

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)

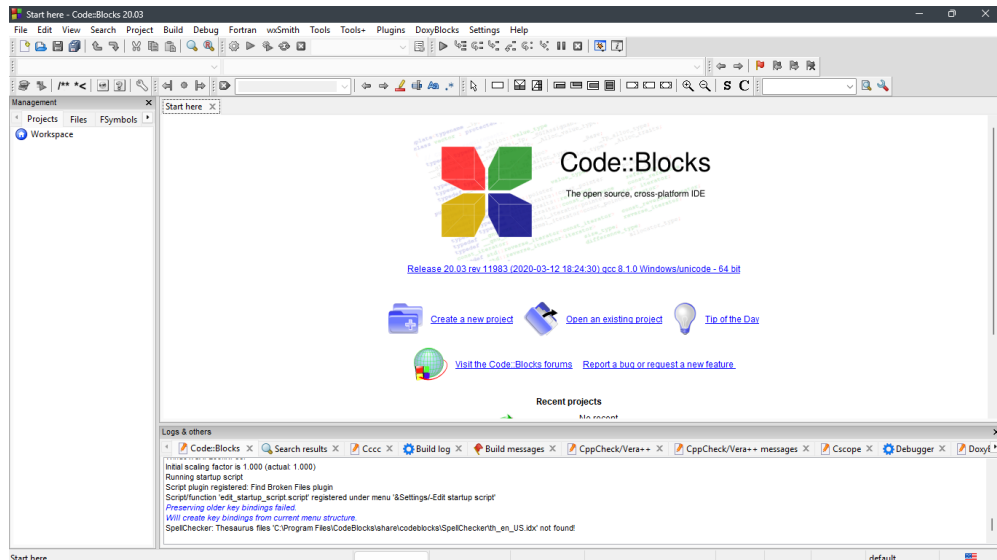
▪ Identitas Mahasiswa

Nama lengkap : Afad Fath Musyarof Halim
NIM : 2211104030
Program Studi : Software Engineering

