Prokom-0:

Programming, Algorithm, Flowchart, Pseudocode, C language

@btatmaja

Overview

- Programming, Algorithm
- Flowchart, Pseudocode
- ASCII, Binary
- Compiler, IDE
- C and C++ language
- Hello World!

Programming

- Every computer is a machine >> It does not think >> It cannot understand >> It does not know what you want it to do.
- Everything you want it to do must be told to it, explicitly in its language >> comp programming
- Belajar memprogram != belajar membuat program

Binary

- Binary: 0, 1
- Octal: 0,1, 2, 3, 4, 5, 6, 7
- Decimal: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9

100 10 1

$$123_{10} = \bullet\bullet_2$$

100 x 1 + 10 x 2 + 1 x 3

Hexadecimal

- 0, 1, 2, 3, 4, 5, 6,7, 8, 9, a, b, c, d, e, f

• Decimal:	255	256
• Binary:	1111 1111	1101 1000
• Hexa:	f f	d 8
	0xff	0xd8

ASCII

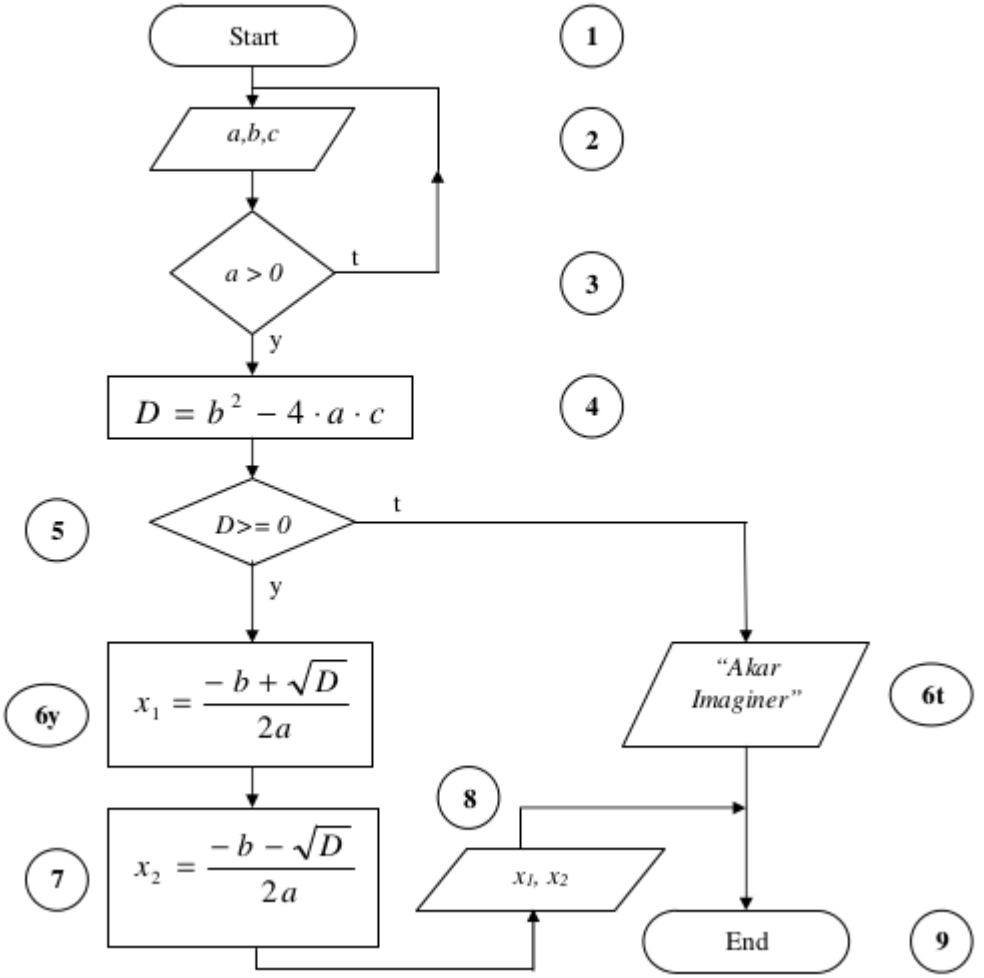
A	B	C	D	E	F	G	H	I
65	66	67	68	69	70	71	72	73
J	K	L	M	N	O	P	Q	R
74	75	76	77	78	79	80	81	82
S	T	U	V	W	X	Y	Z	
83	84	85	86	87	88	89	90	

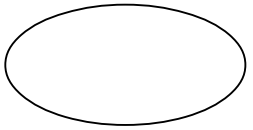
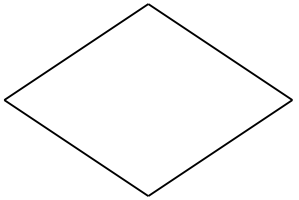
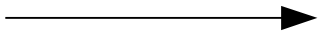
H	I	!
72	73	33

