LAPORAN PRAKTIKUM

- **Identitas Praktikum**

  Nama MK : Struktur Data

  Kode MK : CCK2AAB4

  Bobot SKS : 4 SKS

  Tempat : L-Program, Gedung DC, lantai 3

  Hari, tanggal : Selasa, 24 September 2024

  Jam : 12:30-14:30 WIB

  Topik praktikum : Modul-1 Code Blocks IDE & Pengenalan Bahasa C++ (Bagian Pertama)

- **Identitas Mahasiswa**

  Nama lengkap : Afad Fath Musyarof Halim

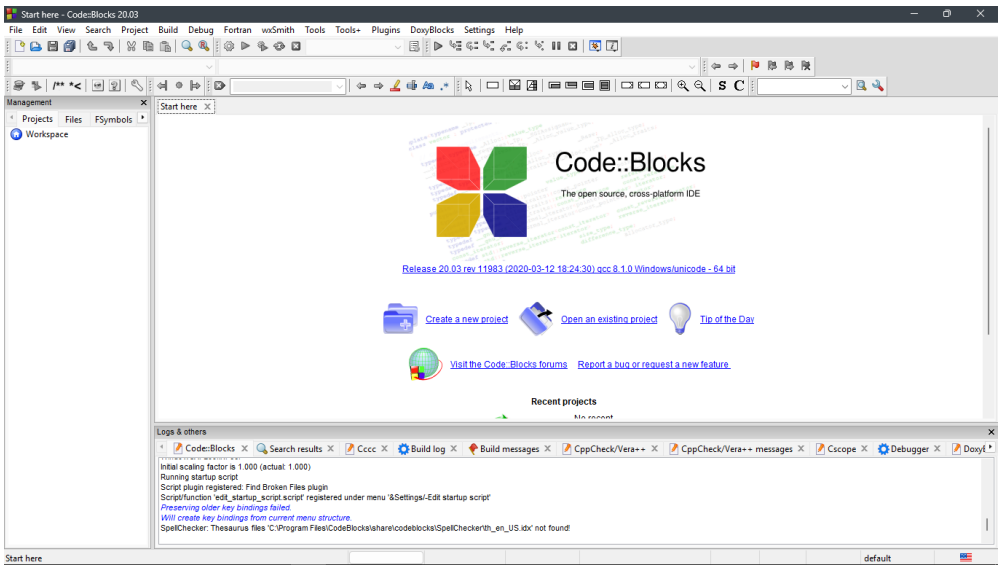