▪ Hasil Praktikum

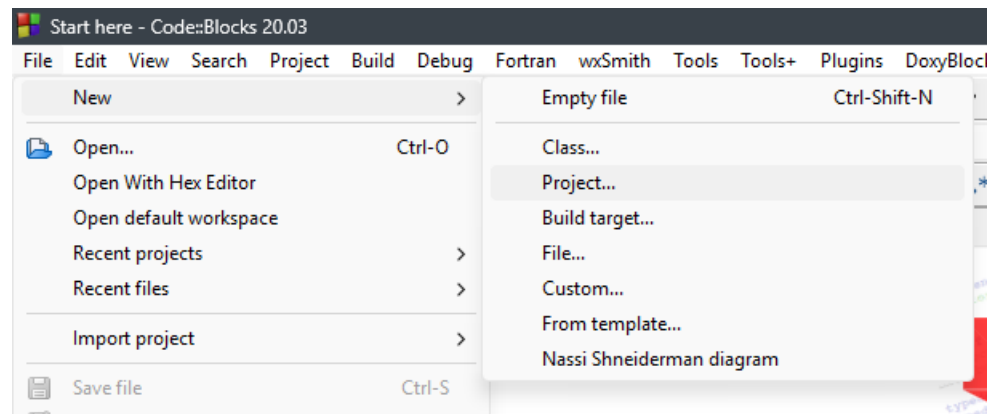
1.1 Code Blocks

1.1.1 Instalasi

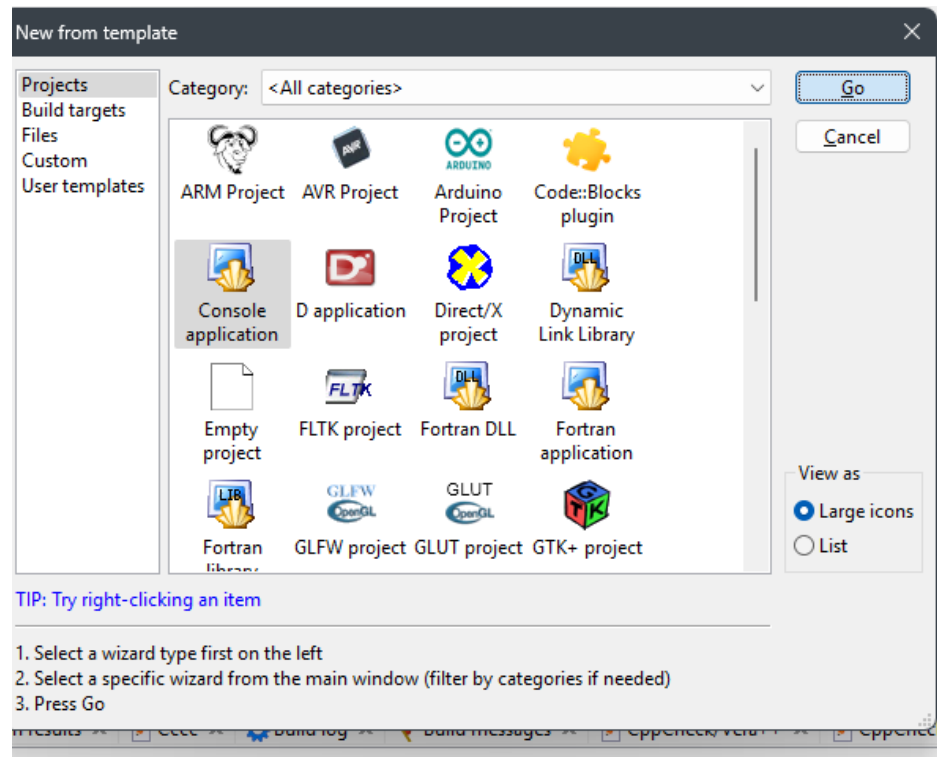


1.1.2 Membuat Project

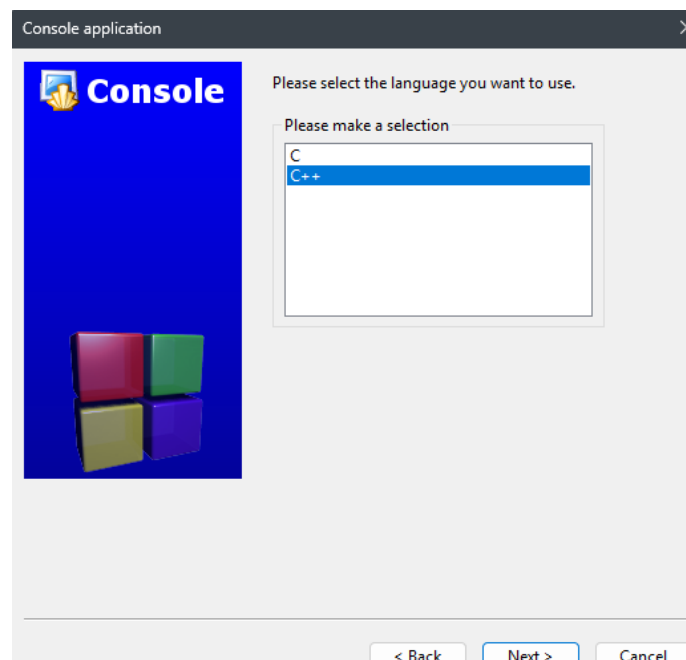
1.1.2.1 File > New > Project



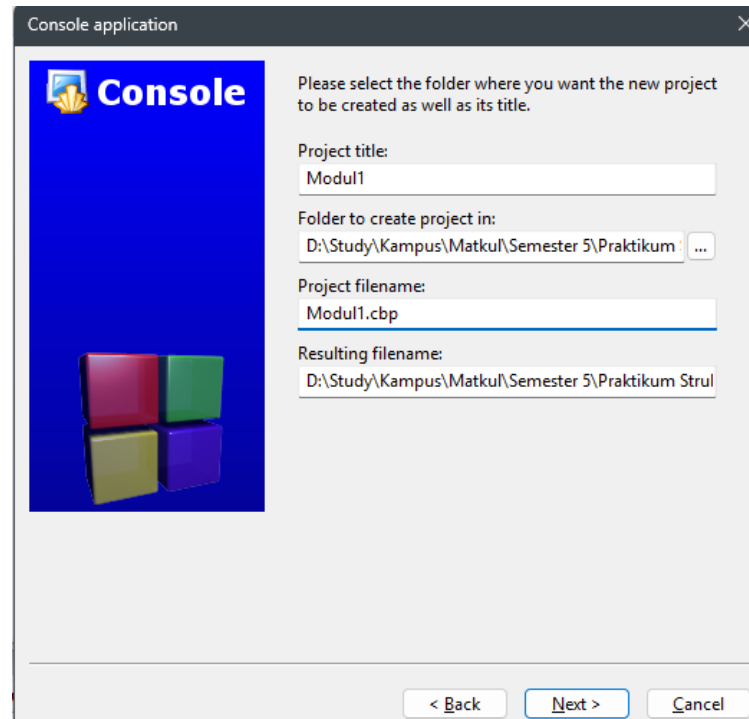
1.1.2.2 Console App > Go



1.1.2.3 Pilih C++



1.1.2.4 Isi text field

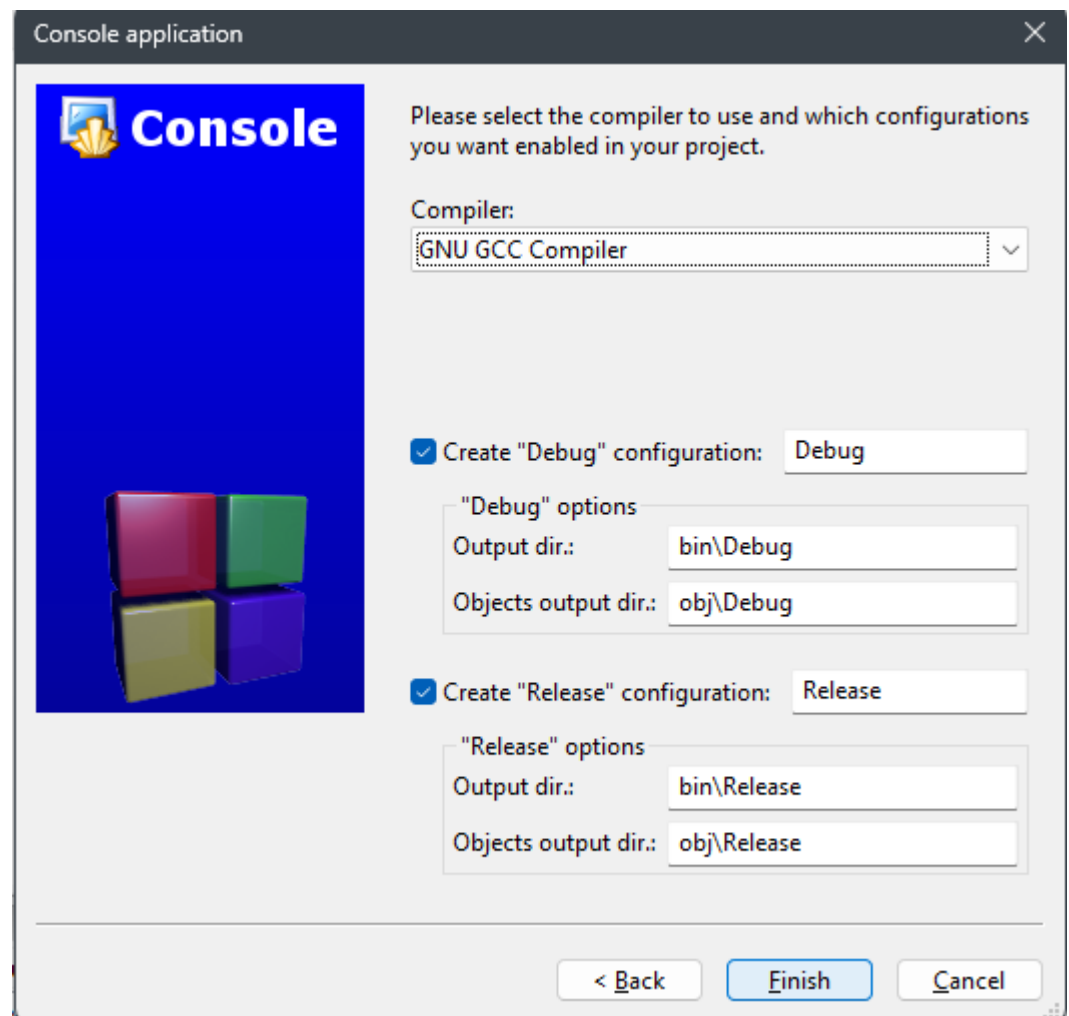


The screenshot shows the first step of the 'Console application' wizard. The window title is 'Console application'. On the left, there is a blue panel