Bahria University, Islamabad

Department of Software Engineering

Data Structures & Algorithms Lab

(Spring-2024)

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Enrollment : 01-131232-004

Lab Journal: 11

Date: 08 / 12 / 24

Comments:

Signature

Code:

All the code files are uploaded on GitHub: https://github.com/CharlieFour/DSA_Lab

You can check out the code on GitHub in Lab_11 folder.

Graph.h

```
#pragma once

#include <iostream>

#define MAXVERTEXS 5

struct edge
{
    bool adj;
    int weight;

    friend std::ostream& operator<<(std::ostream& os, const edge&
edge)
    {
        os << "[" << edge.weight << "]";
        return os;
    }
};

class Graph
{
    private:
        edge adjMatrix[MAXVERTEXS][MAXVERTEXS];
    public:
        Graph();

        void addEdge(int vertex1, int vertex2, int weight);
        void removeEdge(int vertex1, int vertex2);
        void display();
};
```

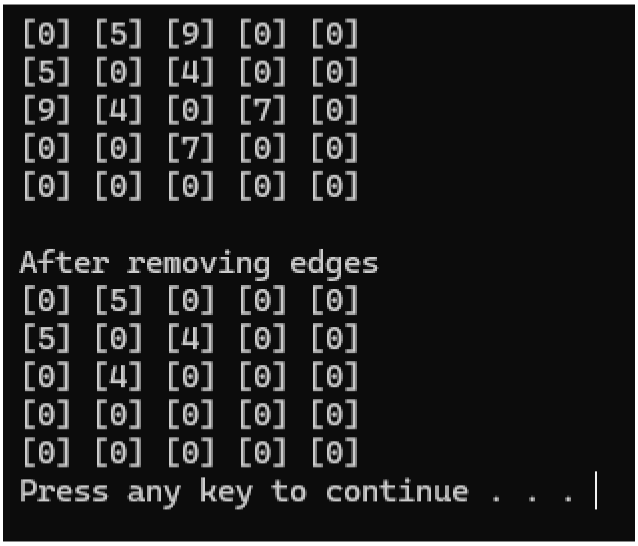
Graph.cpp

```
#include "graph.h"

Graph::Graph()
{
    for (int i = 0; i < MAXVERTEXS; i++)
    {
        for (int j = 0; j < MAXVERTEXS; j++)
        {
            adjMatrix[i][j] = {0, 0};
        }
    }
}
void Graph::addEdge(int vertex1, int vertex2, int weight)
{
    adjMatrix[vertex1][vertex2].adj = true;
    adjMatrix[vertex2][vertex1].adj = true;
    adjMatrix[vertex1][vertex2].weight = weight;
    adjMatrix[vertex2][vertex1].weight = weight;
}
void Graph::removeEdge(int vertex1, int vertex2)
{
    adjMatrix[vertex1][vertex2].adj = false;
    adjMatrix[vertex2][vertex1].adj = false;
    adjMatrix[vertex1][vertex2].weight = 0;
    adjMatrix[vertex2][vertex1].weight = 0;
}

void Graph::display()
{
    for (int i = 0; i < MAXVERTEXS; i++)
    {
        for (int j = 0; j < MAXVERTEXS; j++)
        {
            std::cout << adjMatrix[i][j] << " ";
        }
        std::cout << std::endl;
    }
}
```

Main

```
#include <iostream>
#include "..\lib\graph.h"

using namespace std;

int main()
{
    Graph graph;

    graph.addEdge(0, 1, 5);
    graph.addEdge(0, 2, 9);
    graph.addEdge(1, 2, 4);
    graph.addEdge(2, 3, 7);

    graph.display();

    graph.removeEdge(0, 2);
    graph.removeEdge(2, 3);
    cout << "\nAfter removing edges\n";
    graph.display();

    system("pause");
    return 0;
}
```

Screen Shots:



```
[0] [5] [9] [0] [0]
[5] [0] [4] [0] [0]
[9] [4] [0] [7] [0]
[0] [0] [7] [0] [0]
[0] [0] [0] [0] [0]

After removing edges
[0] [5] [0] [0] [0]
[5] [0] [4] [0] [0]
[0] [4] [0] [0] [0]
[0] [0] [0] [0] [0]
[0] [0] [0] [0] [0]
Press any key to continue . . .
```