Algorithm

- Algoritma adalah **langkah-langkah logis** penyelesaian suatu masalah
- Input **>>** ALGORITMA **>>** output
- Algoritma bisa berupa:
  - Flowchart
  - Pseudo code

Flowchart


Start
1
a,b,c
2
a > 0
t
3
y
D = b² − 4 · a · c
4
5
D>= 0
t
y
6y
x₁ = (− b + √D) / 2a
"Akar Imaginer"
6t
8
7
x₂ = (− b − √D) / 2a
x1, x2
End
9

Name	Symbol	Use in Flowchart
Oval		Denotes the beginning or end of the program
Parallelogram		Denotes an input operation
Rectangle		Denotes a process to be carried out e.g. addition, subtraction, division etc.
Diamond		Denotes a decision (or branch) to be made. The program should continue along one of two routes. (e.g. IF/THEN/ELSE)
Hybrid		Denotes an output operation
Flow line		Denotes the direction of logic flow in the program

Pseudocode

1. Ambil buku telfon
2. Buka tengah-tengah buku
3. Cari nama “Sanusi”
4. If “Sanusi” ada di halaman tersebut
5. Telfon Sanusi
6. Else if “Sanusi” berada di halaman depan
7. Buka tengah buku kiri
8. Ke baris-3
9. Else if “Sanusi” berada di halaman belakang
10. Buka tengah buku bagian kanan
11. Ke baris-3
12. Selesai

Hello C!

```
1 #include <stdio.h>
2 int main (void)
3 {
4     printf(“hello world”);
5 }
```

Hello World!

```
1 #include <stdio.h>
2 Int main (void)
3 {
4     printf(“hello world\n”);
5 }
```

Hello, Bagus!

```
1 #include <stdio.h>
2 Int main (void)
3 {
4     char nama[10] = "Bagus";
5     printf("hello, %s\n", nama);
6 }
```

Hello, Nama!

```
1 #include <stdio.h>
2
3 int main(void)
4 {
5     char nama[10];
6     printf("Masukkan nama anda: ");
7     scanf("%s", nama);
8     printf("hello, %s\n", nama);
9 }
```

How it works

Source Code

Compiler >> Compile/build

Object Code >> Run

The Compiler

- Turbo C
- Visual C
- **GCC**
- Borland C
- **Clang**
- ...

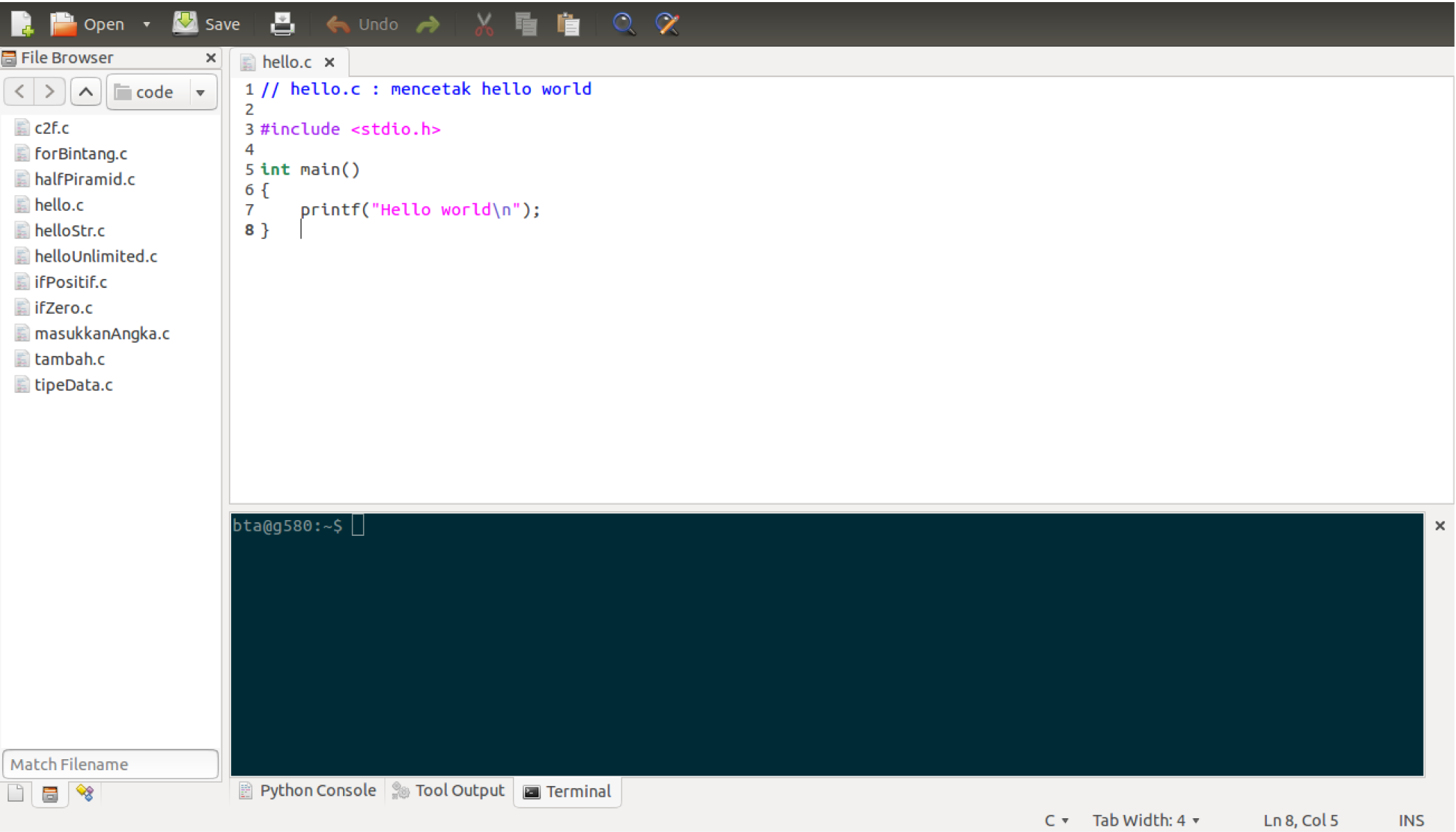
Command (line)

