

# **LAPORAN STRUKTUR DATA UJIAN AKHIR SEMESTER**



**Disusun Oleh:**

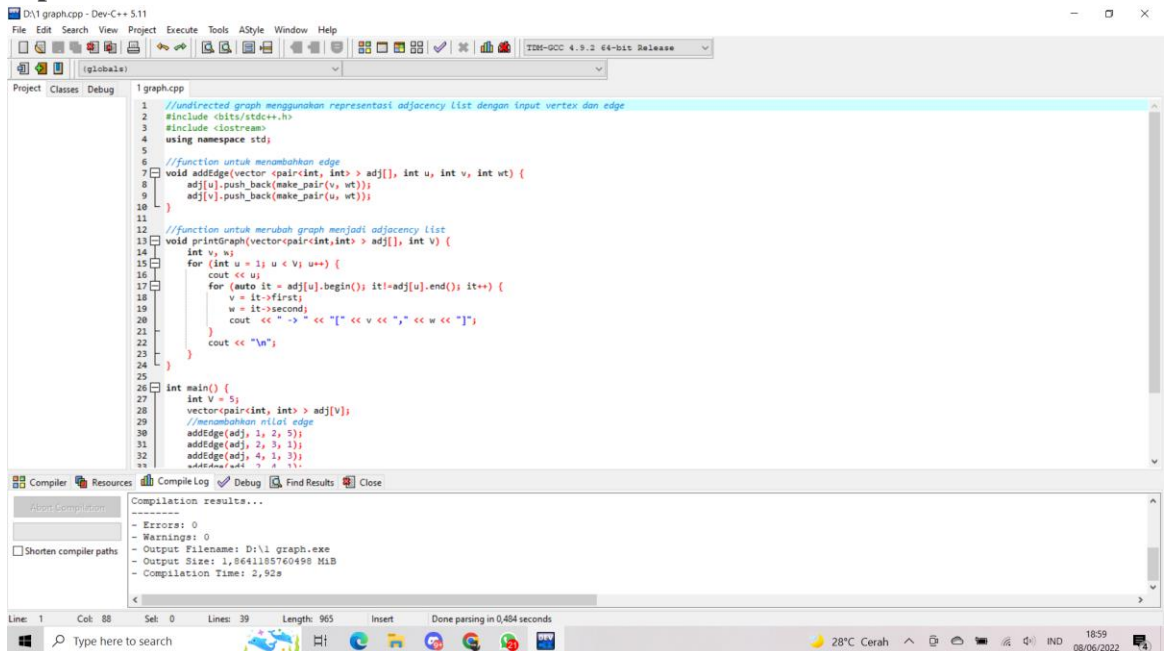
Filusive Nathan Fernanda (21091397073)

