] = 1;
    }
    cout << "\n Enter initial vertex for DFS Traversal : ";
    cin >> v;
    cout << "The DFS of the Graph is\n";
    cout << v;
    visited[v] = 1;
    k = 1;
    while (k < n)
    {
        for (j = n; j >= 1; j--)
        {
            if (cost[v][j] != 0 && visited1[j] != 1 &&
                visit1[j] != 1)
            {
                visit1[j] = 1;
                stk[top] = j;
                top++;
            }
        }
        v = stk[--top];
        cout << " " << v;
        k++;
        visit1[v] = 0;
        visited1[v] = 1;
    }
}
```

OUTPUT:



```
Enter number of vertices : 3
Enter number of edges : 4

EDGES
Enter edge 1 : 1 2
Enter edge 2 : 2 3
Enter edge 3 : 1 1
Enter edge 4 : 1 3
The adjacency matrix of the graph is :
 0 0 0
 0 1 1
 0 1 0
Enter initial vertex for BFS Traversal : 1
The BFS of the Graph is :
1 2 3
 Enter initial vertex for DFS Traversal :2
The DFS of the Graph is
2 1 2
```