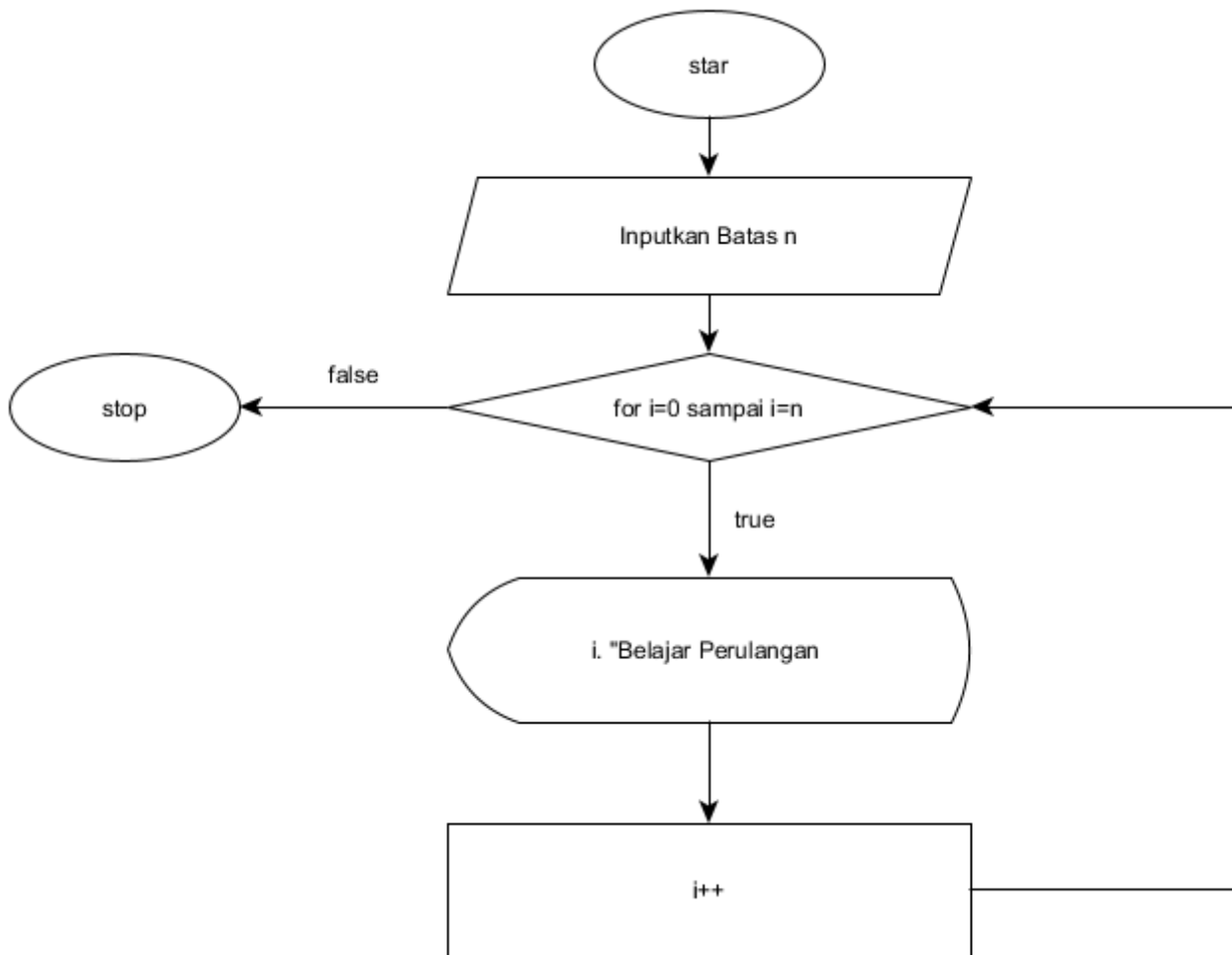
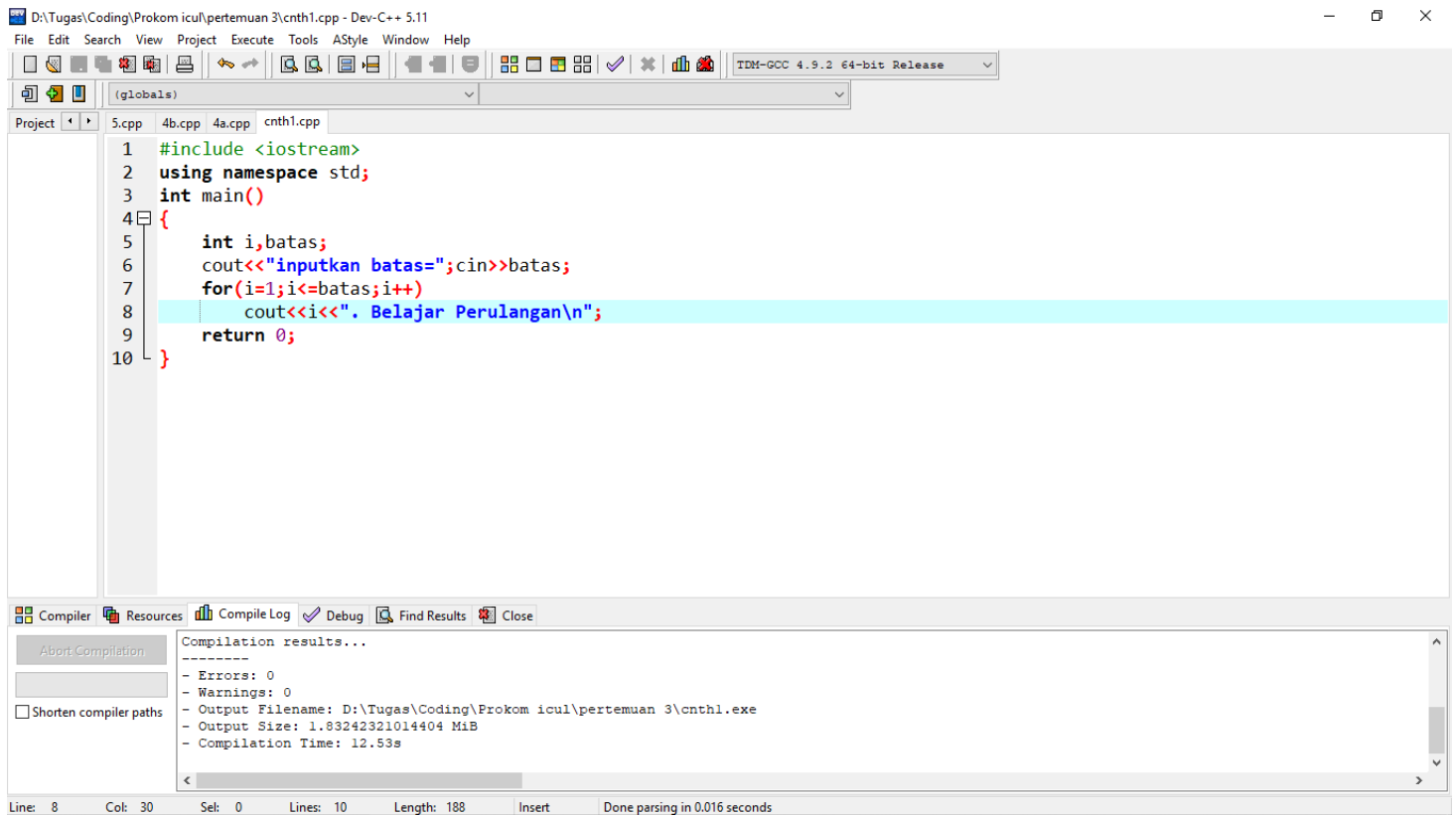


1. Program 1

a) Salinlah program pada contoh 1 dan jalankan!



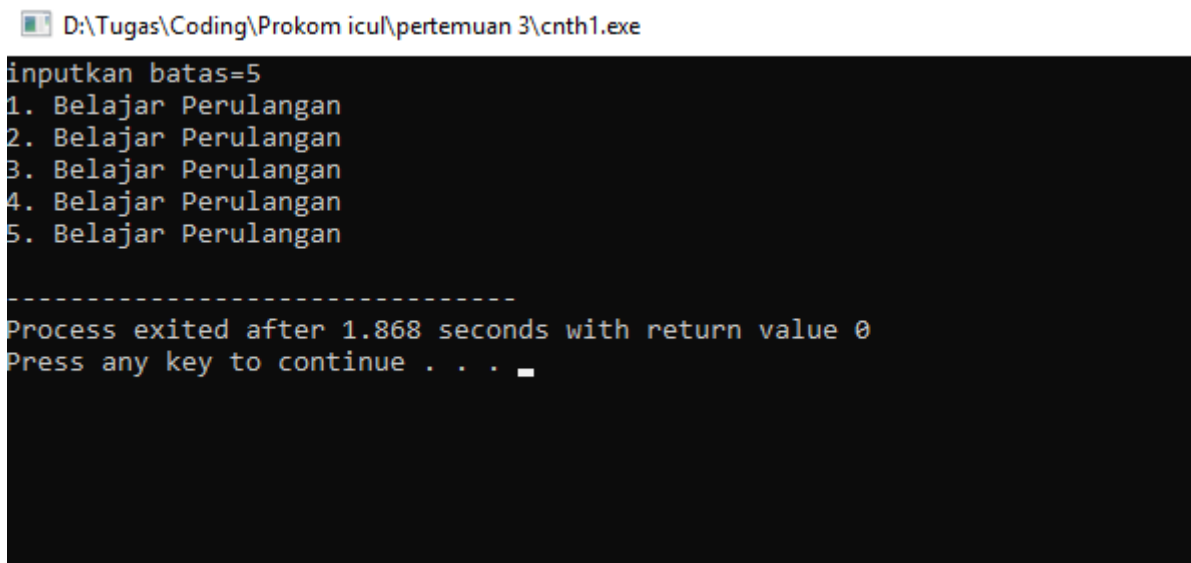


The screenshot shows the Dev-C++ IDE with the following details:

- File Explorer:** Shows the project structure with files 5.cpp, 4b.cpp, 4a.cpp, and cnth1.cpp.
- Source Code (cnth1.cpp):**

```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int i,batas;
6     cout<<"inputkan batas=";<<cin>>batas;
7     for(i=1;i<=batas;i++)
8         cout<<i<<" . Belajar Perulangan\n";
9     return 0;
10 }
```
- Compiler Output:**

```
Compilation results...
- Errors: 0
- Warnings: 0
- Output Filename: D:\Tugas\Coding\Prokom icul\pertemuan 3\cnth1.exe
- Output Size: 1.83242321014404 MiB
- Compilation Time: 12.53s
```