Kelas : 2021 A

**FAKULTAS VOKASI PROGRAM STUDI D4  
MANAJEMEN INFORMATIKA UNIVERSITAS  
NEGERI SURABAYA 2022**

## Nomor 1 :

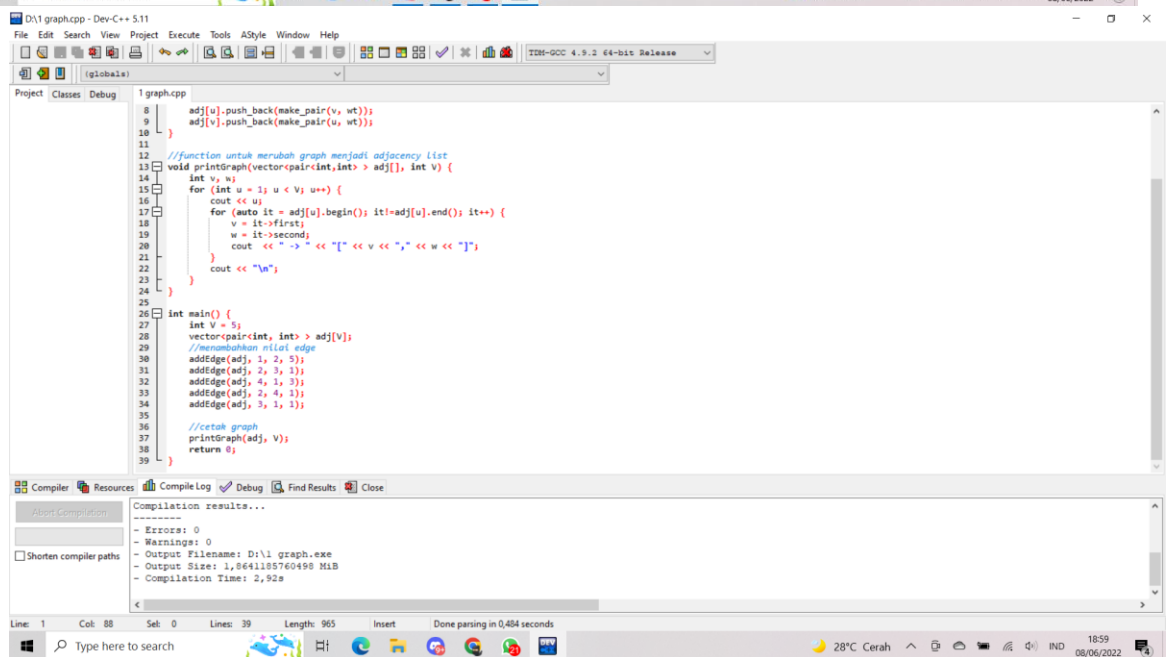
### - Input :



```
1 //undirected graph menggunakan representasi adjacency list dengan input vertex dan edge
2 #include <bits/stdc++.h>
3 #include <iostream>
4 using namespace std;
5
6 //function untuk menambahkan edge
7 void addEdge(vector<pair<int, int> > adj[], int u, int v, int wt) {
8     adj[u].push_back(make_pair(v, wt));
9     adj[v].push_back(make_pair(u, wt));
10 }
11
12 //function untuk merubah graph menjadi adjacency list
13 void printGraph(vector<pair<int, int> > adj[], int V) {
14     int v, w;
15     for (int u = 1; u < V; u++) {
16         cout << u;
17         for (auto it = adj[u].begin(); it!=adj[u].end(); it++) {
18             v = it->first;
19             w = it->second;
20             cout << " -> " << "[* << v << ", " << w << "];"
21         }
22         cout << "\n";
23     }
24 }
25
26 int main() {
27     int V = 5;
28     vector<pair<int, int> > adj[V];
29     //menambahkan n(lal edge
30     addEdge(adj, 1, 2, 5);
31     addEdge(adj, 2, 3, 1);
32     addEdge(adj, 4, 1, 3);
33     addEdge(adj, 3, 4, 1);
34 }
```

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: D:\1 graph.exe
- Output Size: 1,8641185760498 KiB
- Compilation Time: 2,92s