  NIM : 2211104030

  Program Studi : Software Engineering

- **Hasil Praktikum**

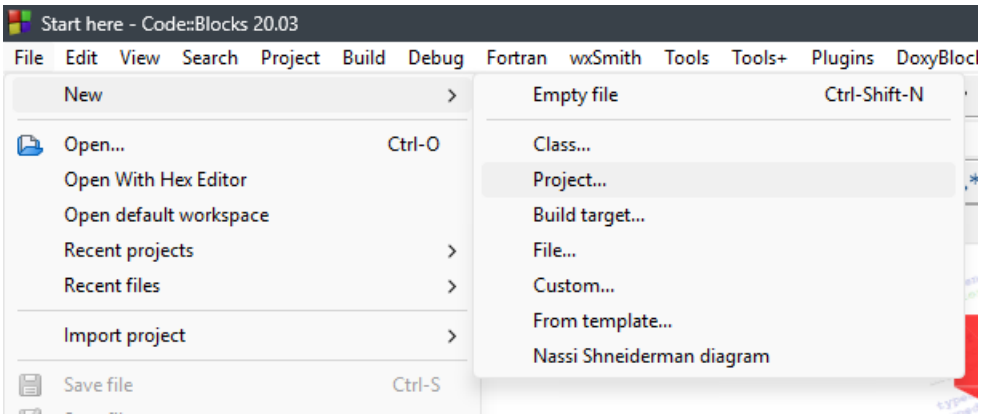
  1.1 Code Blocks

  1.1.1 Instalasi

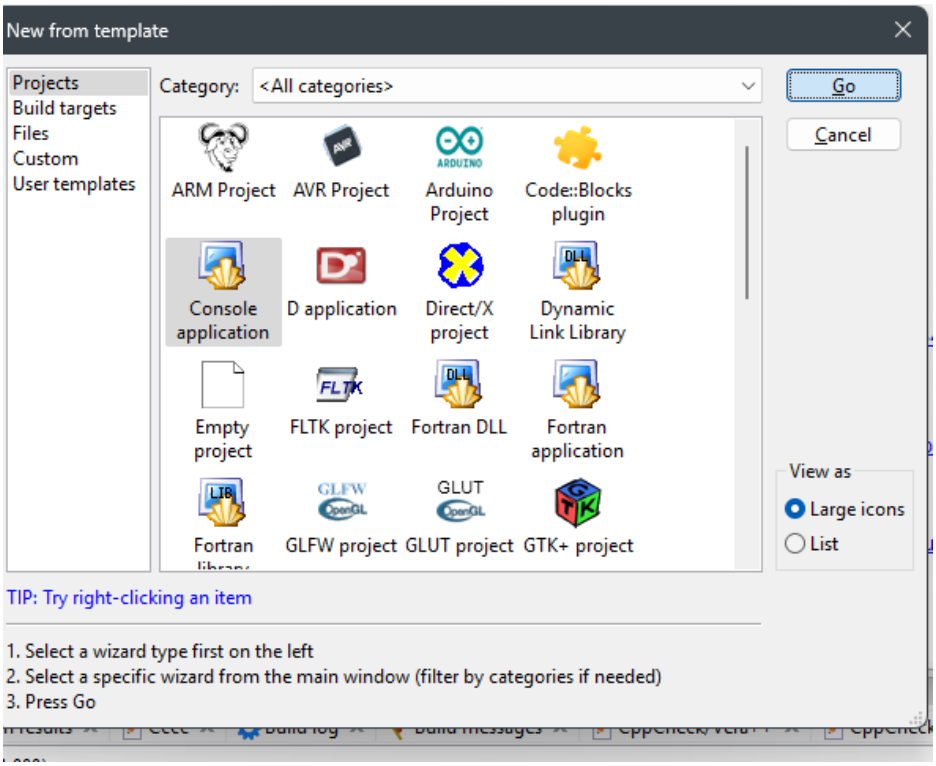


1.1.2 Membuat Project

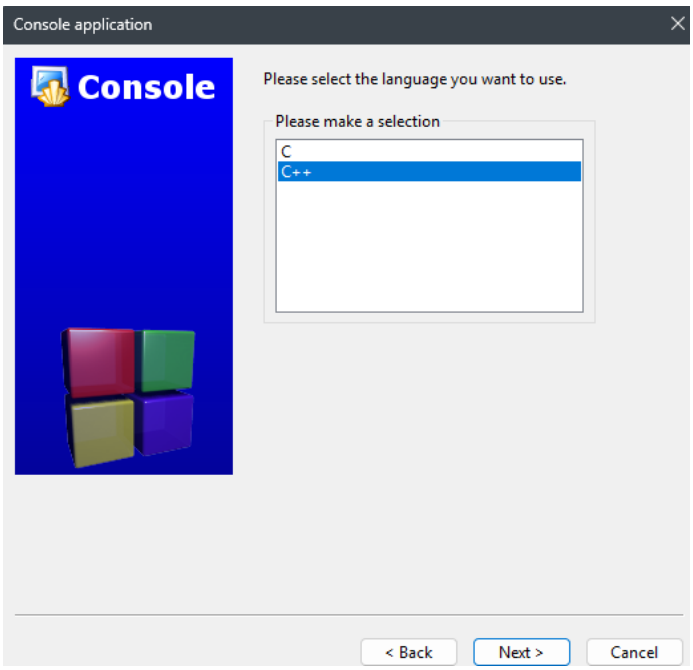
1.1.2.1 File > New > Project



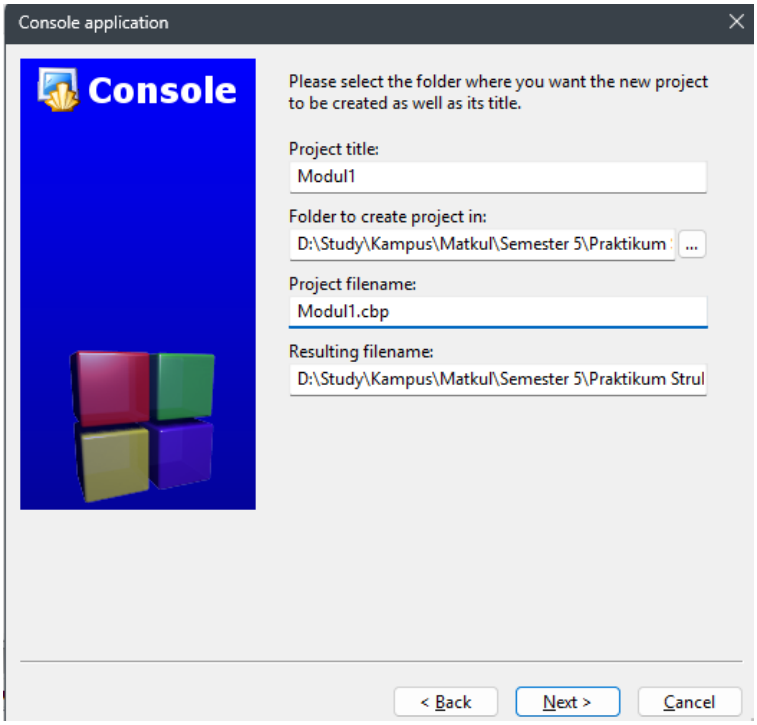
1.1.2.2 Console App > Go



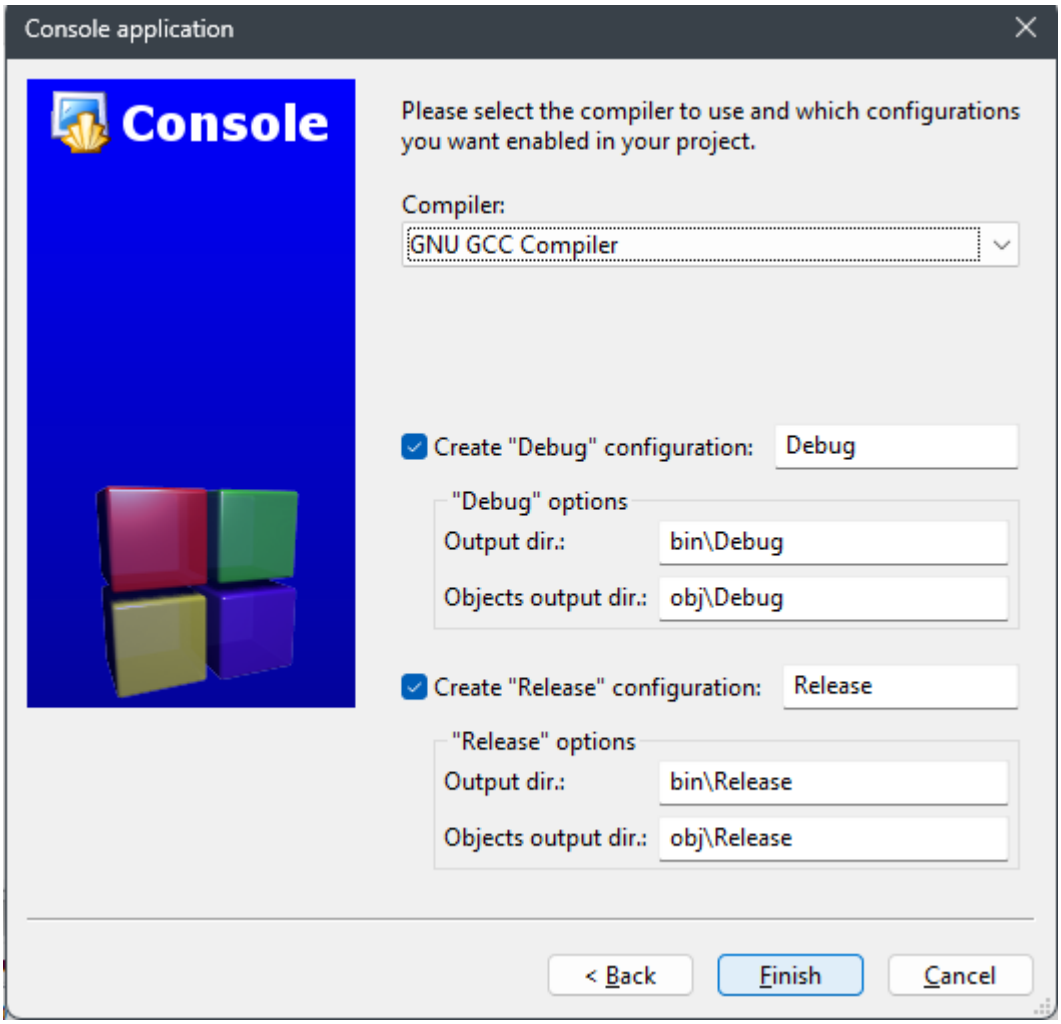
