

**LAPORAN UAS STRUKTUR DATA UNDIRECTED GRAPH  
MENGUNAKAN REPRESENTASI ADJACENCY LIST**



**Oleh :**

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TAHUN PELAJARAN 2022**

## Soal

1. Membuat kodingan dan laporan sebuah algoritma yang membuat undirected graph menggunakan representasi adjacency list dengan input vertex dan edge.

**Input :**

- 1) int jumlah vertex yang ada dalam graph
- 2) (x,y,w) dengan x = vertex 1, y = vertex 2, w = weight

**Output :**

Satu per satu vertex, edge, dan weightnya

**Contoh input :**

4

(1,2,5) (2,3,1) (4,1,3) (2,4,1) (3,1,1)

**Contoh output :**

1 → [2,5] → [3,1] → [4,3]

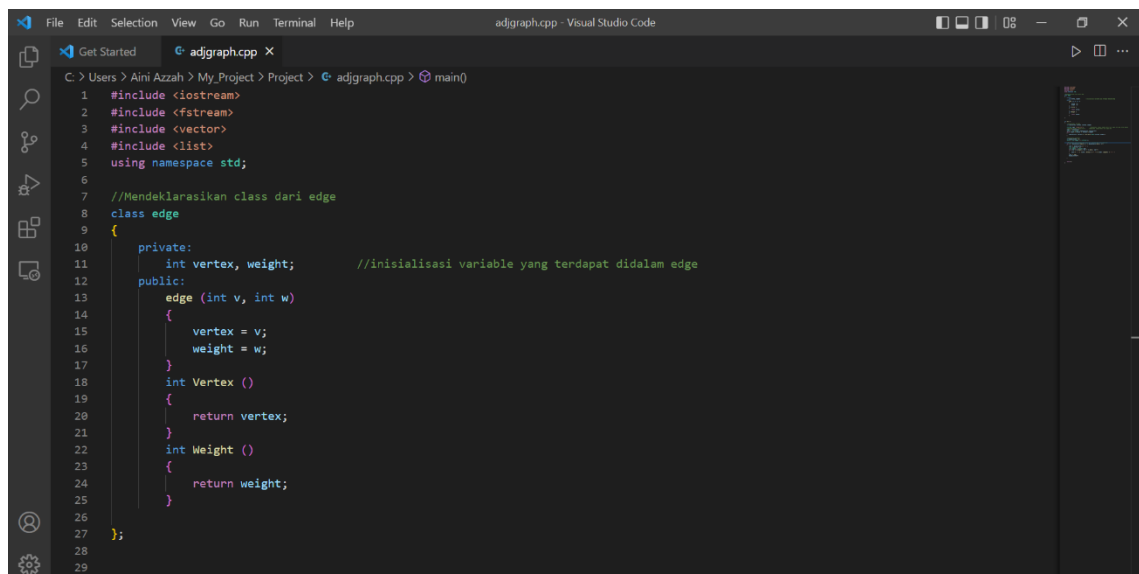
2 → [1,5] → [4,1] → [3,1]

3 → [2,1] → [1,1]

4 → [2,1] → [1,3]

## Jawaban

- Code program Undirected Graph dengan representasi Adjacency List dengan inputan vertex, edge, serta weight



```
1 #include <iostream>
2 #include <fstream>
3 #include <vector>
4 #include <list>
5 using namespace std;
6
7 //Mendeklarasikan class dari edge
8 class edge
9 {
10     private:
11         int vertex, weight; //inisialisasi variable yang terdapat didalam edge
12     public:
13         edge (int v, int w)
14         {
15             vertex = v;
16             weight = w;
17         }
18         int Vertex ()
19         {
20             return vertex;
21         }
22         int Weight ()
23         {
24             return weight;
25         }
26 };
27
28
29
```