with the 'Console' logo and a 3D cube graphic. The main area contains the following fields:

- Project title:** Modul1
- Folder to create project in:** D:\Study\Kampus\Matkul\Semester 5\Praktikum ...
- Project filename:** Modul1.cbp
- Resulting filename:** D:\Study\Kampus\Matkul\Semester 5\Praktikum Strul

At the bottom, there are three buttons: '< Back', 'Next >', and 'Cancel'.

1.1.2.5 Kondisi Default

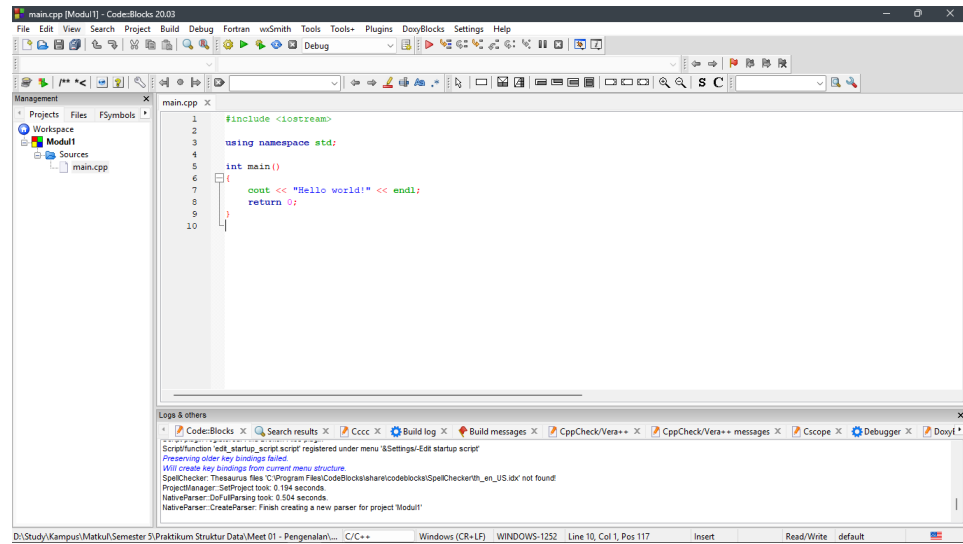


The screenshot shows the second step of the 'Console application' wizard. The window