1.1.2.3 Pilih C++



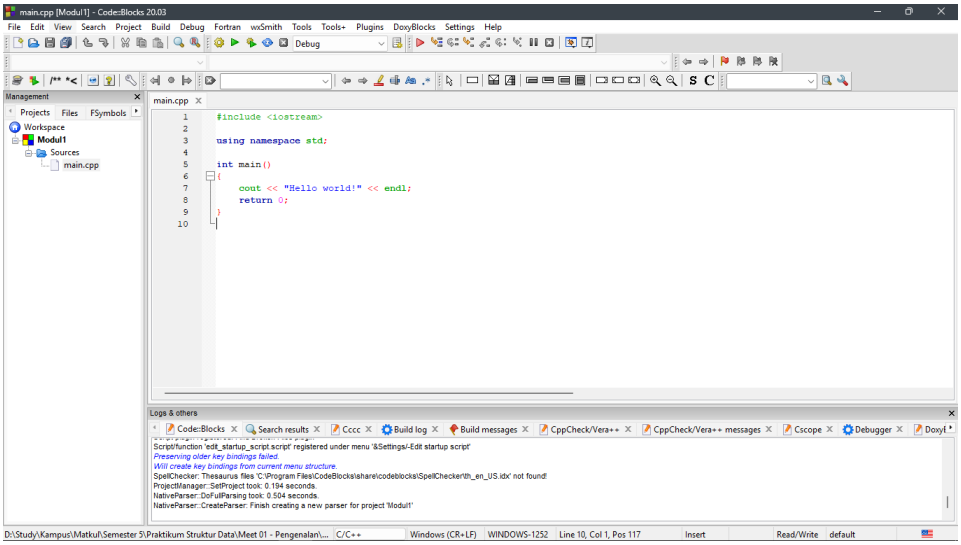
1.1.2.4 Isi text field



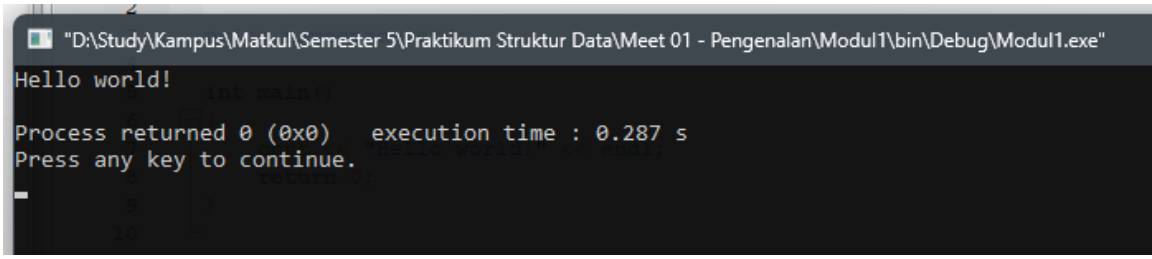
1.1.2.5 Kondisi Default



1.1.2.6 Project selesai dibuat



1.1.2.7 Untuk menjalankan gunakan tombol Build lalu Run



1.2 C++

C++ adalah bahasa pemrograman yang di sempurnakan yang berasal dari bahasa pemrograman C.

1.3 Struktur Dasar

1.3.1 Variable (berubah)

main.cpp

```cpp
#include <iostream>

using namespace std;

int main()
{
    string x, z;
    char a;
    int64_t y;

    x = "Pengin Duit ";
    y = 1000000;
    z = " Juta";
    a = '!';

    cout << x << y << z << a << endl;
    return 0;
}
```

```
"D:\Study\Kampus\Matkul\Semester 5\Praktikum Struktur Data\Meet 01 - Pengenalan\Modul1\bin\Debug\Modul1.exe"
Rp. 1000000

Process returned 0 (0x0)   execution time : 0.072 s
Press any key to continue.
```