- gcc -o hello hello.c >> ./hello
- gcc hello.c >> ./a.out
- clang -o hello hello.c -lcs50 >> ./hello
- clang hello.c -lm >> ./a.out
- Code::blocks >> build > run
- Visual C >> build > run

Editor and IDE

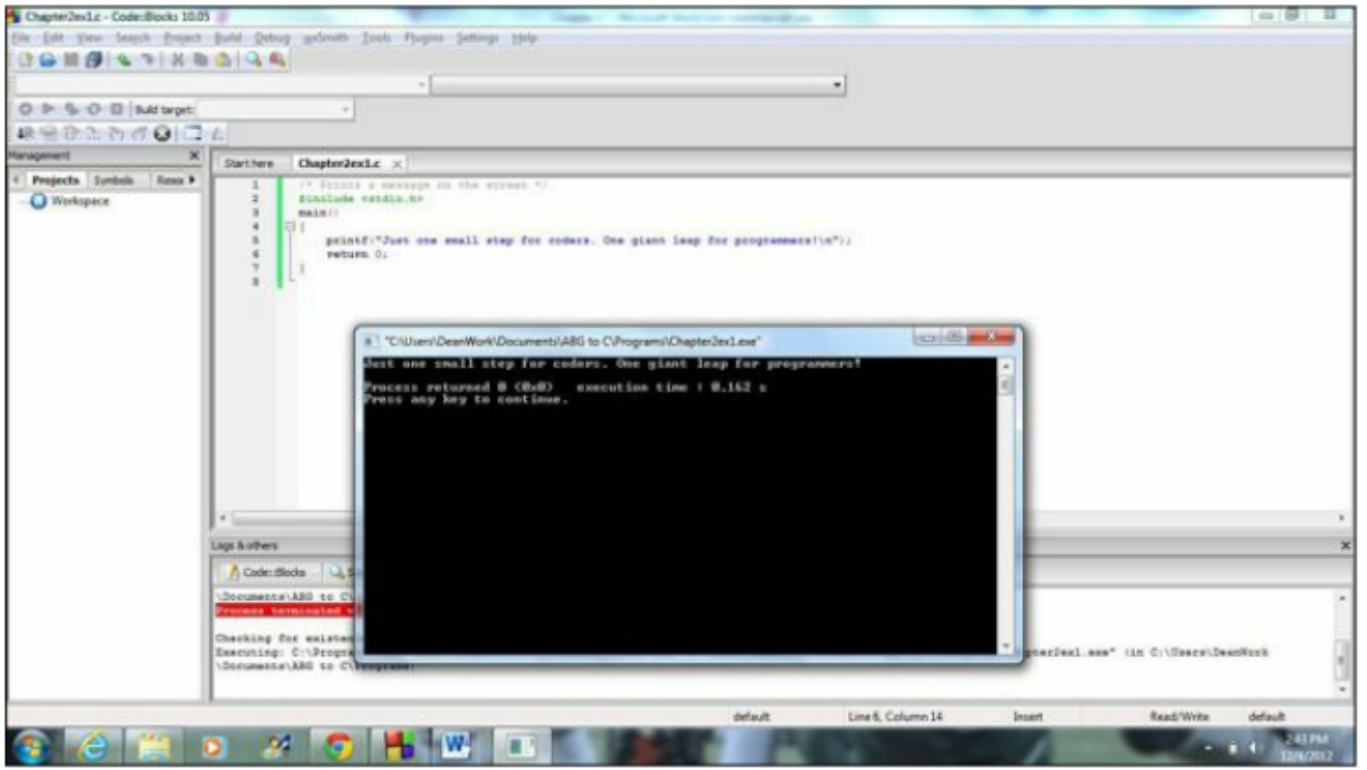
- Gedit and Terminal plugin
- Geany
- Code::Blocks
- Dev-C++
- VisualStudio Express
- www.cs50.io