title is 'Console application'. The left panel is the same as in the previous step. The main area contains the following fields and options:

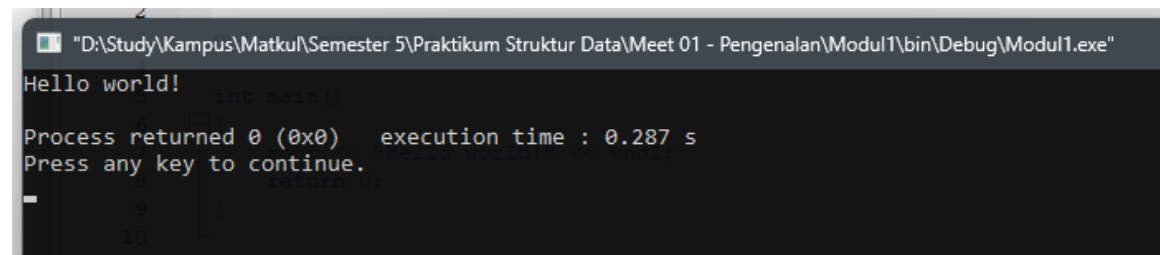
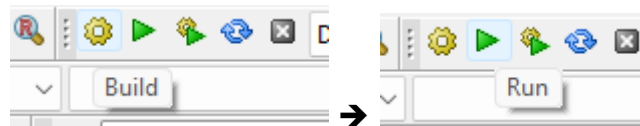
- Compiler:** GNU GCC Compiler (dropdown menu)
- ☒ **Create "Debug" configuration:** Debug
- "Debug" options:**
 - Output dir.:** bin\Debug
 - Objects output dir.:** obj\Debug
- ☒ **Create "Release" configuration:** Release
- "Release" options:**
 - Output dir.:** bin\Release
 - Objects output dir.:** obj\Release