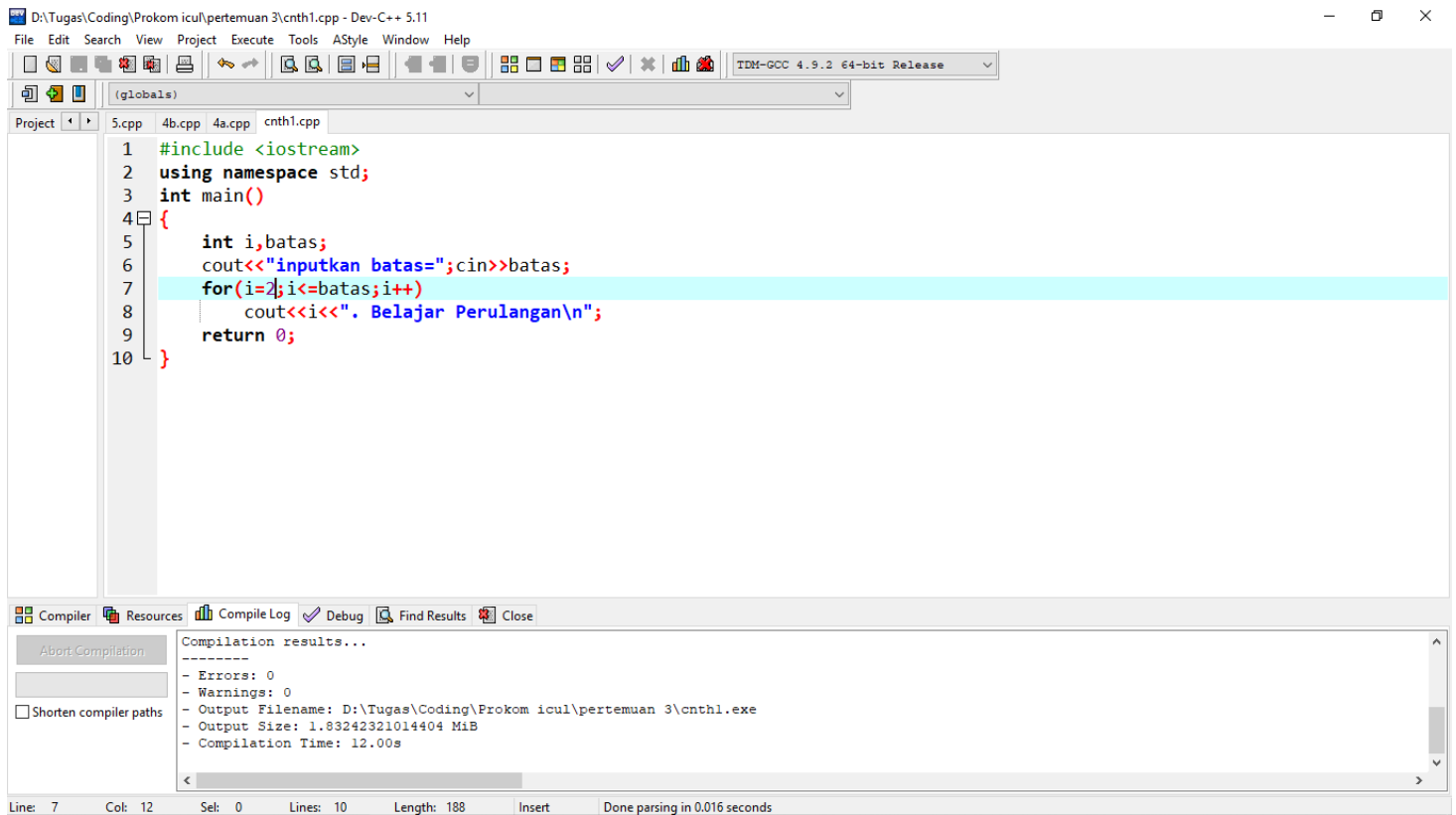


The screenshot shows the output of the program in a command prompt window:

```
D:\Tugas\Coding\Prokom icul\pertemuan 3\cnth1.exe
inputkan batas=5
1. Belajar Perulangan
2. Belajar Perulangan
3. Belajar Perulangan
4. Belajar Perulangan
5. Belajar Perulangan

-----
Process exited after 1.868 seconds with return value 0
Press any key to continue . . .
```

- b) Bagaimana output program 1 bila “ i=1 diganti dengan “i=2” ; “i++ diganti dengan “i—“,i+=1. Apa kesimpulan anda !



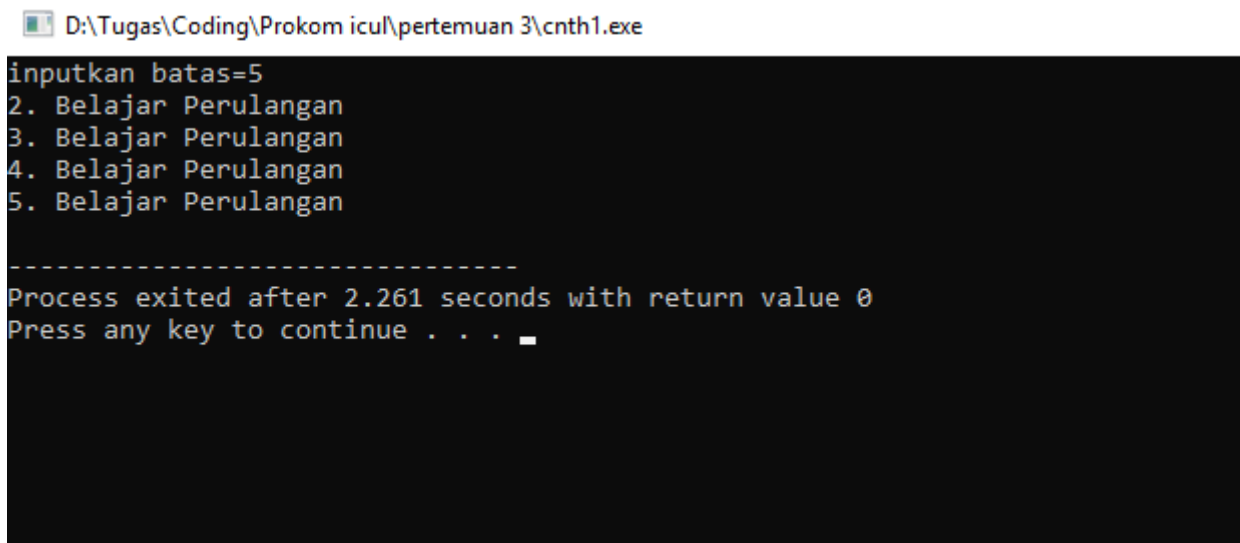
The screenshot shows the Dev-C++ IDE interface. The main window displays a C++ program named `cnth1.cpp` with the following code:

```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int i, batas;
6     cout<<"inputkan batas="; cin>>batas;
7     for(i=2; i<=batas; i++)
8         cout<<i<<" . Belajar Perulangan\n";
9     return 0;
10 }
```

The line `for(i=2; i<=batas; i++)` is highlighted in light blue. Below the code editor, the 'Compiler' window shows the 'Compilation results...' with the following output:

```
-----
- Errors: 0
- Warnings: 0
- Output Filename: D:\Tugas\Coding\Prokom icul\pertemuan 3\cnth1.exe
- Output Size: 1.83242321014404 MiB
- Compilation Time: 12.00s
```

The status bar at the bottom indicates 'Line: 7 Col: 12 Sel: 0 Lines: 10 Length: 188 Insert Done parsing in 0.016 seconds'.

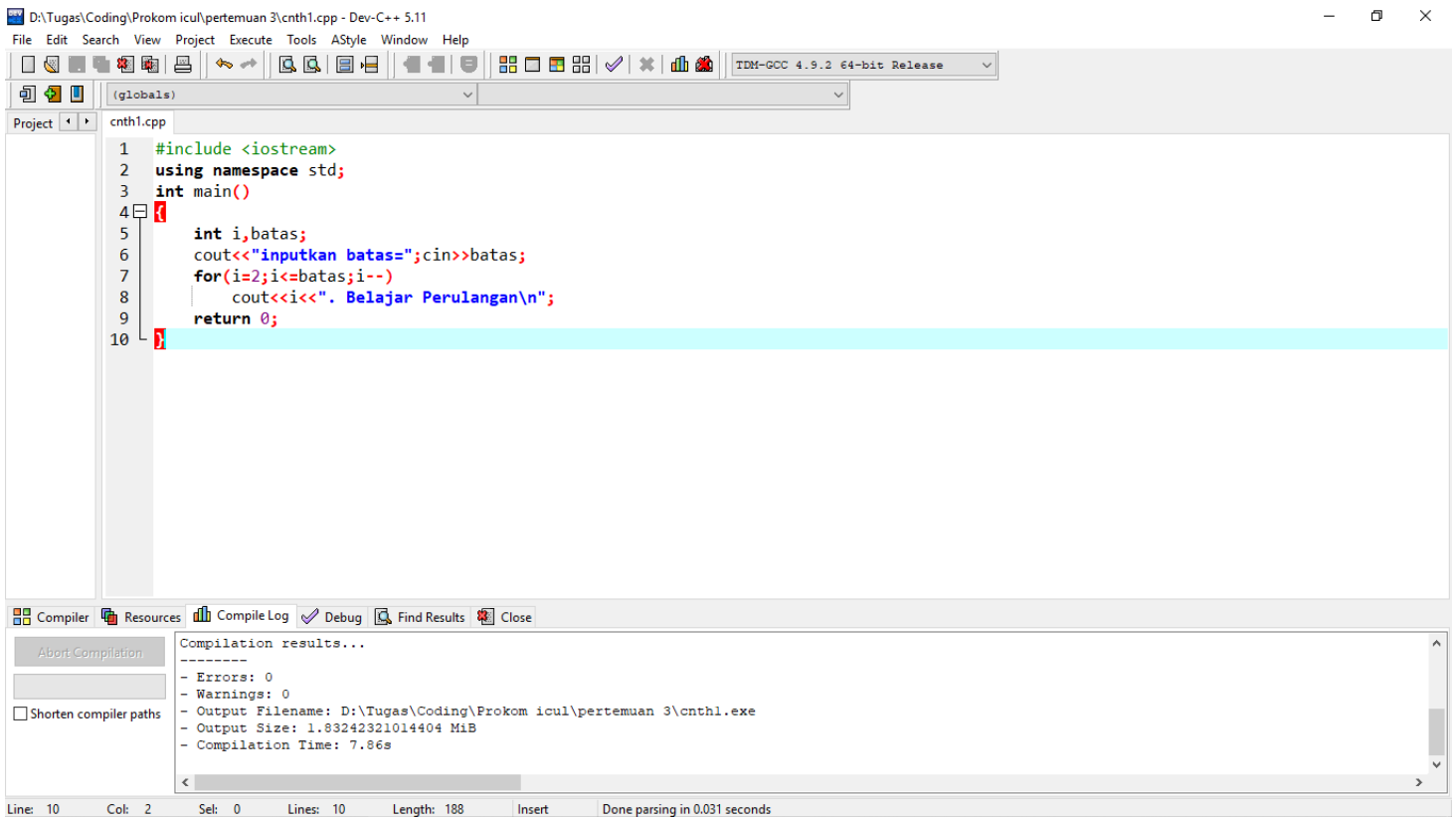


The screenshot shows the output of the program in a command prompt window. The title bar reads `D:\Tugas\Coding\Prokom icul\pertemuan 3\cnth1.exe`. The output is as follows:

```
inputkan batas=5
2. Belajar Perulangan
3. Belajar Perulangan
4. Belajar Perulangan
5. Belajar Perulangan

-----
Process exited after 2.261 seconds with return value 0
Press any key to continue . . .
```

Keterangan = jika nilai $i=1$ diganti menjadi $i=2$, maka proses looping akan dimulai dari angka 2 seperti pada screen yang ditampilkan

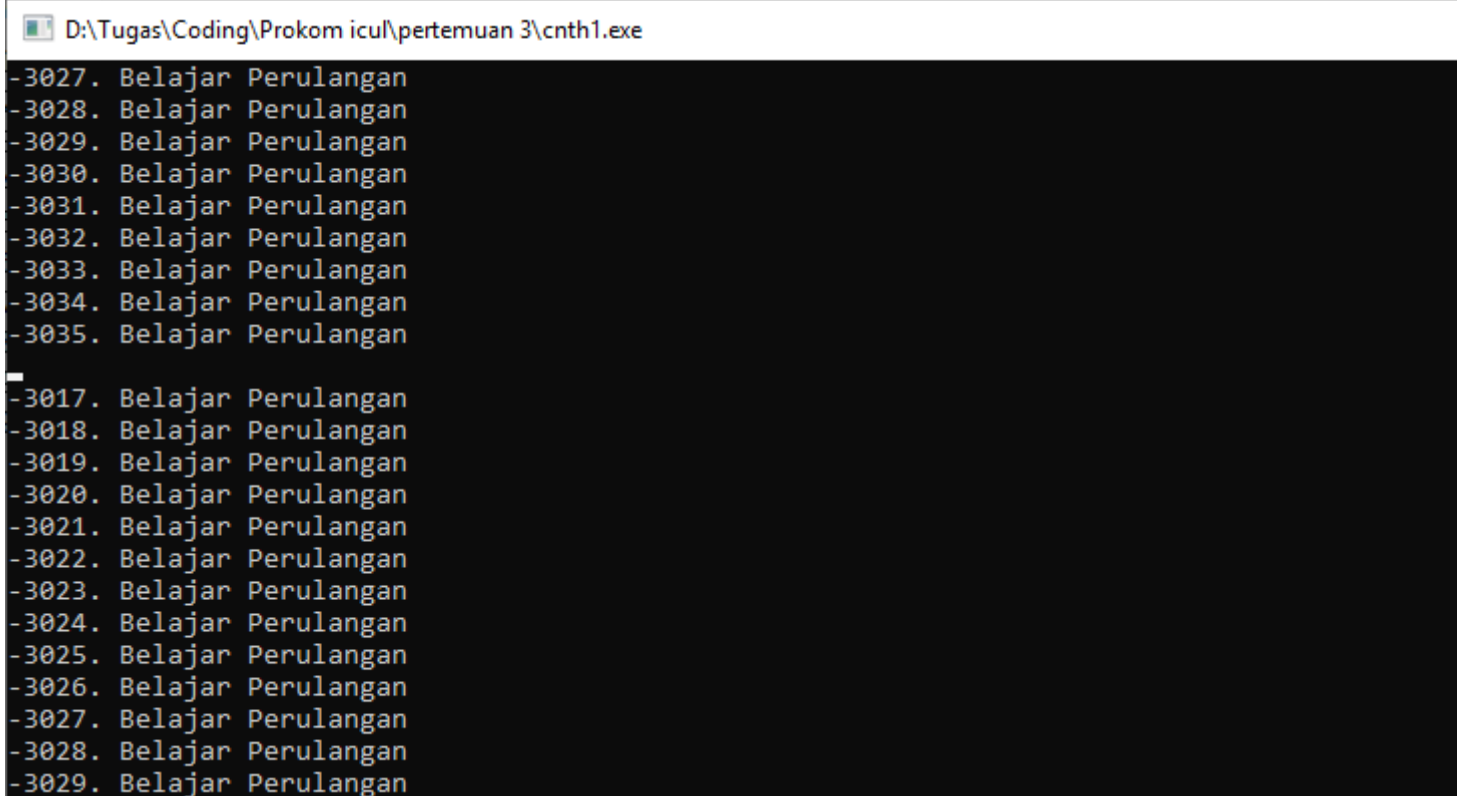


The screenshot shows the Dev-C++ IDE with the file `cnth1.cpp` open. The code is as follows:

```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int i, batas;
6     cout<<"inputkan batas=";>>cin>>batas;
7     for(i=2; i<=batas; i--)
8         cout<<i<<" . Belajar Perulangan\n";
9     return 0;
10 }
```