1.3.2 Konstanta (Tetap)

1.3.2.1 Berhasil

main.cpp

```cpp
#include <iostream>

using namespace std;

int main()
{
    string x;
    const int y = 1000000;

    x = "Rp. ";

    cout << x << y << endl;
    return 0;
}
```

```
"D:\Study\Kampus\Matkul\Semester 5\Praktikum Struktur Data\Meet 01 - Pengenal
Rp. 1000000

Process returned 0 (0x0)   execution time : 0.080 s
Press any key to continue.
```

1.3.2.2 Jika dicoba untuk dirubah maka error

```
1   #include <iostream>
2
3   using namespace std;
4
5   int main()
6   {
7       string x;
8       const int y = 1000000;
9
10      x = "Rp. ";
11      y = 10;
12
13      cout << x << y << endl;
14      return 0;
15  }
16
```

```
D:\Study\Kamp...  11  error: assignment of read-only variable 'y'
```

1.4 Input / Output

1.4.1 Output (cout)

```
int main()
{
    cout << "Siapa saya?" << endl;
    return 0;
}
```

```
"D:\Study\Kampus\Matkul\Semester 5\Praktikum Struktur Data\Meet 01 - Pengen
Siapa saya?

Process returned 0 (0x0)   execution time : 0.100 s
Press any key to continue.
```

1.4.2 Input (cin)

```
int main()
{
    string nama;

    cout << "Siapa saya?";
    cin >> nama;
    cout << endl;

    cout << "Nama saya adalah " << nama << endl;

    return 0;
}
```

```
"D:\Study\Kampus\Matkul\Se
Siapa saya?
```

➔

```
"D:\Study\Kampus\Matkul\Semester 5\Praktikum Struktur Data\Meet 01 - Pen
Siapa saya?Afad

Nama saya adalah Afad

Process returned 0 (0x0)   execution time : 17.507 s
Press any key to continue.
```

1.5 Operator

```cpp
int main()
{
    int x, y;
    x = 5;
    y = 2;

    cout << "x = " << x << endl;
    cout << "y = " << y << endl;
    cout << "==================" << endl;
    cout << "Tambah     + : " << x + y << endl;
    cout << "Kurang     - : " << x - y << endl;
    cout << "Kali       * : " << x * y << endl;
    cout << "Bagi       / : " << x / y << endl;
    cout << "Sisa Bagi  % : " << x % y << endl;


    return 0;
}
```

```
"D:\Study\Kampus\Matkul\Semester 5\Praktikum Struktur Data\Meet 01 - Pe
x = 5
y = 2
==================
Tambah     + : 7
Kurang     - : 3
Kali       * : 10
Bagi       / : 2
Sisa Bagi  % : 1

Process returned 0 (0x0)   execution time : 0.090 s
Press any key to continue.
```

1.6 Pemodifikasi

1.6.1 Unsigned (Jika hanya nilai positif)

1.6.2 Short (Angka yang kecil)

1.6.3 Long (Angka yang besar)

1.7 Kondisional

1.7.1 If-Else

```
int main()
{
    int nilai;
    char predikat;

    cout << "Input nilai: ";
    cin >> nilai;
    cout << endl;

    if (nilai > 90) {
        predikat = 'A';
    } else if(nilai > 80) {
        predikat = 'B';
    } else {
        predikat = 'c';
    }

    cout << "Predikat kamu: " << predikat << endl;
    return 0;
}
```

```
Input nilai: 80

Predikat kamu: c

Process returned 0 (0x0)   executi
Press any key to continue.
```

```
Input nilai: 85

Predikat kamu: B

Process returned 0 (0x0)   execution ti
Press any key to continue.
```

```
Input nilai: 91

Predikat kamu: A

Process returned 0 (0x0)   execution ti
Press any key to continue.
```

1.7.2 Switch-Case

```cpp
int main()
{
    int hariIndex;
    string pesan;

    cout << "Input hari (Senin = 1 sampai Minggu = 7): ";
    cin >> hariIndex;
    cout << endl;

    switch(hariIndex){
        case 1:
            pesan = "Upacara GAESS";
            break;
        default:
            pesan = "Bukan hari upacara";
            break;
    };

    cout << pesan << endl;
    return 0;
}
```

```
Input hari (Senin = 1 sampai Minggu = 7): 1

Upacara GAESS

Process returned 0 (0x0)   execution time : 2.1
Press any key to continue.
```

```
Input hari (Senin = 1 sampai Minggu = 7): 2

Bukan hari upacara

Process returned 0 (0x0)   execution time : 2.4
Press any key to continue.
```