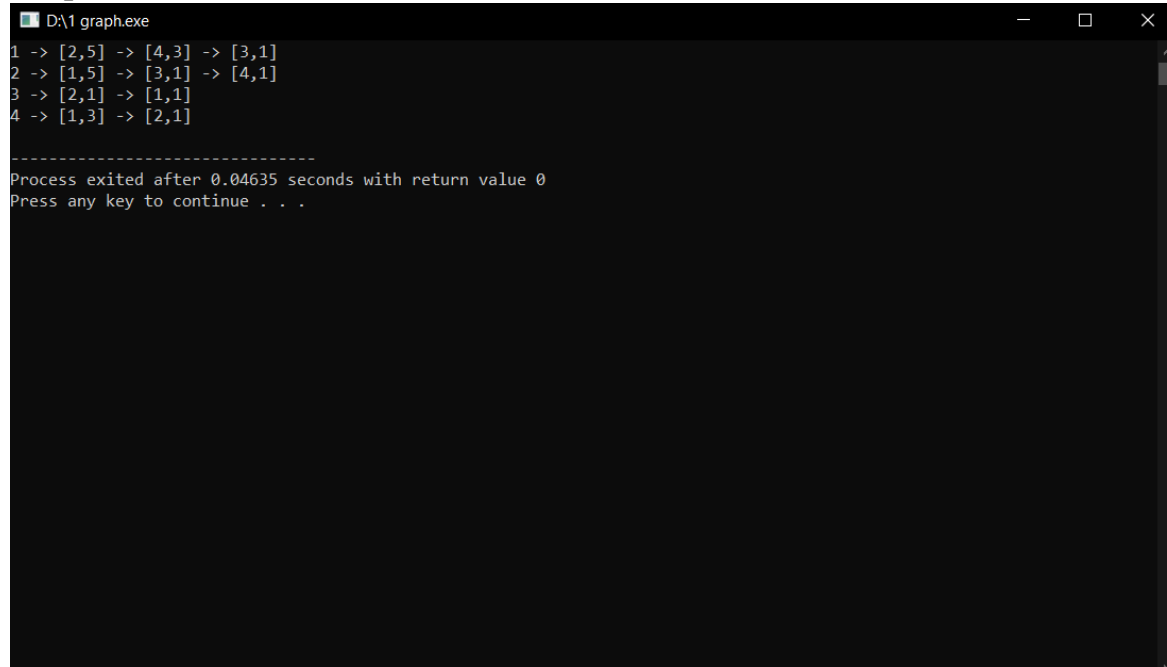


```
8     adj[u].push_back(make_pair(v, wt));
9     adj[v].push_back(make_pair(u, wt));
10 }
11
12 //function untuk merubah graph menjadi adjacency list
13 void printGraph(vector<pair<int, int> > adj[], int V) {
14     int v, w;
15     for (int u = 1; u < V; u++) {
16         cout << u;
17         for (auto it = adj[u].begin(); it!=adj[u].end(); it++) {
18             v = it->first;
19             w = it->second;
20             cout << " -> " << "[* << v << ", " << w << "];"
21         }
22         cout << "\n";
23     }
24 }
25
26 int main() {
27     int V = 5;
28     vector<pair<int, int> > adj[V];
29     //menambahkan n(lal edge
30     addEdge(adj, 1, 2, 5);
31     addEdge(adj, 2, 3, 1);
32     addEdge(adj, 4, 1, 3);
33     addEdge(adj, 2, 4, 1);
34     addEdge(adj, 3, 1, 1);
35
36     //cetak graph
37     printGraph(adj, V);
38     return 0;
39 }
```

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: D:\1 graph.exe
- Output Size: 1,8641185760498 KiB
- Compilation Time: 2,92s

- **Output :**

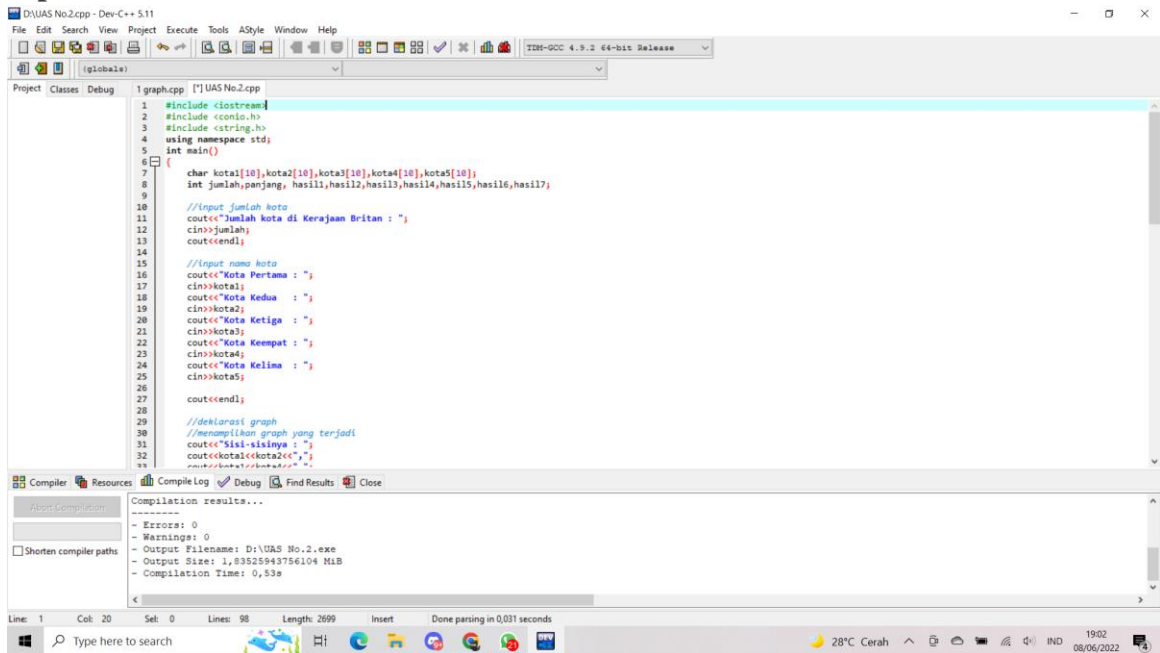


```
D:\1 graph.exe
1 -> [2,5] -> [4,3] -> [3,1]
2 -> [1,5] -> [3,1] -> [4,1]
3 -> [2,1] -> [1,1]
4 -> [1,3] -> [2,1]

-----
Process exited after 0.04635 seconds with return value 0
Press any key to continue . . .
```