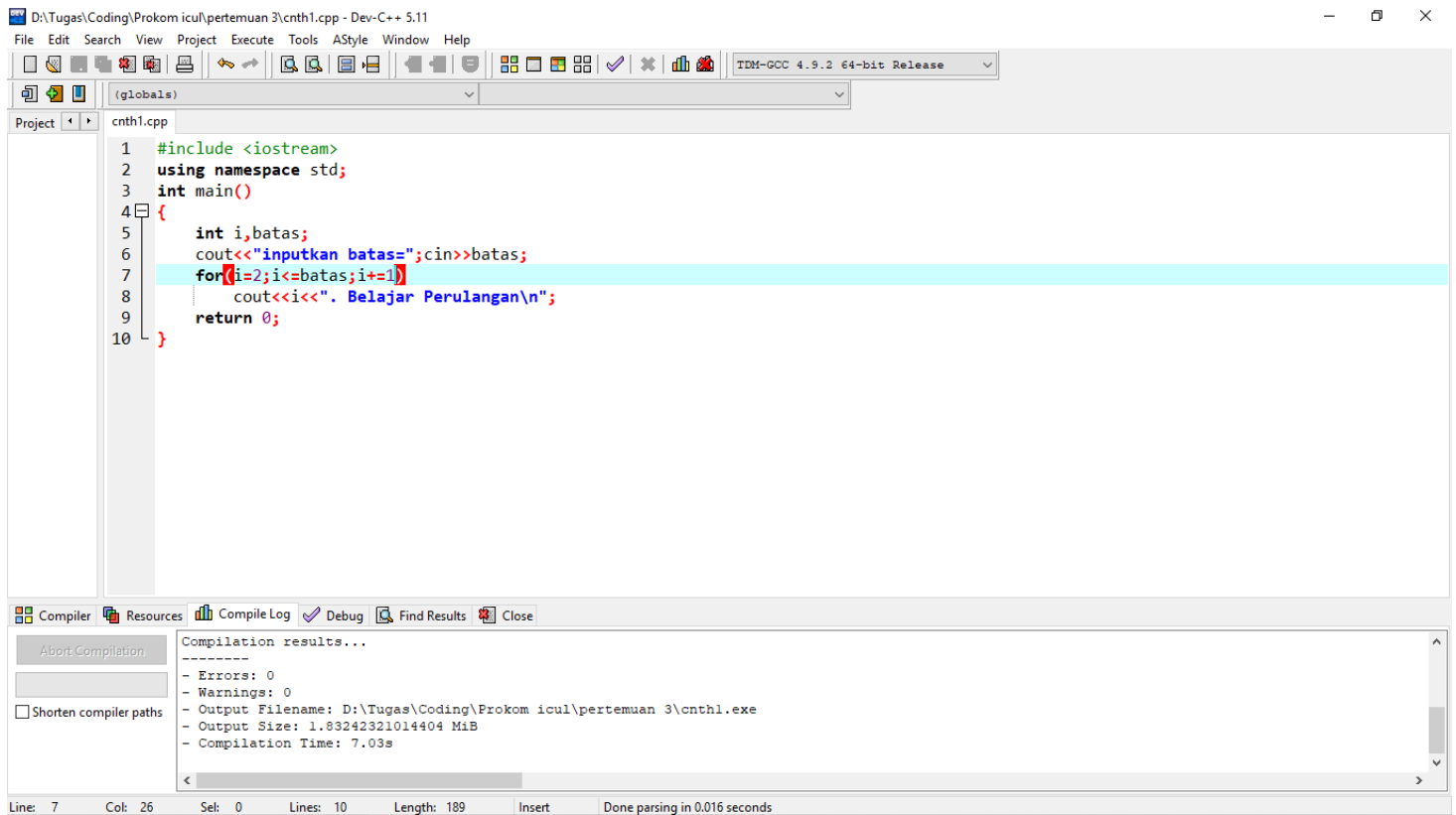
The compilation results window shows the following output:

```
Compilation results...
- Errors: 0
- Warnings: 0
- Output Filename: D:\Tugas\Coding\Prokom icul\pertemuan 3\cnth1.exe
- Output Size: 1.83242321014404 MiB
- Compilation Time: 7.86s
```



The screenshot shows the output of the program `D:\Tugas\Coding\Prokom icul\pertemuan 3\cnth1.exe`. The output consists of a series of lines, each starting with a number followed by the text "Belajar Perulangan". The numbers range from -3027 to -3029, and then from -3017 to -3029. This indicates that the loop in the code is not terminating as expected, likely due to the decrement operator being used in the loop condition.

Keterangan = ketika statement proses tidak sesuai dengan statmen batas, maka perulangan akan terjadi hingga batas angka dari type data yang digunakan, seperti permasalahan diatas. Hal ini karena oprator yang digunakan adalah decrement, yang artinya melawan statement 1 dan 2 dari syntax for yang digunakan.



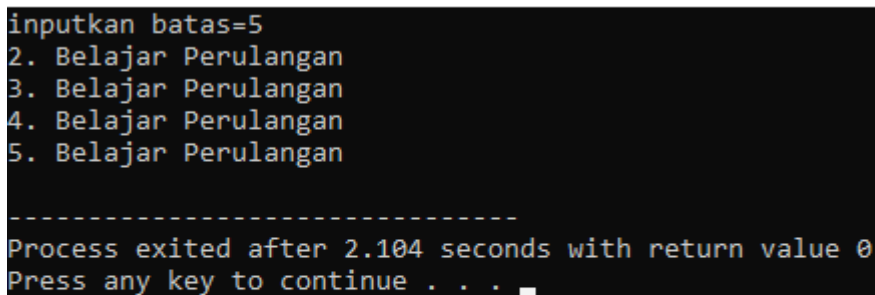
The screenshot shows the Dev-C++ IDE with the file `cnth1.cpp` open. The code is as follows:

```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int i, batas;
6     cout<<"inputkan batas=";<<cin>>batas;
7     for(i=2; i<=batas; i+=1)
8         cout<<i<<" . Belajar Perulangan\n";
9     return 0;
10 }
```

The compilation results window shows the following output:

```
Compilation results...
- Errors: 0
- Warnings: 0
- Output Filename: D:\Tugas\Coding\Prokom icul\pertemuan 3\cnth1.exe
- Output Size: 1.83242321014404 MiB
- Compilation Time: 7.03s
```

D:\Tugas\Coding\Prokom icul\pertemuan 3\cnth1.exe



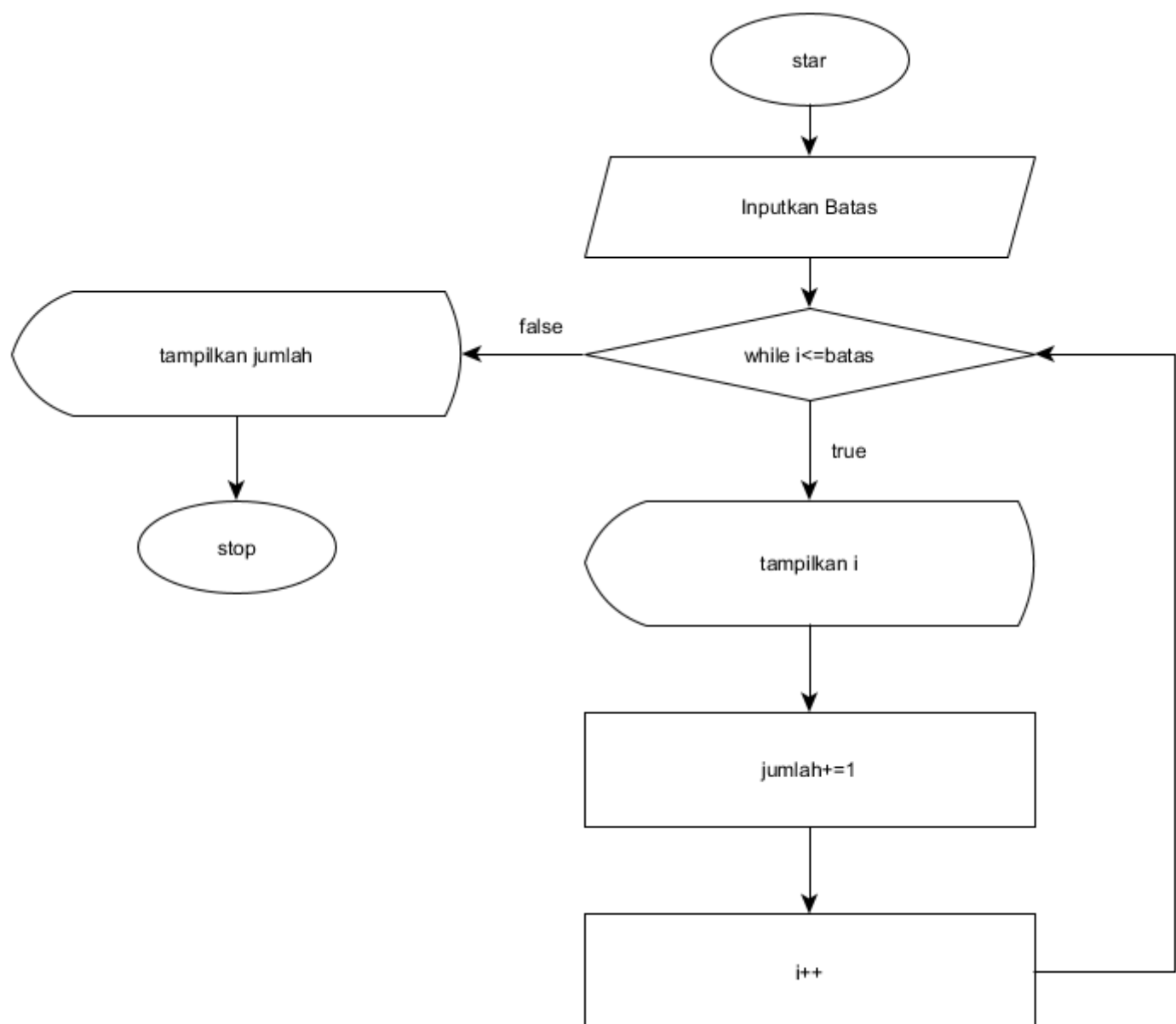
```
inputkan batas=5
2. Belajar Perulangan
3. Belajar Perulangan
4. Belajar Perulangan
5. Belajar Perulangan

-----
Process exited after 2.104 seconds with return value 0
Press any key to continue . . .
```

Keterangan = penggunaan operator `i+=1` menghasilkan proses yang sama dengan `i++` sehingga system berjalan sebagaimana mestinya.

2. Program 2

- Salinlah program pada contoh 2 dan jalankan!