At the bottom, there are three buttons: '< Back', 'Finish', and 'Cancel'.

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 disempurnakan yang berasal dari bahasa pemrograman C.

1.3 Struktur Dasar

1.3.1 Variable (berubah)

```
main.cpp X
1  #include <iostream>
2
3  using namespace std;
4
5  int main()
6  {
7      string x, z;
8      char a;
9      int64_t y;
10
11     x = "Penguin Duit ";
12     y = 1000000;
13     z = " Juta";
14     a = '!';
15
16     cout << x << y << z << a << endl;
17     return 0;
18 }
19
```

```
"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 X
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
12     cout << x << y << endl;
13     return 0;
14 }
15
```

```
"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\Matku\Semester 5\Praktikum Struktur Data\Meet 01 - Pengenalan"
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\Matku\Se...
Siapa saya?
afad



"D:\Study\Kampus\Matku\Semester 5\Praktikum Struktur Data\Meet 01 - Pengenalan"
Siapa saya?Afad
Nama saya adalah Afad
Process returned 0 (0x0) execution time : 17.507 s
Press any key to continue.

1.5 Operator

```
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      5      int main()
y = 2      2      {
            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;
        }
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)   execution time: 0.000 s
Press any key to continue.
```

```
Input nilai: 85
Predikat kamu: B
Process returned 0 (0x0)   execution time: 0.000 s
Press any key to continue.
```

```
Input nilai: 91
Predikat kamu: A
Process returned 0 (0x0)   execution time: 0.000 s
Press any key to continue.
```


1.7.2 Switch-Case

```
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;
}
```

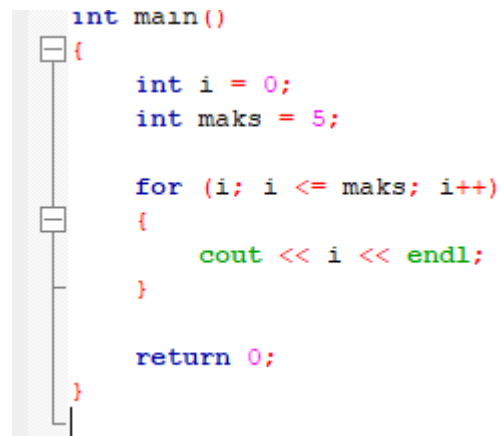
```
Input hari (Senin = 1 sampai Minggu = 7): 1
Upacara GAESS
Process returned 0 (0x0)   execution time : 2.2
Press any key to continue.
```

```
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



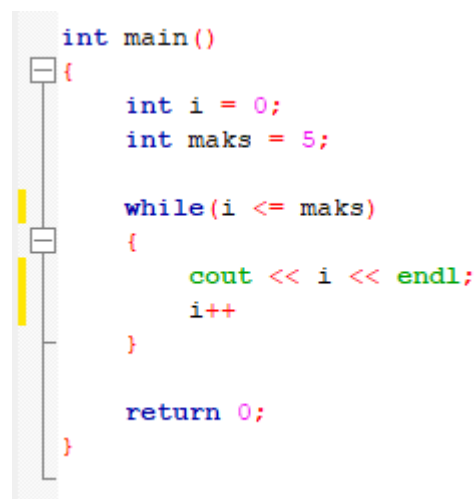
```
int main()
{
    int i = 0;
    int maks = 5;

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

    return 0;
}
```

The screenshot shows a C++ program using a for loop. The code is displayed in a text editor with a vertical scrollbar on the left. The code initializes a variable `i` to 0 and a constant `maks` to 5. A for loop is used to iterate from `i` to `maks`, incrementing `i` by 1 in each iteration. Inside the loop, the value of `i` is printed to the console followed by a newline character. The program returns 0 at the end.