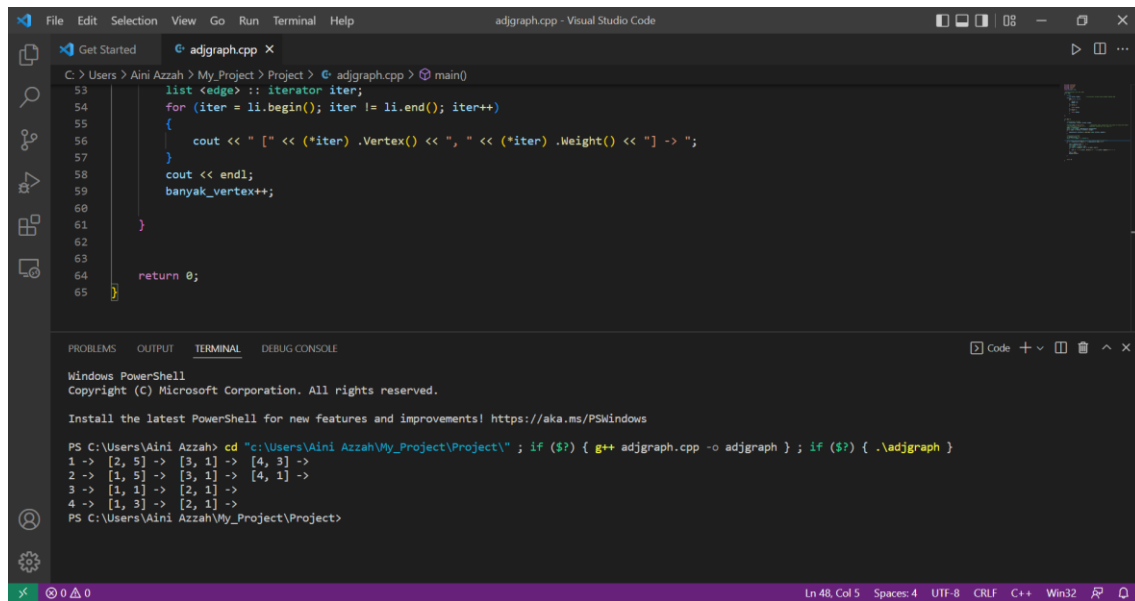
```
29
30 int main ()
31 {
32     //inisialisasi variabel
33     int totalvertex, vertex1, vertex2, weight;
34
35     ifstream input ("input.txt"); //menyalakan fungsi inputan dari file input.txt yang telah dibuat
36     //ofstream output ("input.txt"); //mematikan inputan dari file input.txt
37     input >> totalvertex;
38     vector < list <edge> > adjacencylist (totalvertex);
39     while (input >> vertex1 >> vertex2 >> weight)
40     {
41         adjacencylist [vertex1-1] .push_back (edge (vertex2, weight));
42     }
43
44     //inisialisasi variabel
45     int banyak_vertex = 1;
46     vector < list <edge> > :: iterator i;
47
48     //Perulangan untuk menampilkan hasil dari inputan pada file input.txt
49     for (i = adjacencylist.begin(); i != adjacencylist.end(); i++)
50     {
51         cout << banyak_vertex << " -> ";
52         list <edge> li = *i;
53         list <edge> :: iterator iter;
54         for (iter = li.begin(); iter != li.end(); iter++)
55         {
56             cout << "[" << (*iter) .Vertex() << ", " << (*iter) .Weight() << "]" -> ";
57         }
58         cout << endl;
59         banyak_vertex++;
60     }
61
62
63     return 0;
64 }
65
```

➤ File inputan code program

- Berisi inputan jumlah vertex pada baris pertama
- Kemudian baris kedua dan selanjutnya adalah (vertex 1, vertex 2 , weight)

```
4
1 2 5
1 3 1
1 4 3
2 1 5
2 3 1
2 4 1
3 1 1
3 2 1
4 1 3
4 2 1
```

- Hasil Outputan dari code program Undirected Graph dengan representasi Adjacency List dengan inputan vertex, edge, serta weight diatas.



The screenshot displays the Visual Studio Code interface with a C++ file named `adjgraph.cpp` open. The code defines a function `main()` that iterates through a list of edges and prints each edge's vertices and weight. The output window shows the program's execution results for four input edges: `[2, 5] -> [3, 1] -> [4, 3]`, `[1, 5] -> [3, 1] -> [4, 1]`, `[1, 1] -> [2, 1]`, and `[1, 3] -> [2, 1]`.

```
53 list <edge> :: iterator iter;
54 for (iter = li.begin(); iter != li.end(); iter++)
55 {
56     cout << " [" << (*iter).Vertex() << ", " << (*iter).Weight() << "]" -> " ";
57 }
58 cout << endl;
59 banyak_vertex++;
60 }
61
62
63 return 0;
64
65 }
```

Windows PowerShell  
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Install the latest PowerShell for new features and improvements! <https://aka.ms/PSWindows>

```
PS C:\Users\Aini Azzah> cd "C:\Users\Aini Azzah\My_Project\Project\" ; if ($?) { g++ adjgraph.cpp -o adjgraph } ; if ($?) { .\adjgraph }
1 -> [2, 5] -> [3, 1] -> [4, 3] ->
2 -> [1, 5] -> [3, 1] -> [4, 1] ->
3 -> [1, 1] -> [2, 1] ->
4 -> [1, 3] -> [2, 1] ->
```

PS C:\Users\Aini Azzah\My\_Project\Project>