## Nomor 2 :

### - Input :



The screenshot shows a C++ IDE with a project named "UAS No.2.cpp". The code is as follows:

```
1 #include <iostream>
2 #include <conio.h>
3 #include <string.h>
4 using namespace std;
5 int main()
6 {
7     char kota1[10], kota2[10], kota3[10], kota4[10], kota5[10];
8     int jumlah, panjang, hasil1, hasil2, hasil3, hasil4, hasil5, hasil6, hasil7;
9
10    //Input jumlah kota
11    cout<<"Jumlah kota di Kerajaan Britan : ";
12    cin>>jumlah;
13    cout<<endl;
14
15    //Input nama kota
16    cout<<"Kota Pertama : ";
17    cin>>kota1;
18    cout<<"Kota Kedua : ";
19    cin>>kota2;
20    cout<<"Kota Ketiga : ";
21    cin>>kota3;
22    cout<<"Kota Keempat : ";
23    cin>>kota4;
24    cout<<"Kota Kelima : ";
25    cin>>kota5;
26
27    cout<<endl;
28
29    //deklarasi graph
30    //menampilkan graph yang terjadi
31    cout<<"Sisi-sisinya : ";
32    cout<<kota1<<kota2<<" ";
33    cout<<kota1<<kota3<<" ";
34    cout<<kota1<<kota4<<" ";
35    cout<<kota1<<kota5<<" ";
36    cout<<kota2<<kota3<<" ";
37    cout<<kota2<<kota4<<" ";
38    cout<<kota2<<kota5<<" ";
39    cout<<kota3<<kota4<<" ";
40    cout<<kota3<<kota5<<" ";
41    cout<<kota4<<kota5<<" ";
42    cout<<endl;
43}
```