1.8.1.2 Bentuk While



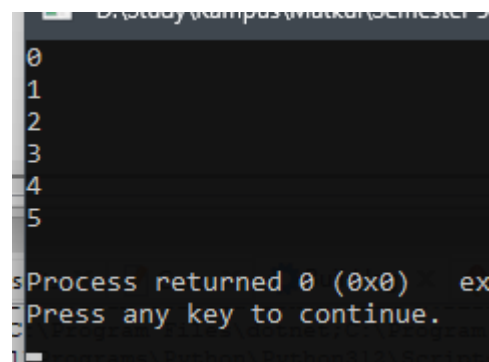
```
int main()
{
    int i = 0;
    int maks = 5;

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

    return 0;
}
```

The screenshot shows a C++ program using a while loop. The code is displayed in a text editor with a vertical scrollbar on the left. The code initializes a variable `i` to 0 and a constant `maks` to 5. A while loop is used to iterate as long as `i` is less than or equal to `maks`. Inside the loop, the value of `i` is printed to the console followed by a newline character, and then `i` is incremented by 1. The program returns 0 at the end.

1.8.1.3 Hasil



```
0
1
2
3
4
5
Process returned 0 (0x0)   ex
Press any key to continue.
```

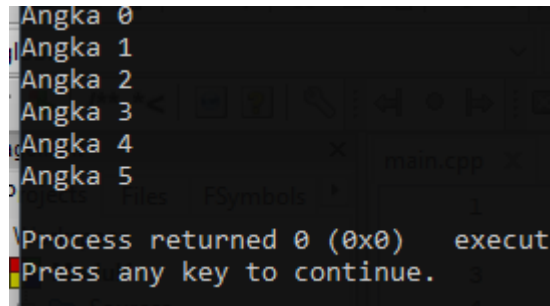
The screenshot shows the output of the program. It displays the numbers 0 through 5, each on a new line. Below the numbers, the text "Process returned 0 (0x0)" and "Press any key to continue." is visible, indicating the program has finished execution and is waiting for a key press.

1.8.2 Do-While

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

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

    return 0;
}
```



```
Angka 0
Angka 1
Angka 2
Angka 3
Angka 4
Angka 5
Process returned 0 (0x0)
Press any key to continue.
```

1.9 Struktur

Aturan dalam codingan (Type nama_variable, dll)

1.10 Blok kode

Tiap baris kode

▪ Latihan

1. Buat program:

- Menerima input 2 bilangan float
- Berikan hasil output penjumlahan, pengurangan, perkalian, dan pembagian dari 2 bilangan tersebut

-Coding

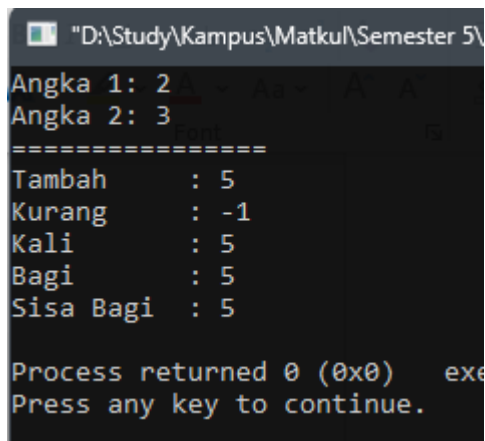
```
int main()
{
    float a, b;

    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         : 6
Bagi         : 1.5
Sisa Bagi    : 2