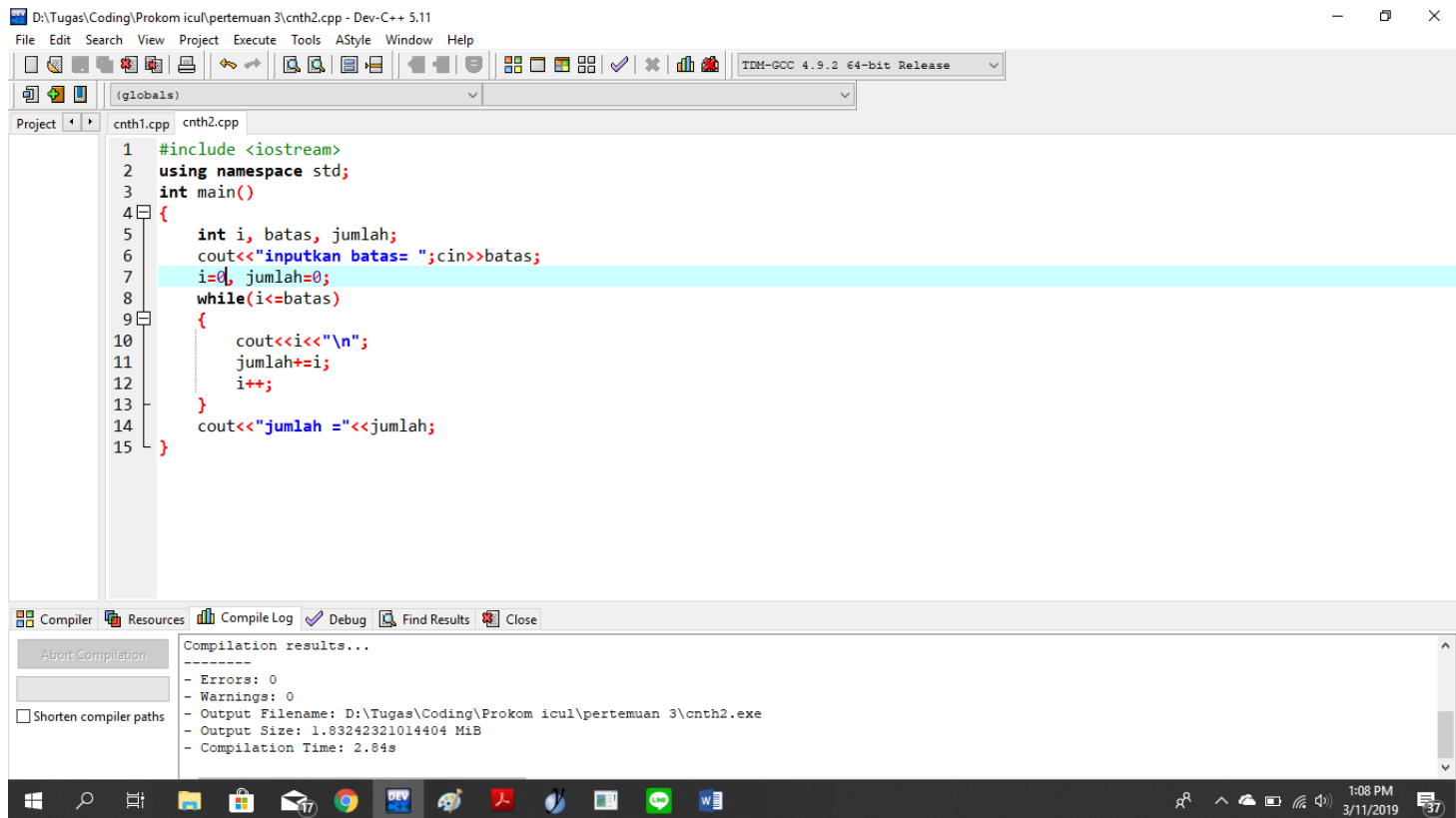


```
D:\Tugas\Coding\Prokom icul\pertemuan 3\cnth2.cpp - Dev-C++ 5.11
File Edit Search View Project Execute Tools AStyle Window Help
(globals)
Project cnth1.cpp cnth2.cpp
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int i, batas, jumlah;
6     cout<<"inputkan batas= ";cin>>batas;
7     i=1, jumlah=0;
8     while(i<=batas)
9     {
10         cout<<i<<"\n";
11         jumlah+=i;
12         i++;
13     }
14     cout<<"jumlah ="<<jumlah;
15 }

Compiler Resources Compile Log Debug Find Results Close
Compilation results...
- Errors: 0
- Warnings: 0
- Output Filename: D:\Tugas\Coding\Prokom icul\pertemuan 3\cnth2.exe
- Output Size: 1.83242321014404 MiB
- Compilation Time: 12.16s

D:\Tugas\Coding\Prokom icul\pertemuan 3\cnth2.exe
inputkan batas= 5
1
2
3
4
5
jumlah =15
-----
Process exited after 1.039 seconds with return value 0
Press any key to continue . . .
```

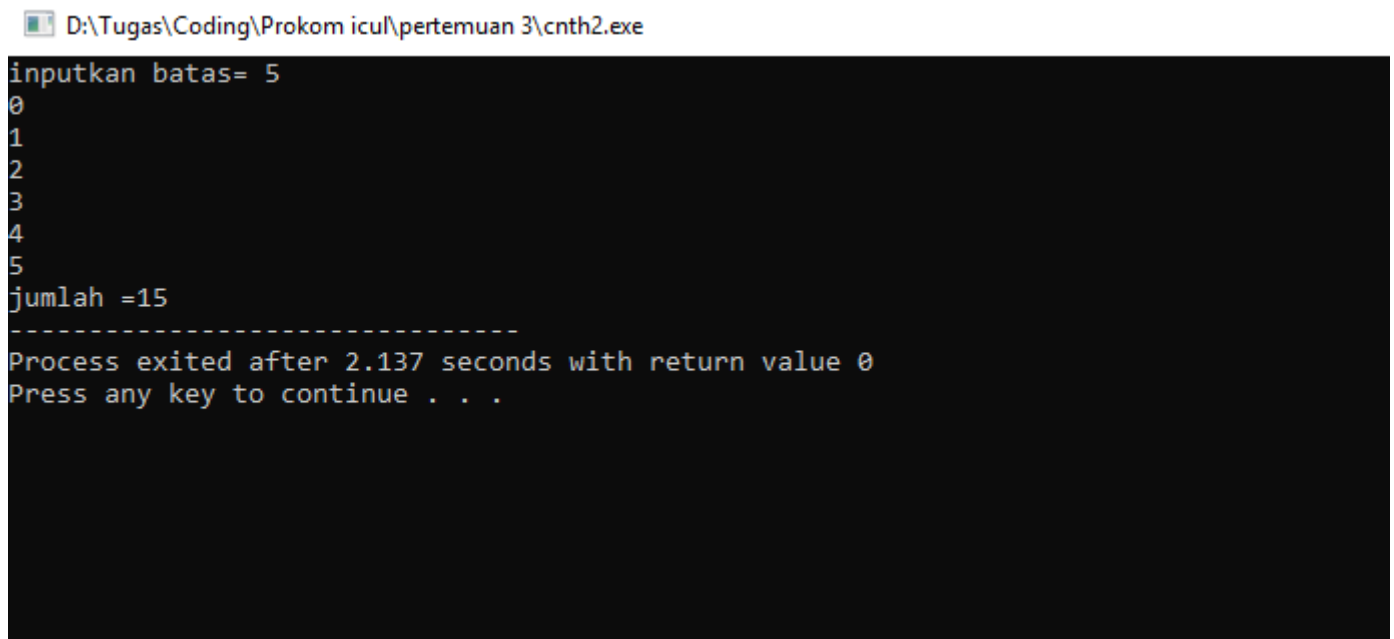
- b) Bagaimana output program contoh 2 bila “i=1 diganti dengan “i=0”; jumlah=0 diganti dengan “jumlah=1”. Pelajari dan apa kesimpulan anda?



```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int i, batas, jumlah;
6     cout<<"inputkan batas= ";cin>>batas;
7     i=0, jumlah=0;
8     while(i<=batas)
9     {
10         cout<<i<<"\n";
11         jumlah+=i;
12         i++;
13     }
14     cout<<"jumlah ="<<jumlah;
15 }
```

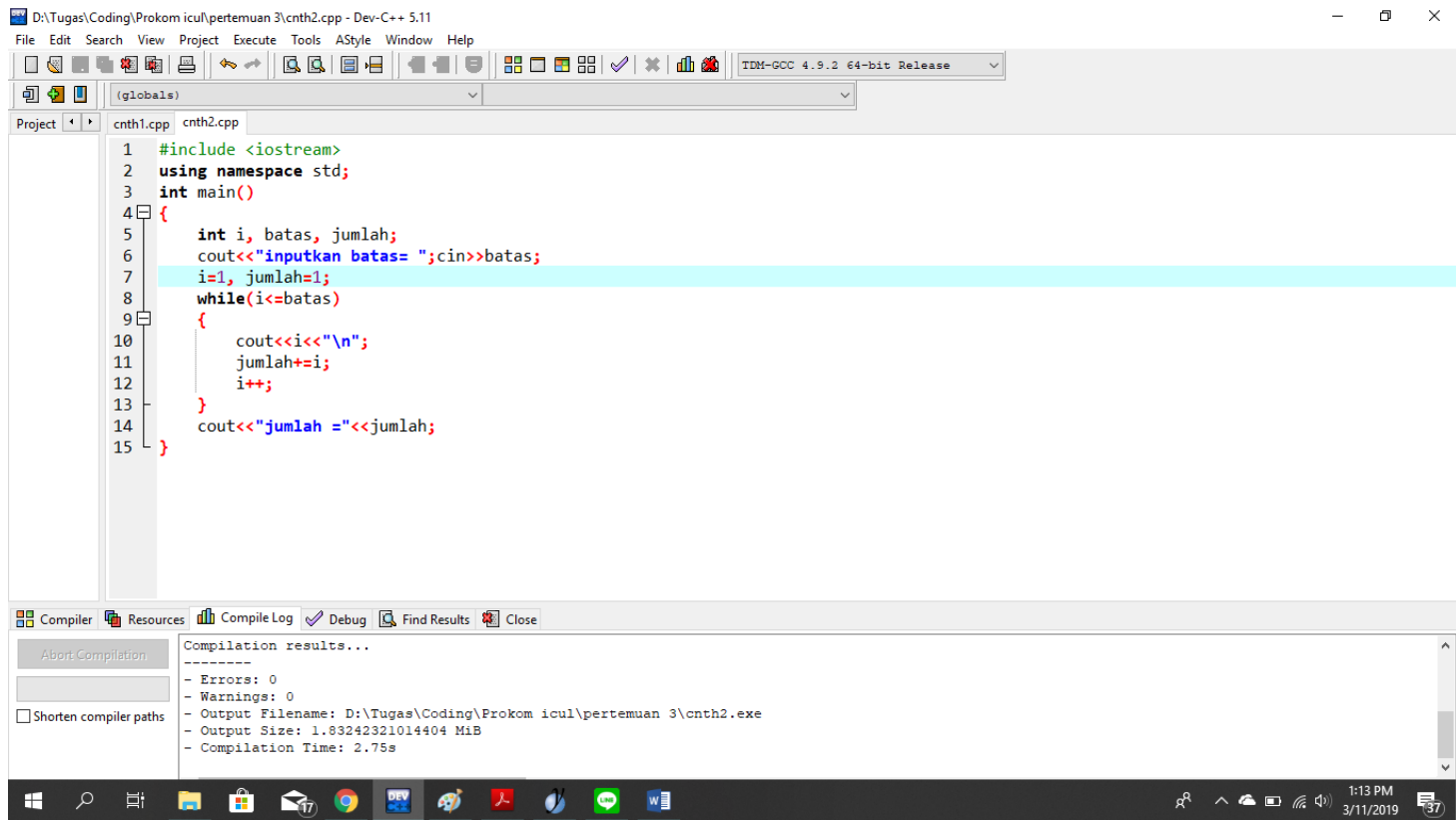
Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: D:\Tugas\Coding\Prokom icul\pertemuan 3\cnth2.exe
- Output Size: 1.83242321014404 MiB
- Compilation Time: 2.84s



```
D:\Tugas\Coding\Prokom icul\pertemuan 3\cnth2.exe
inputkan batas= 5
0
1
2
3
4
5
jumlah =15
-----
Process exited after 2.137 seconds with return value 0
Press any key to continue . . .
```

Keterangan = ketika i dirubah menjadi sama dengan 0, maka perulangan program dimulai dari angka 0 dan kemudian berlanjut hingga nilai batas.