The compilation results show 0 errors and 0 warnings. The output filename is "D:\UAS No.2.exe", the output size is 1,835,259,437,561,04 MB, and the compilation time is 0,53s.

```
D:\UAS No.2.cpp - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
[global]
1 graph.cpp ["] UAS No.2.cpp
34 cout<<kota1<<kota5<<" ";
35 cout<<kota2<<kota3<<" ";
36 cout<<kota3<<kota5<<" ";
37 cout<<kota3<<kota4<<" ";
38 cout<<kota4<<kota5<<endl<<endl;
39
40 //deklarasi edge
41 //menampilkan panjang jalan yang menghubungkan vertex
42 cout<<"Panjang jalan antar kota"<<endl;
43 cout<<"Panjang "<<kota1<<" ke "<<kota4<<" : " cin>> hasil1;
44 cout<<"Panjang "<<kota1<<" ke "<<kota4<<" : " cin>> hasil2;
45 cout<<"Panjang "<<kota1<<" ke "<<kota5<<" : " cin>> hasil3;
46 cout<<"Panjang "<<kota2<<" ke "<<kota3<<" : " cin>> hasil4;
47 cout<<"Panjang "<<kota3<<" ke "<<kota5<<" : " cin>> hasil5;
48 cout<<"Panjang "<<kota3<<" ke "<<kota4<<" : " cin>> hasil6;
49 cout<<"Panjang "<<kota4<<" ke "<<kota5<<" : " cin>> hasil7;
50
51 cout<<endl;
52
53 //deklarasi adjacent
54 //menampilkan jalan yang menghubungkan kedua simpul (x,y,z)
55 cout<<"Seluruh jalan yang ada di Kerajaan Britan dan panjang jalannya : ";
56 cout<<"("<<kota1<<","<<kota2<<","<<hasil1<<") ";
57 cout<<"("<<kota1<<","<<kota4<<","<<hasil2<<") ";
58 cout<<"("<<kota1<<","<<kota5<<","<<hasil3<<") ";
59 cout<<"("<<kota2<<","<<kota3<<","<<hasil4<<") ";
60 cout<<"("<<kota3<<","<<kota5<<","<<hasil5<<") ";
61 cout<<"("<<kota3<<","<<kota4<<","<<hasil6<<") ";
62 cout<<"("<<kota4<<","<<kota5<<","<<hasil7<<") ";
63
64 cout<<endl;
65
66 //hasi1
67
Compiler Resources Compile Log Debug Find Results Close
Compilation results...
- Errors: 0
- Warnings: 0
- Output Filename: D:\UAS No.2.exe
- Output Size: 1,83525943756104 MiB
- Compilation Time: 0,53s
Line: 1 Col: 20 Sel: 0 Lines: 98 Length: 2699 Insert Done parsing in 0,031 seconds
Type here to search 28°C Cerah 1902 08/06/2022
```

```
D:\UAS No.2.cpp - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
[global]
1 graph.cpp ["] UAS No.2.cpp
67 //menampilkan tempat pedagang berada
68 cout<<"Kota tempat pedagang sekarang : ";
69 cout<<kota1;
70
71 cout<<endl<<endl;
72
73 //menampilkan kota yang diserang naga
74 cout<<"Kota yang diserang naga : ";
75 cout<<kota3;
76
77 cout<<endl<<endl;
78
79 //menampilkan kota yang terdapat kastil
80 cout<<"Kota yang memiliki kastil : ";
81 cout<<kota5;
82
83 cout<<endl<<endl;
84
85 //menampilkan vertex tercepat untuk selamat
86 cout<<"Jalur yang paling cepat ditempuh : ";
87 cout<<kota1<<"-<<kota4<<"-<<kota5;
88
89 cout<<endl<<endl;
90
91 //total edge yang harus ditempuh
92 cout<<"Dengan jarak yang ditempuh : ";
93 cout<<hasil2<<hasil7<<endl<<endl;
94
95
96 getch();
97 return 0;
98
Compiler Resources Compile Log Debug Find Results Close
Compilation results...
- Errors: 0
- Warnings: 0
- Output Filename: D:\UAS No.2.exe
- Output Size: 1,83525943756104 MiB
- Compilation Time: 0,53s
Line: 1 Col: 20 Sel: 0 Lines: 98 Length: 2699 Insert Done parsing in 0,031 seconds
Type here to search 28°C Cerah 1902 08/06/2022
```

- **Output :**

```
D:\UAS No.2.exe
Jumlah kota di Kerajaan Britan : 5

Kota Pertama : 1
Kota Kedua : 2
Kota Ketiga : 3
Kota Keempat : 4
Kota Kelima : 5

Sisi-sisinya : 12,14,15,23,35,34,45

Panjang jalan antar kota
Panjang 1 ke 2: 12
Panjang 1 ke 4: 13
Panjang 1 ke 5: 30
Panjang 2 ke 3: 14
Panjang 3 ke 5: 22
Panjang 3 ke 4: 4
Panjang 4 ke 5: 5

Seluruh jalan yang ada di Kerajaan Britan dan panjang jalannya : (1,2,12) (1,4,13) (1,5,30) (2,3,14) (3,5,22) (3,4,4) (4,5,5)
Kota tempat pedagang sekarang : 1

Kota yang diserang naga : 3

Kota yang memiliki kastil : 5

Jalur yang paling cepat ditempuh : 1-4-5

Dengan jarak yang ditempuh : 18
```