1.8 Perulangan

1.8.1 For-While

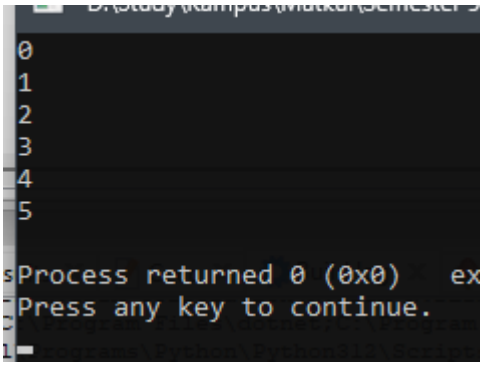
1.8.1.1 Bentuk For

```
int main()
{
    int i = 0;
    int maks = 5;

    for (i; i <= maks; i++)
    {
        cout << i << endl;
    }

    return 0;
}
```

1.8.1.2 Bentuk While

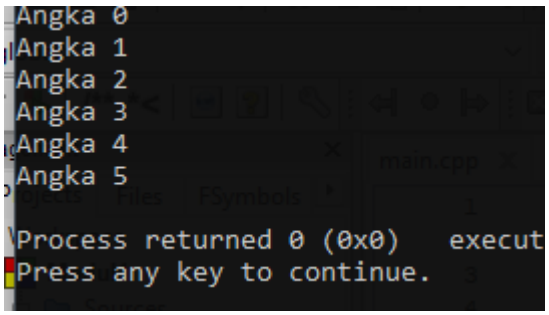
```
int main()
{
    int i = 0;
    int maks = 5;

    while(i <= maks)
    {
        cout << i << endl;
        i++
    }

    return 0;
}
```

1.8.1.3 Hasil



1.8.2 Do-While

```
int main()
{
    int i = 0;
    int maks = 5;

    do {
        cout << "Angka " << i << endl;
        i++;
    } while(i <= maks);

    return 0;
}
```



1.9 Struktur

Aturan dalam codingan (Type nama_variable, dll)

1.10 Blok kode

Tiap baris kode

- **Latihan**

1. Buat program:
    a. Menerima input 2 bilangan float
    b. Berikan hasil output penjumlahan, pengurangan, perkalian, dan pembagian dari 2 bilangan tersebut

    -Coding

```
int main()
{
    float a, b;

    cout << "Angka 1: ";
    cin >> a;
    cout << "Angka 2: ";
    cin >> b;

    cout << "================" << endl;
    cout << "Tambah     : " << a + b << endl;
    cout << "Kurang     : " << a - b << endl;
    cout << "Kali       : " << a + b << endl;
    cout << "Bagi       : " << a + b << endl;
    cout << "Sisa Bagi  : " << a + b << endl;

    return 0;
}
```

    -Running

```
"D:\Study\Kampus\Matkul\Semester 5\
Angka 1: 2
Angka 2: 3
================
Tambah     : 5
Kurang     : -1
Kali       : 5
Bagi       : 5
Sisa Bagi  : 5

Process returned 0 (0x0)   exe
Press any key to continue.
```

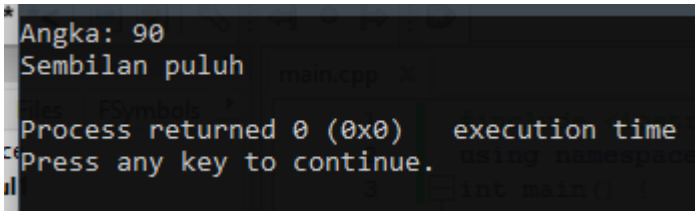
    - Pembahasan
        - Insisiasi variable
        - Input variable dari user
        - Hitung dan output hasil

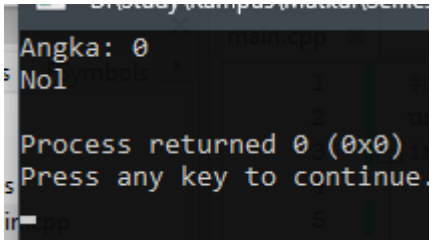
2. Buat program:
    a. Input angka (dari 0 – 100)
    b. Berikan output angka dalam bentuk tulisan