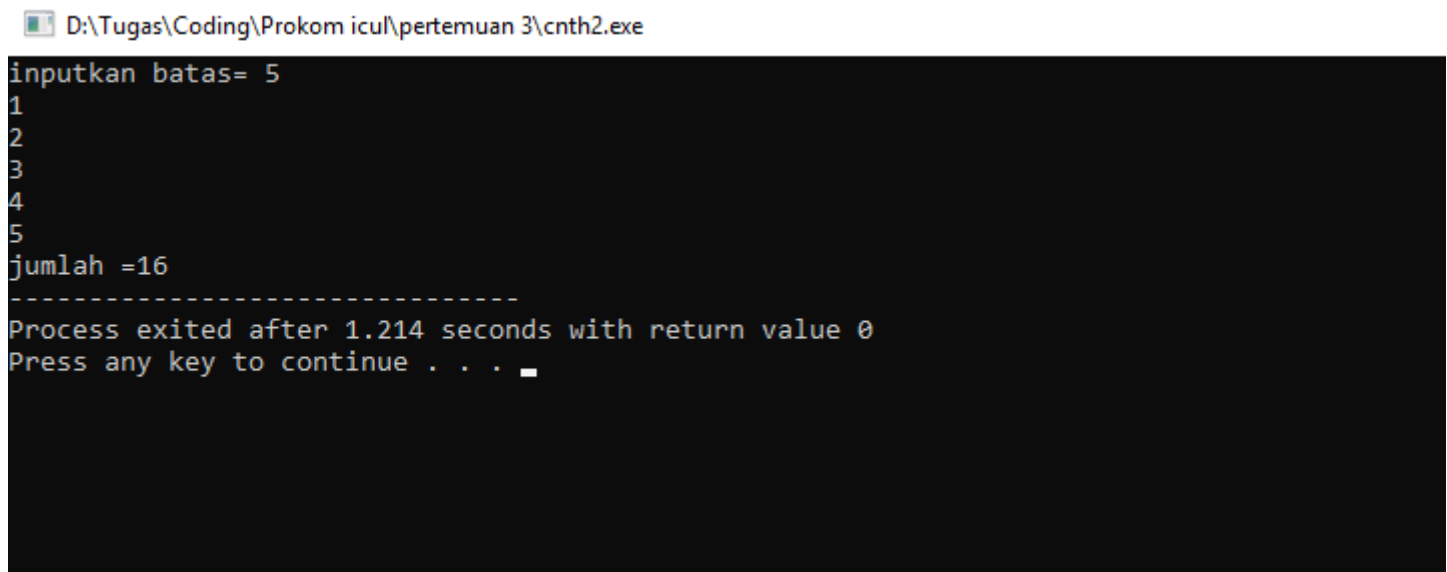


The screenshot shows the Dev-C++ IDE with the file `cnth2.cpp` open. The code is as follows:

```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int i, batas, jumlah;
6     cout<<"inputkan batas= ";cin>>batas;
7     i=1, jumlah=1;
8     while(i<=batas)
9     {
10         cout<<i<<"\n";
11         jumlah+=i;
12         i++;
13     }
14     cout<<"jumlah ="<<jumlah;
15 }
```

Below the code editor, the 'Compilation results...' window is visible, showing the following output:

```
-----
- Errors: 0
- Warnings: 0
- Output Filename: D:\Tugas\Coding\Prokom icul\pertemuan 3\cnth2.exe
- Output Size: 1.83242321014404 MiB
- Compilation Time: 2.75s
```



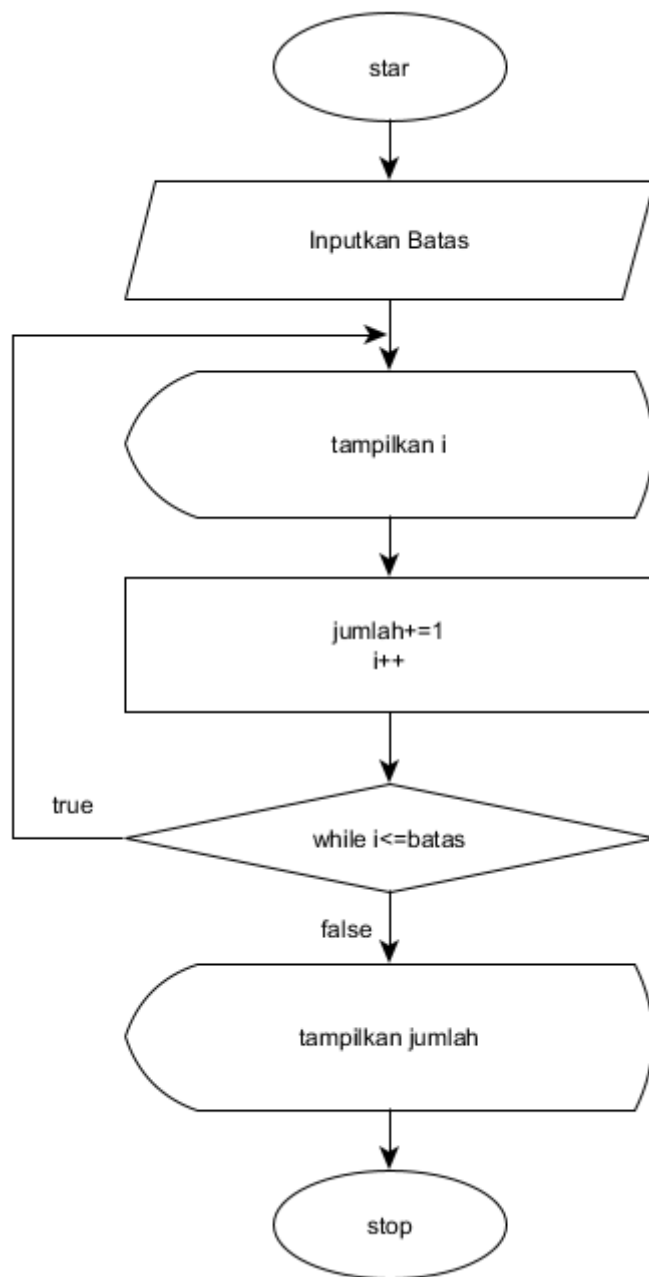
The screenshot shows the execution of the program `D:\Tugas\Coding\Prokom icul\pertemuan 3\cnth2.exe`. The output is as follows:

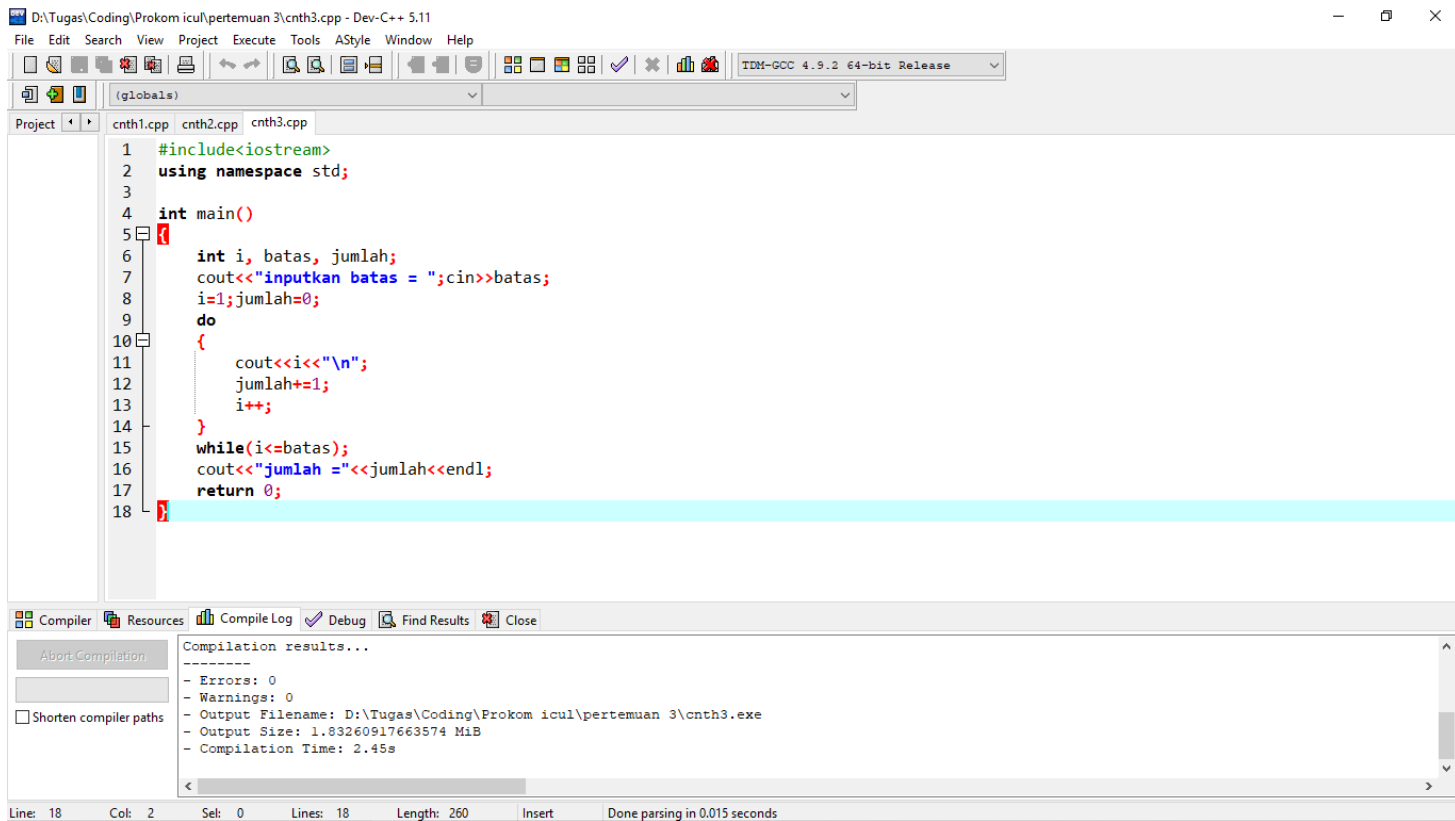
```
inputkan batas= 5
1
2
3
4
5
jumlah =16
-----
Process exited after 1.214 seconds with return value 0
Press any key to continue . . .
```

Keterangan = jika inisiasi jumlah dirubah menjadi =1, maka nilai perulangan penjumlahan pada program akan bernilai lebih 1 dari nilai yang seharusnya.

3. Program 3

- Salinlah program pada contoh 3 dan jalankan !



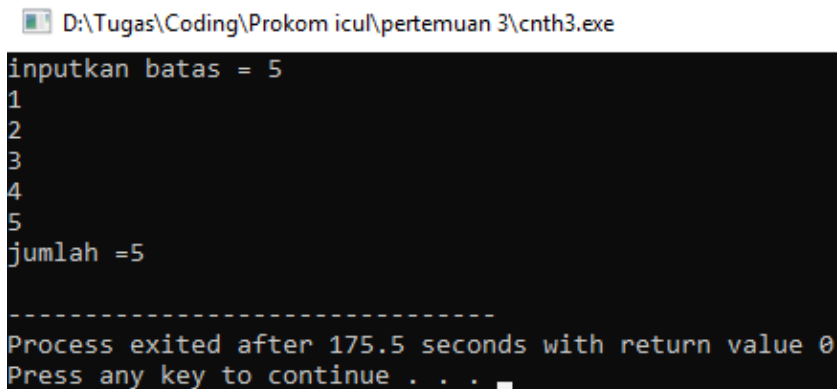


The screenshot shows the Dev-C++ IDE with the file `cnth3.cpp` open. The code is as follows:

```
1 #include<iostream>
2 using namespace std;
3
4 int main()
5 {
6     int i, batas, jumlah;
7     cout<<"inputkan batas = ";cin>>batas;
8     i=1;jumlah=0;
9     do
10    {
11        cout<<i<<"\n";
12        jumlah+=1;
13        i++;
14    }
15    while(i<=batas);
16    cout<<"jumlah ="<<jumlah<<endl;
17    return 0;
18 }
```

Below the code editor, the 'Compiler' window shows the following compilation results:

```
Compilation results...
- Errors: 0
- Warnings: 0
- Output Filename: D:\Tugas\Coding\Prokom icul\pertemuan 3\cnth3.exe
- Output Size: 1.83260917663574 MiB
- Compilation Time: 2.45s
```



The screenshot shows the command prompt window with the following output:

```
D:\Tugas\Coding\Prokom icul\pertemuan 3\cnth3.exe
inputkan batas = 5
1
2
3
4
5
jumlah =5
-----
Process exited after 175.5 seconds with return value 0
Press any key to continue . . .
```

b) Pelajari dan apa perbedaan antara program contoh 2 dan contoh 3? jelaskan!