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

- Pembahasan

- Inisiasi 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

```
1  #include <iostream>
2  using namespace std;
3  int main() {
4      int a, c;
5      string pembilang = "", puluhan = "";
6      cout << "Angka: ";
7      cin >> a;
8
9      if (a >= 20 && a < 30) { puluhan = "Dua puluh "; }
10     else if (a >= 30 && a < 40) { puluhan = "Tiga puluh "; }
11     else if (a >= 40 && a < 50) { puluhan = "Empat puluh "; }
12     else if (a >= 50 && a < 60) { puluhan = "Lima puluh "; }
13     else if (a >= 60 && a < 70) { puluhan = "Enam puluh "; }
14     else if (a >= 70 && a < 80) { puluhan = "Tujuh puluh "; }
15     else if (a >= 80 && a < 90) { puluhan = "Delapan puluh "; }
16     else if (a >= 90 && a < 100) { puluhan = "Sembilan puluh "; }
17
18     c = a;
19
20     if (a > 19){ while(c > 9){ c = c - 10; } }
21
22     if (c == 1) pembilang = "satu";
23     else if (c == 2) pembilang = "dua";
24     else if (c == 3) pembilang = "tiga";
25     else if (c == 4) pembilang = "empat";
26     else if (c == 5) pembilang = "lima";
27     else if (c == 6) pembilang = "enam";
28     else if (c == 7) pembilang = "tujuh";
29     else if (c == 8) pembilang = "delapan";
30     else if (c == 9) pembilang = "sembilan";
31     else if (c == 10) pembilang = "sepuluh";
32     else if (c == 11) pembilang = "sebelas";
33     else if (c == 12) pembilang = "dua belas";
34     else if (c == 13) pembilang = "tiga belas";
35     else if (c == 14) pembilang = "empat belas";
36     else if (c == 15) pembilang = "lima belas";
37     else if (c == 16) pembilang = "enam belas";
38     else if (c == 17) pembilang = "tujuh belas";
39     else if (c == 18) pembilang = "delapan belas";
40     else if (c == 19) pembilang = "sembilan belas";
41
42     if (a + c == 0){pembilang = "Nol"; }
43
44     cout << puluhan << pembilang << endl;
45
46     return 0;
47 }
```

-Running

```
Angka: 90
Sembilan puluh

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

```
Angka: 0
No1

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

```
"D:\Study\Kampus\Matkul\Semester 5
Angka: 98
Sembilan puluh delapan

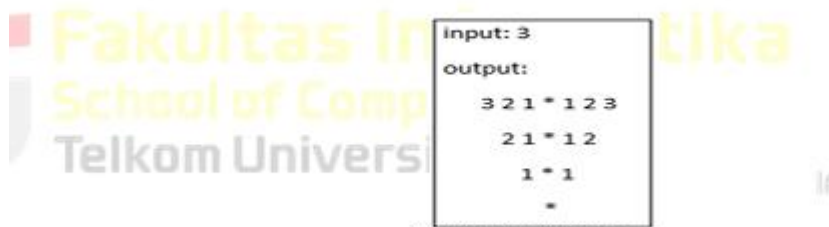
Process returned 0 (0x0)   ex
Press any key to continue.
```

- Pembahasan

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

3. Buat Program:

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

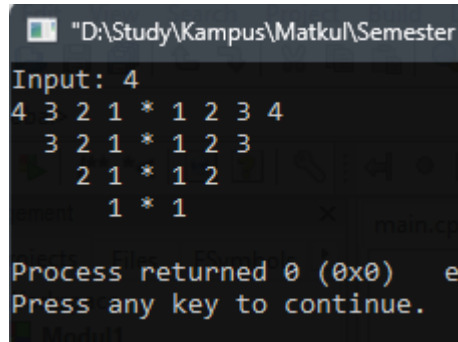


Gambar 1-16 Mirror

- Coding

```
1  #include <iostream>
2  using namespace std;
3  int main() {
4      int a, b, c;
5      string hasil;
6      cout << "Input: ";
7      cin >> a;
8
9      for (int i = a; i > 0; i--) {
10         for (int j = 0; j < a - i; j++) {
11             cout << " ";
12         }
13
14         for (int j = i; j > 0; j--) {
15             cout << j << " ";
16         }
17
18         cout << "* ";
19
20         for (int j = 1; j <= i; j++) {
21             cout << j << " ";
22         }
23
24         cout << endl;
25     }
26
27     return 0;
28 }
```

- Runing



```
"D:\Study\Kampus\Matkul\Semester
Input: 4
4 3 2 1 * 1 2 3 4
 3 2 1 * 1 2 3
  2 1 * 1 2
   1 * 1

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

- 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