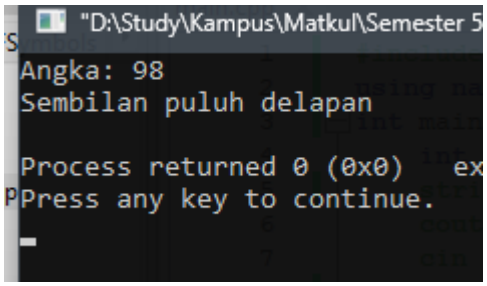
    -Coding

```cpp
#include <iostream>
using namespace std;
int main() {
    int a, c;
    string pembilang = "", puluhan = "";
    cout << "Angka: ";
    cin >> a;

    if (a >= 20 && a < 30) { puluhan = "Dua puluh "; }
    else if (a >= 30 && a < 40) { puluhan = "Tiga puluh "; }
    else if (a >= 40 && a < 50) { puluhan = "Empat puluh "; }
    else if (a >= 50 && a < 60) { puluhan = "Lima puluh "; }
    else if (a >= 60 && a < 70) { puluhan = "Enam puluh "; }
    else if (a >= 70 && a < 80) { puluhan = "Tujuh puluh "; }
    else if (a >= 80 && a < 90) { puluhan = "Delapan puluh "; }
    else if (a >= 90 && a < 100) { puluhan = "Sembilan puluh "; }

    c = a;

    if (a > 19){ while(c > 9){ c = c - 10; } }

    if (c == 1) pembilang = "satu";
    else if (c == 2) pembilang = "dua";
    else if (c == 3) pembilang = "tiga";
    else if (c == 4) pembilang = "empat";
    else if (c == 5) pembilang = "lima";
    else if (c == 6) pembilang = "enam";
    else if (c == 7) pembilang = "tujuh";
    else if (c == 8) pembilang = "delapan";
    else if (c == 9) pembilang = "sembilan";
    else if (c == 10) pembilang = "sepuluh";
    else if (c == 11) pembilang = "sebelas";
    else if (c == 12) pembilang = "dua belas";
    else if (c == 13) pembilang = "tiga belas";
    else if (c == 14) pembilang = "empat belas";
    else if (c == 15) pembilang = "lima belas";
    else if (c == 16) pembilang = "enam belas";
    else if (c == 17) pembilang = "tujuh belas";
    else if (c == 18) pembilang = "delapan belas";
    else if (c == 19) pembilang = "sembilan belas";

    if (a + c == 0){pembilang = "Nol"; }

    cout << puluhan << pembilang << endl;

    return 0;
}
```

-Running



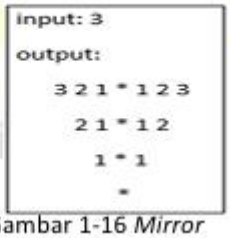




- Pembahasan
    - Inisiasi variable dan input user
    - Menentukan bilangan puluhan
    - Mengurangi sampai tersisa satuan
    - Menentukan bilangan satuan sampai 19
    - Cek apakah inputan 0
    - Tampilkan hasil

3. Buat Program:

Buatlah program yang dapat memberikan *input* dan *output* sbb.

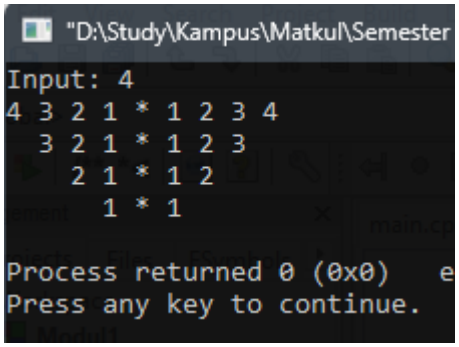


Gambar 1-16 *Mirror*

- Coding

```cpp
#include <iostream>
using namespace std;
int main() {
    int a, b, c;
    string hasil;
    cout << "Input: ";
    cin >> a;

    for (int i = a; i > 0; i--) {
        for (int j = 0; j < a - i; j++) {
            cout << "  ";
        }

        for (int j = i; j > 0; j--) {
            cout << j << " ";
        }

        cout << "* ";

        for (int j = 1; j <= i; j++) {
            cout << j << " ";
        }

        cout << endl;
    }

    return 0;
}
```

- Runing



- Pembahasan
    - Input a
    - Perulangan Iterasi dari a ke n
    - Perulangan untuk posisi spasi dari kiri
    - Tampilkan angka dari kiri yang terbesar
    - Berikan asterisk / bintang
    - Tampilkan angka dari kiri yang terbesar