D:\Tugas\Coding\Prokom icul\pertemuan 3\cnth2.exe

```
inputkan batas= 5
1
2
3
4
5
jumlah =16
-----
Process exited after 1.214 seconds with return value 0
Press any key to continue . . .
```

D:\Tugas\Coding\Prokom icul\pertemuan 3\cnth3.exe

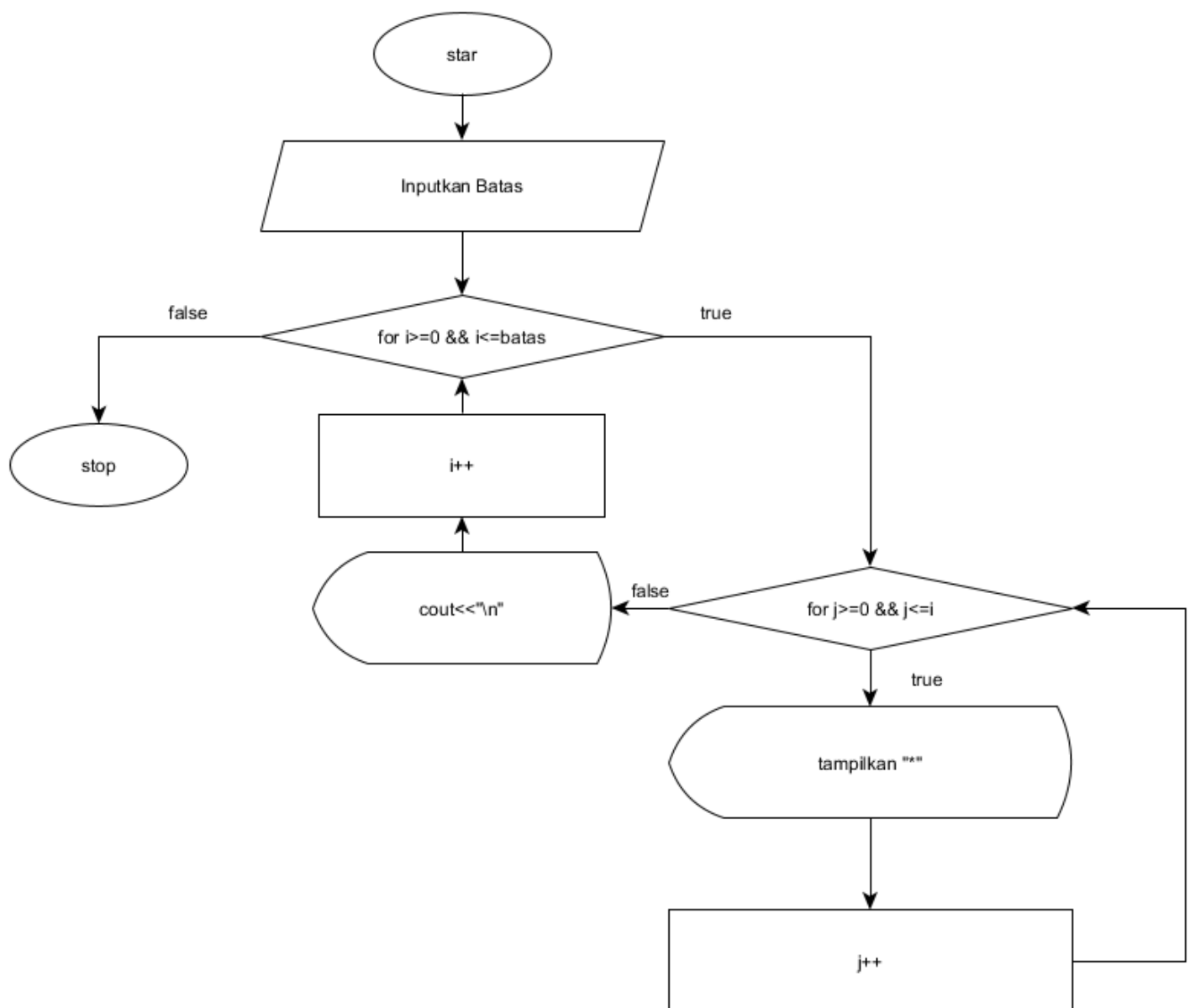
```
inputkan batas = 5
1
2
3
4
5
jumlah =5
-----
Process exited after 175.5 seconds with return value 0
Press any key to continue . . .
```

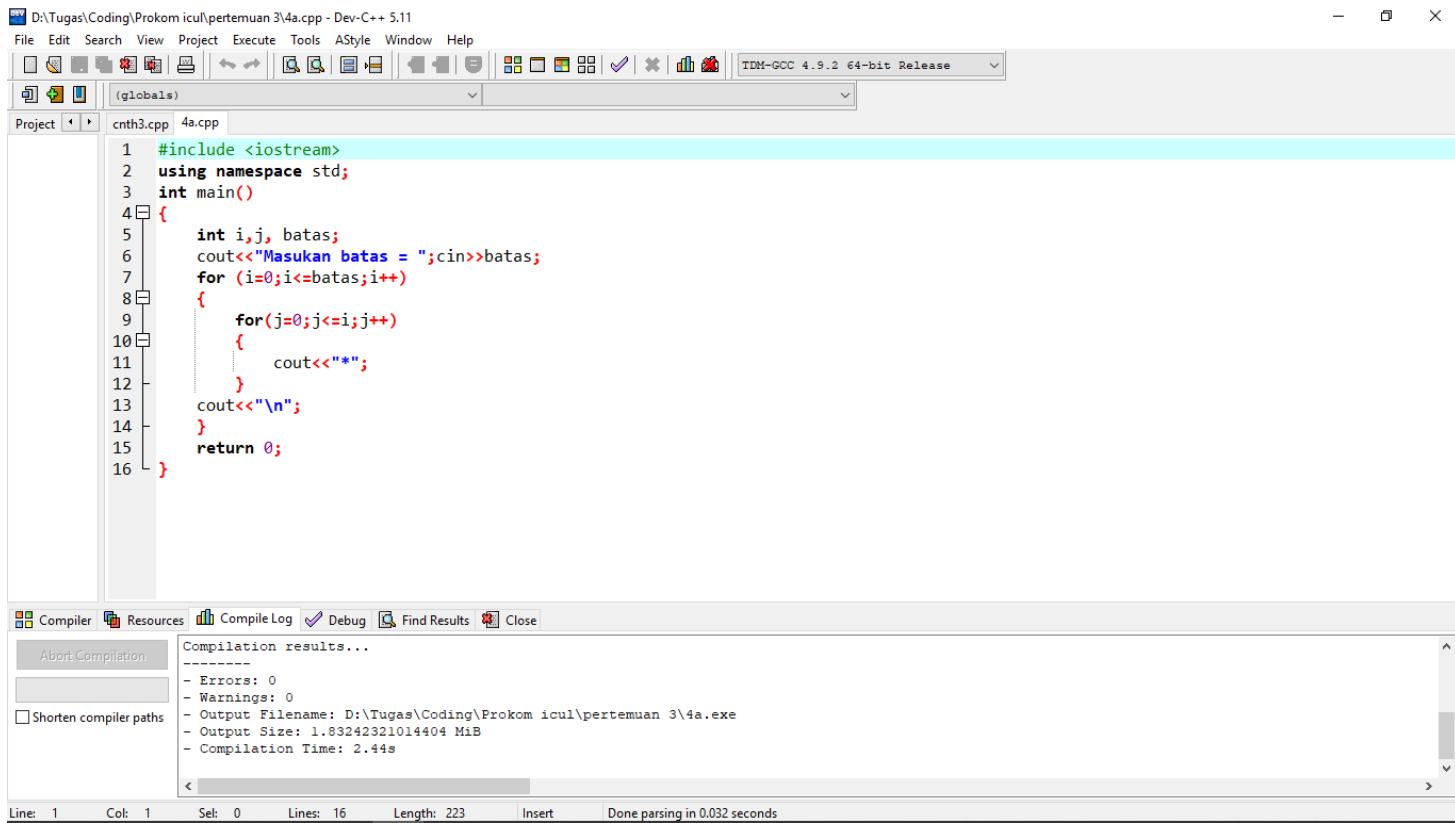
Keterangan = Perbedaan dapat dilihat dari hasil jumlah anatra program 2 dan program 3. Pada program 2, operator masuk kedalam fungsi while, sehingga nilai jumlah akan di update berdasarkan nilai i yang dihasilkan oleh perulangan while tersebut. Sedangkan pada program 3, jumlah yang ditampilkan adalah jumlah terakhir dari i karena jumlah tidak di update dari perulangan while, melainkan masuk kedalam statement do, sehingga nilai awalan variable jumlah selalu 0 tiap terjadi perulangan, dan akan bernilai sama dengan batas perulangan tersebut.

4. Buat program untuk menampilkan pola gambar berikut :

a) *

**





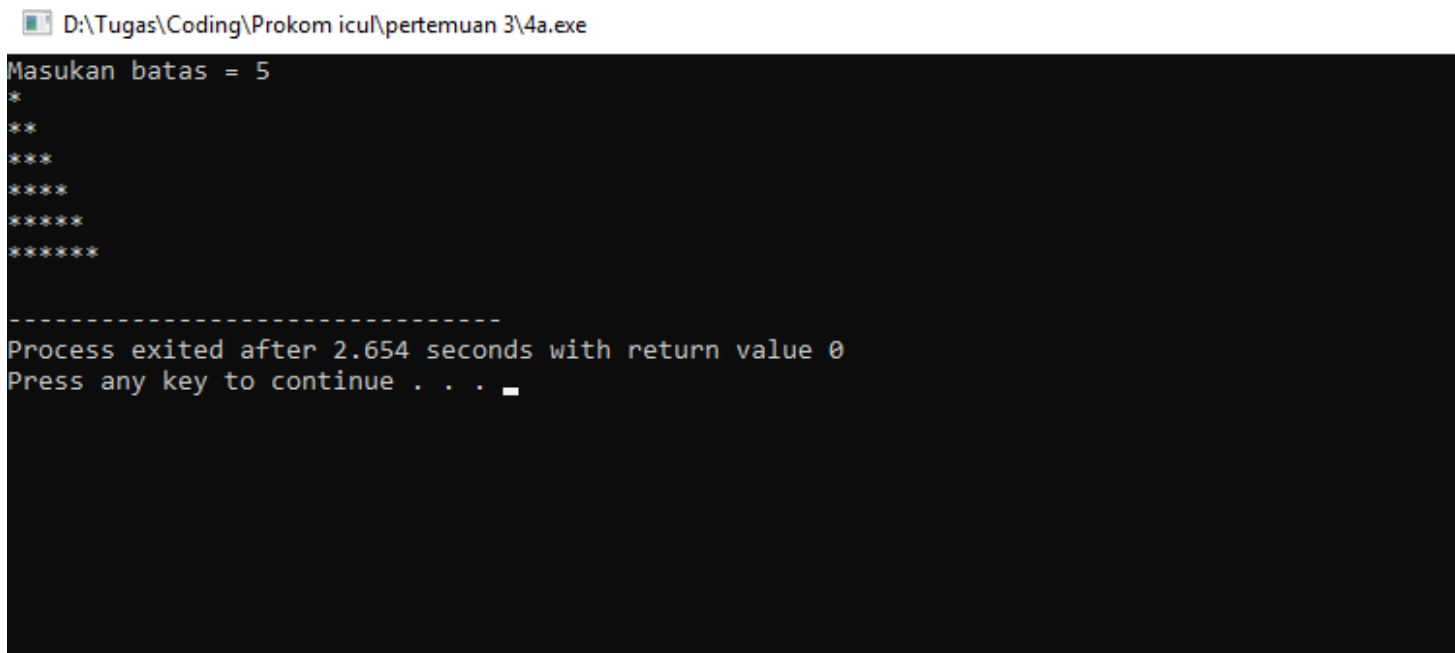
The screenshot shows the Dev-C++ IDE interface. The main window displays a C++ program in `4a.cpp` that uses nested loops to print a pattern of asterisks. The code is as follows:

```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int i,j, batas;
6     cout<<"Masukan batas = ";cin>>batas;
7     for (i=0;i<=batas;i++)
8     {
9         for(j=0;j<=i;j++)
10        {
11            cout<<"*";
12        }
13        cout<<"\n";
14    }
15    return 0;
16 }
```

Below the code editor, the 'Compiler' window shows the 'Compile Log' with the following output:

```
Compilation results...
- Errors: 0
- Warnings: 0
- Output Filename: D:\Tugas\Coding\Prokom icul\pertemuan 3\4a.exe
- Output Size: 1.83242321014404 MiB
- Compilation Time: 2.44s
```

The status bar at the bottom indicates 'Line: 1 Col: 1 Sel: 0 Lines: 16 Length: 223 Insert Done parsing in 0.032 seconds'.

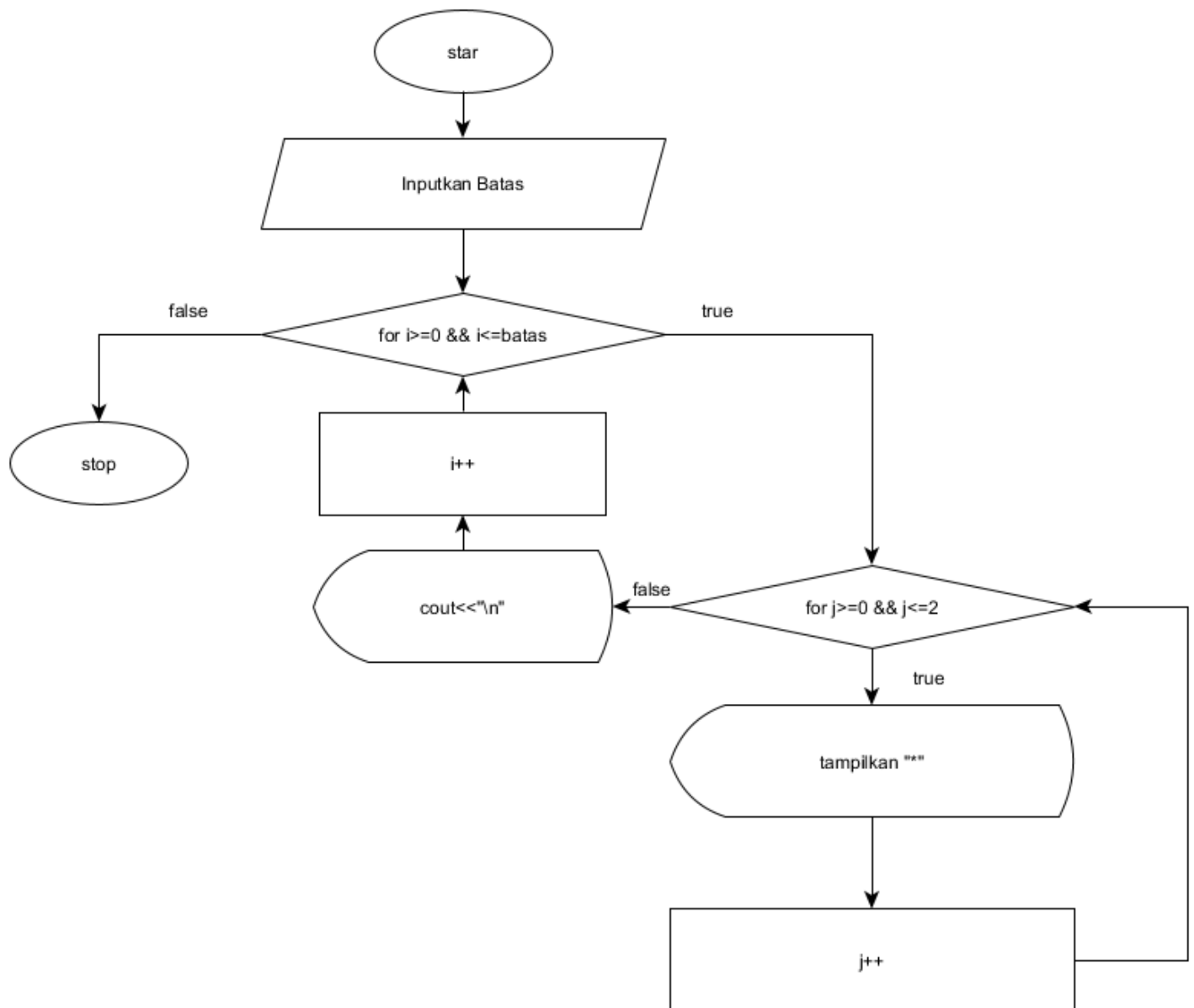


The screenshot shows the output of the program in a command prompt window. The user has entered the input '5', and the program has printed a pattern of asterisks. The output is as follows:

```
D:\Tugas\Coding\Prokom icul\pertemuan 3\4a.exe
Masukan batas = 5
*
**
***
****
*****
*****

-----
Process exited after 2.654 seconds with return value 0
Press any key to continue . . .
```

b) ***



The screenshot displays the Dev-C++ IDE interface. The main window shows a C++ source file named `4b.cpp` with the following code:

```
1 #include <iostream>
2 using namespace std;
3 int main()
4 {
5     int i, j, batas;
6     cout<<"Masukan batas = ";cin>>batas;
7     for (i=0;i<=batas;i++)
8     {
9         for(j=0;j<=2;j++)
10        {
11            cout<<"*";
12        }
13        cout<<"\n";
14    }
15    return 0;
16 }
```

Below the code editor, the 'Compiler' window shows the compilation results:

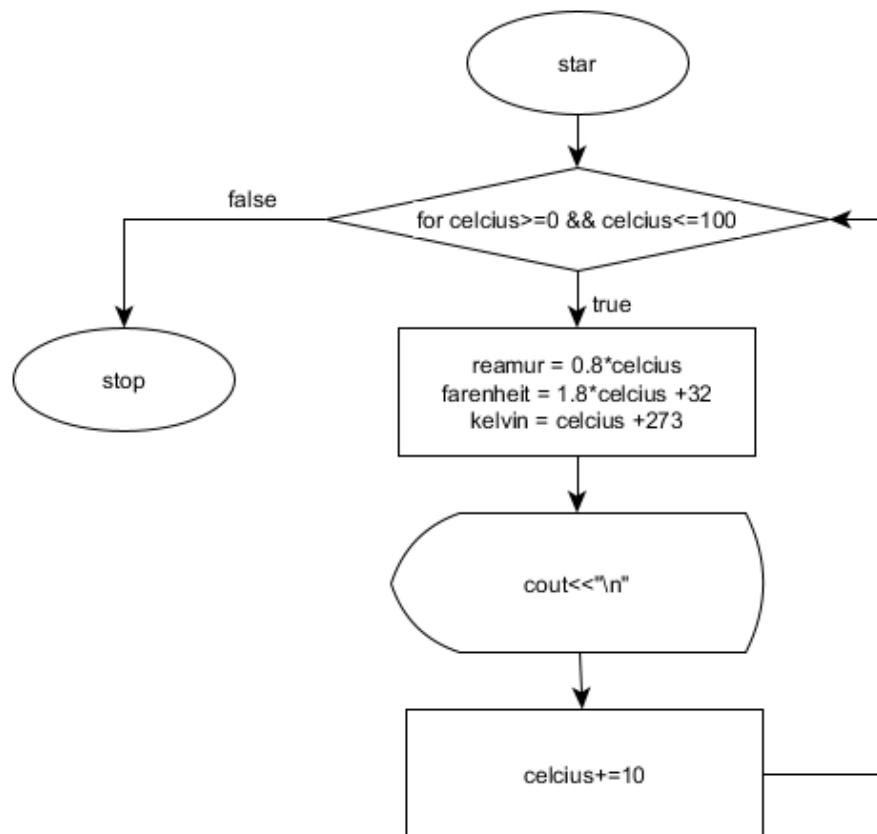
```
Compilation results...
- Errors: 0
- Warnings: 0
- Output Filename: D:\Tugas\Coding\Prokom icul\pertemuan 3\4a.exe
- Output Size: 1.83242321014404 MiB
- Compilation Time: 2.44s
```

The 'Output' window at the bottom shows the execution of the program:

```
D:\Tugas\Coding\Prokom icul\pertemuan 3\4b.exe
Masukan batas = 1
***
***

-----
Process exited after 1.114 seconds with return value 0
Press any key to continue . . .
```

5. Buat program untuk menampilkan table konversi suhu dari satuan celcius ke reamur, Fahrenheit dan kelvin. Suhu dari 0° sampai 100° C dengan kenaikan 10° C.



The screenshot shows the Dev-C++ IDE with a C++ program for temperature conversion. The code is as follows:

```
1 //Konversi Suhu
2 #include <iostream>
3 #include <iomanip>
4 using namespace std;
5 int main()
6 {
7     float celcius, reamur, fahrenheit, kelvin;
8     cout << " Tabel Konversi Suhu\n";
9     cout << "-----\n";
10    for(int celcius=0; celcius<=100; celcius+=10)
11    {
12        reamur=4*celcius/5;
13        fahrenheit=9*celcius/5 + 32;
14        kelvin=celcius + 273;
15        cout << setw(4) << celcius << setw(7) << reamur << setw(7) << fahrenheit << setw(7) << kelvin << endl;
16    }
17    cout << "-----\n";
18    return 0;
19 }
```

The compilation results are shown at the bottom:

```
Compilation results...
-----
- Errors: 0
- Warnings: 0
- Output Filename: D:\Tugas\Coding\Prokom icul\pertemuan 3\5.exe
- Output Size: 1.83327865600586 MiB
- Compilation Time: 2.22s
```

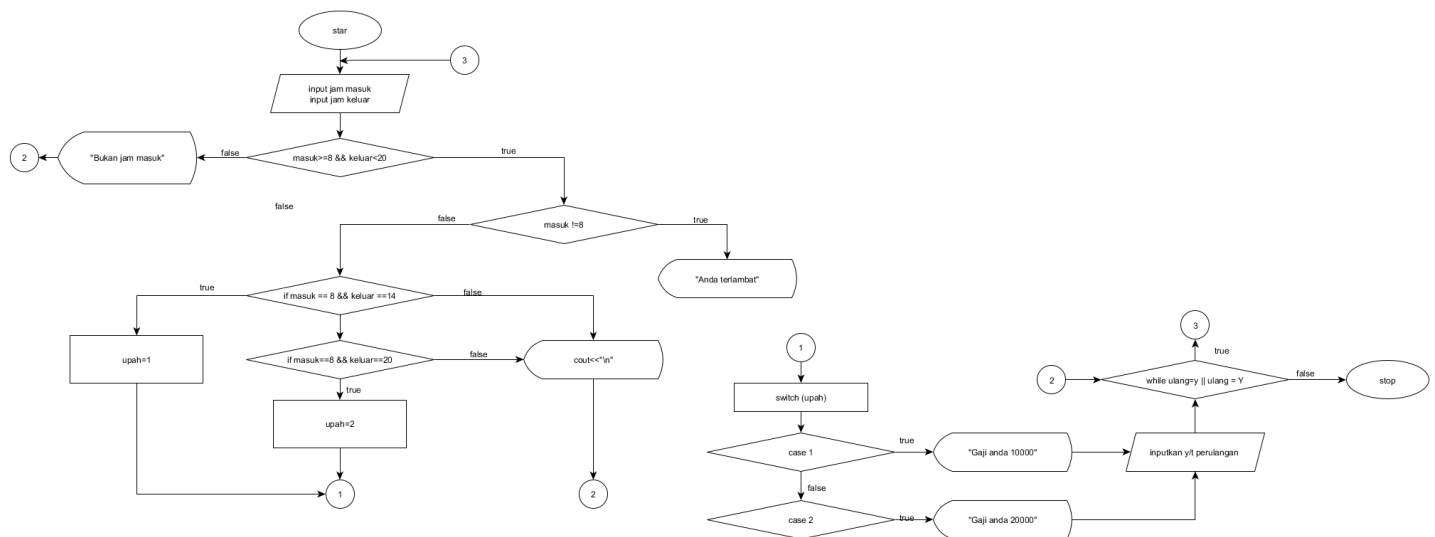
D:\Tugas\Coding\Prokom icul\pertemuan 3\5.exe

Tabel Konversi Suhu

0	0	32	273
10	8	50	283
20	16	68	293
30	24	86	303
40	32	104	313
50	40	122	323
60	48	140	333
70	56	158	343
80	64	176	353
90	72	194	363
100	80	212	373

Process exited after 0.1039 seconds with return value 0
Press any key to continue . . .

6. Modifikasi tugas praktikum no 5 pada modul 2 menggunakan perulangan untuk mengkonfirmasi apakah user akan menghitung upah karyawan lagi(y/t)
- 7.



The image displays two screenshots of the Dev-C++ IDE, showing the source code for a C++ program. The program calculates wages based on hours worked and includes a loop for repetition.

Top Screenshot: Shows the first part of the code, including headers, namespace, variable declarations, and the start of the main function.

```
1 #include <iostream>
2 #include <conio.h>
3 using namespace std;
4 int masuk, keluar, upah;
5 char ulang;
6 int main ()
7 {
8     do
9     {
10        cout<<"Kamu Masuk Jam = ";cin>>masuk;
11        cout<<"Kamu keluar jam = ";cin>>keluar;
12        if(masuk>=8 & keluar<=20)
13        {
14            if (masuk!=8)
15            {
16                cout<<"Kamu terlambat";
17            }
18            else
19            if(masuk==8 & keluar==14)
20            {
21                upah=1;
22            }
23        }
24    }
25 }
```

Bottom Screenshot: Shows the continuation of the code, including the calculation of wages, a switch statement for different wage rates, and a while loop for repetition.

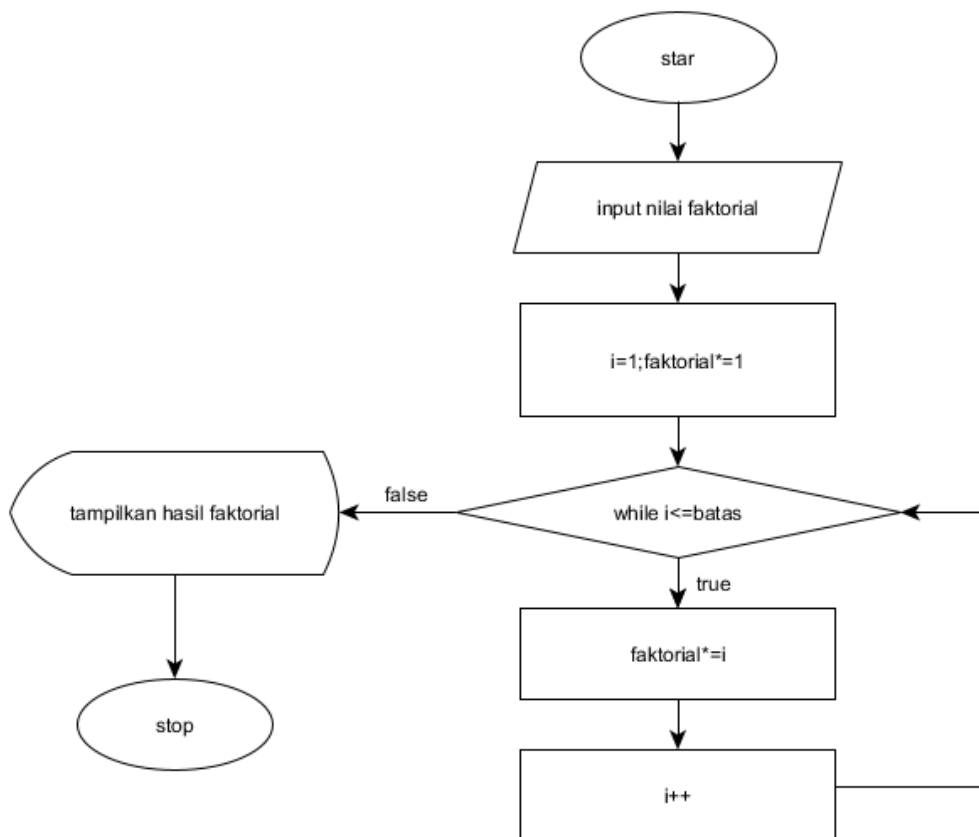
```
21        upah=1;
22        {
23            if(masuk==8 & keluar==20)
24            {
25                upah=2;
26            }
27            else
28            {
29                cout<<"\n";
30            }
31        }
32        else
33        {
34            cout<<"Bukan jam masuk";
35        }
36        switch(upah)
37        {
38            case 1 : cout<<"Kamu mendapatkan upah Rp.10000";break;
39            case 2 : cout<<"Kamu mendapatkan upah Rp.20000";break;
40        }
41        cout<<"apakah anda ingin mengulang program lagi (y/t)";cin>>ulang;
42        while (ulang=='y' || ulang=='Y');
43    }
44    cout<<"terima kasih\n";
45    return 0;
46 }
```

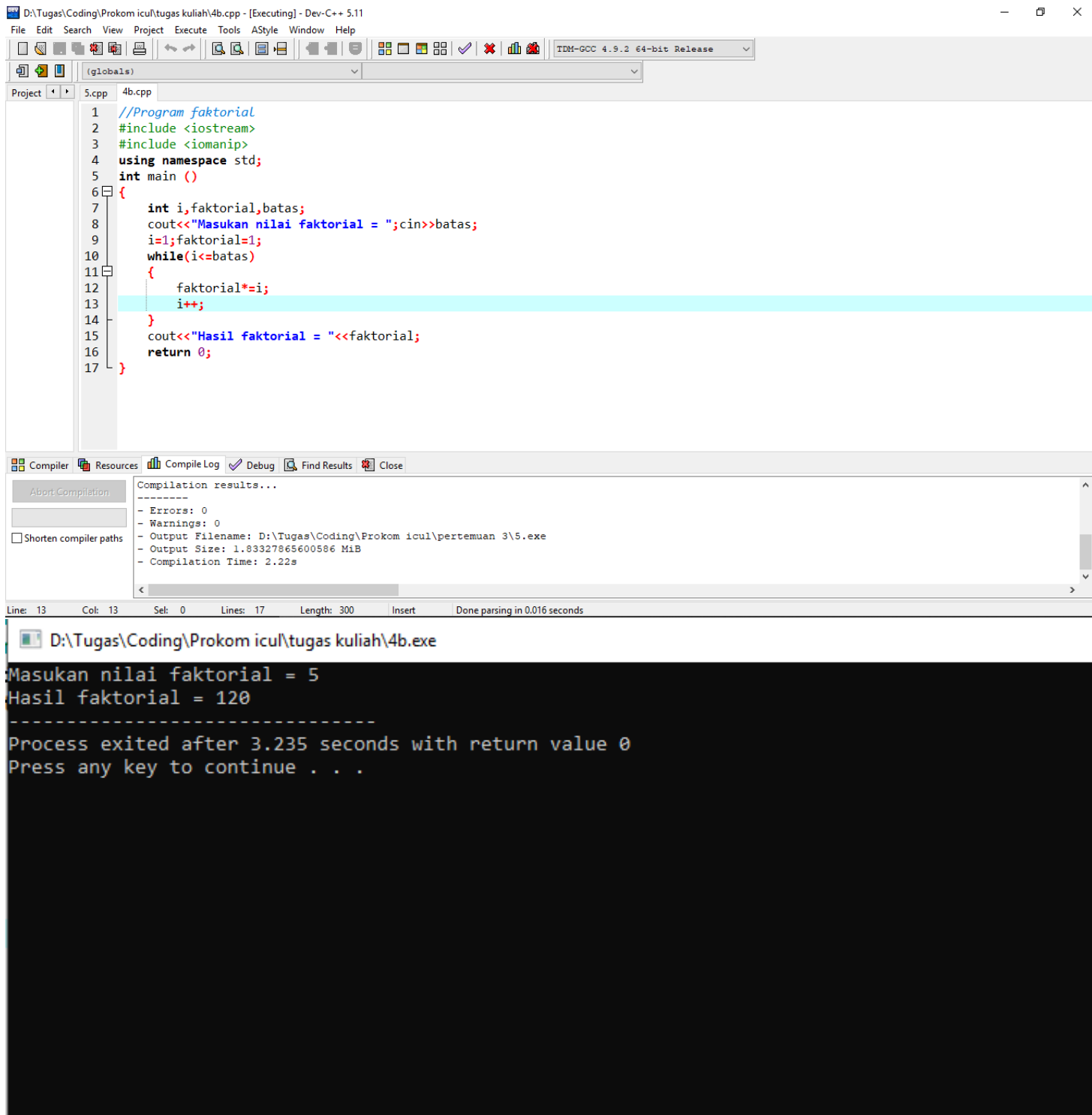
Both screenshots show the compilation results window, indicating that the code compiled successfully with 0 errors and 0 warnings. The output filename is D:\Tugas\Coding\Prokom icul\pertemuan 3\6.exe, and the compilation time is 2.73s.

D:\Tugas\Coding\Prokom icul\pertemuan 3\6.exe

```
Kamu Masuk Jam = 8  
kamu keluar jam = 14  
  
Kamu mendapatkan upah Rp.10000  
apakah anda ingin mengulang program lagi (y/t) = y  
Kamu Masuk Jam = 8  
kamu keluar jam = 20  
Kamu mendapatkan upah Rp.20000  
apakah anda ingin mengulang program lagi (y/t) =
```

8. Buatlah program untuk menghitung factorial





The screenshot displays a C++ development environment. The top window shows the source code for a program named '4b.cpp'. The code calculates the factorial of a user-input number. The bottom window shows the compilation results, indicating a successful build with no errors or warnings. The bottom-most window shows the execution of the program, where the user entered '5' and the program outputted '120'.

```
1 //Program faktorial
2 #include <iostream>
3 #include <iomanip>
4 using namespace std;
5 int main ()
6 {
7     int i,faktorial,batas;
8     cout<<"Masukan nilai faktorial = ";cin>>batas;
9     i=1;faktorial=1;
10    while(i<=batas)
11    {
12        faktorial*=i;
13        i++;
14    }
15    cout<<"Hasil faktorial = "<<faktorial;
16    return 0;
17 }
```

Compilation results...

- Errors: 0
- Warnings: 0
- Output Filename: D:\Tugas\Coding\Prokom icul\pertemuan 3\5.exe
- Output Size: 1.83327865600586 MiB
- Compilation Time: 2.22s

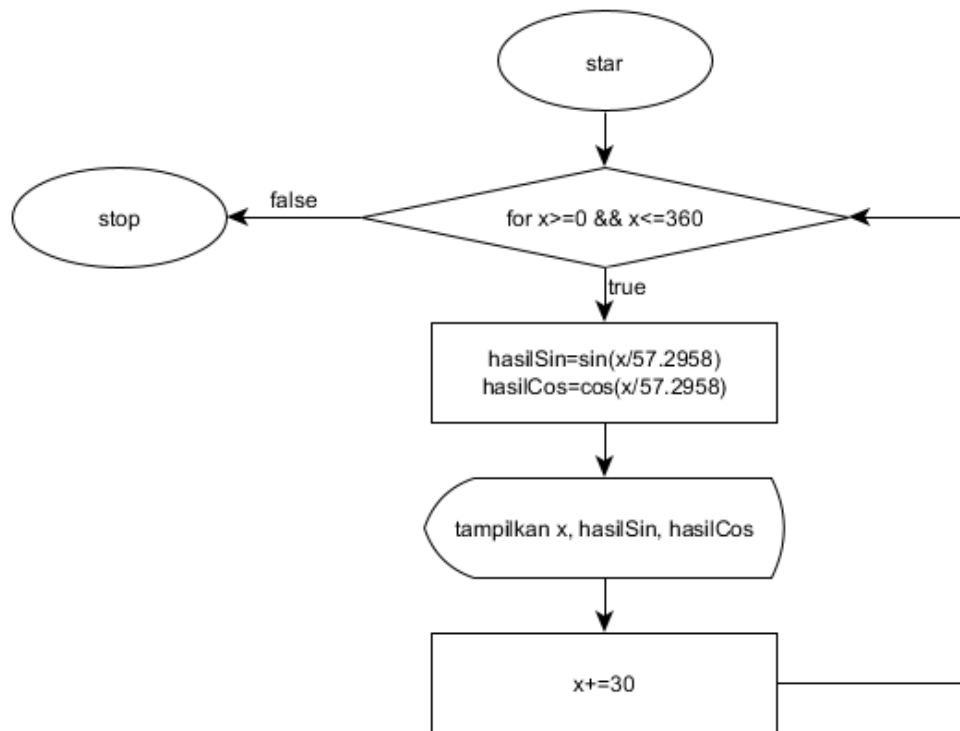
Line: 13 Col: 13 Set: 0 Lines: 17 Length: 300 Insert Done parsing in 0.016 seconds

D:\Tugas\Coding\Prokom icul\tugas kuliah\4b.exe

Masukan nilai faktorial = 5
Hasil faktorial = 120

Process exited after 3.235 seconds with return value 0
Press any key to continue . . .

9. Buatlah program tabel sin cos seperti dengan tampilan berikut!



```

1 //tabel sin cos
2 #include <iostream>
3 #include <math.h>
4 #include <iomanip>
5 using namespace std;
6 int main()
7 {
8     float x, hasilSin, hasilCos;
9     cout<<"***TABEL SINUS DAN COSINUS DALAM SATUAN DERAJAT***\n";
10    cout<<setw(3)<<"x"<<setw(9)<<"sin(x)"<<setw(7)<<"cos(x)"<<endl;
11    cout<<"-----\n";
12    for(int x=0;x<=360;x+=30)
13    {
14        hasilSin=sin(x/57.2958);
15        hasilCos=cos(x/57.2958);
16        cout <<setiosflags(ios::fixed);
17        cout<<setw(4)<<setprecision(2)<<x<<setw(7)<<setprecision(2)<<hasilSin<<setw(7)<<setprecision(2)<<hasilCos<<endl;
18    }
19    cout<<"\n\n-----\n";
20    return 0;
21 }
  
```

Compilation results...

```

- Errors: 0
- Warnings: 0
- Output Filename: D:\Tugas\Coding\Prokom icul\pertemuan 3\8.exe
- Output Size: 1.8419303894043 MiB
- Compilation Time: 0.94s
  
```

Line: 19 Col: 16 Sel: 0 Lines: 21 Length: 602 Insert Done parsing in 0.016 seconds

D:\Tugas\Coding\Prokom icul\pertemuan 3\8.exe

TABEL SINUS DAN COSINUS DALAM SATUAN DERAJAT

x	sin(x)	cos(x)
0	0.00	1.00
30	0.50	0.87
60	0.87	0.50
90	1.00	0.00
120	0.87	-0.50
150	0.50	-0.87
180	0.00	-1.00
210	-0.50	-0.87
240	-0.87	-0.50
270	-1.00	0.00
300	-0.87	0.50
330	-0.50	0.87
360	0.00	1.00

Process exited after 0.05811 seconds with return value 0

Press any key to continue