Editor >> Gedit

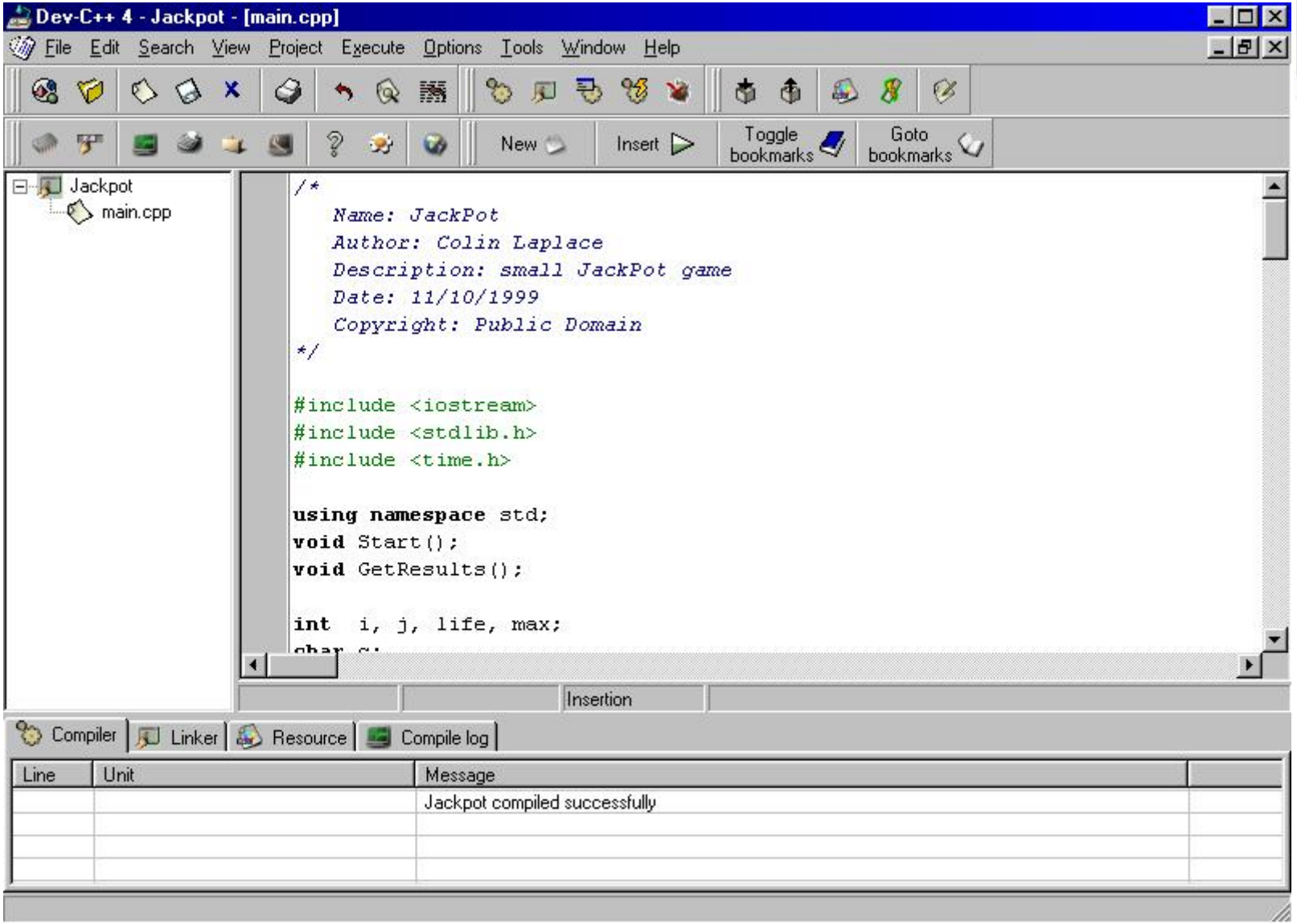


IDE >> Code::Blocks

- Integrated development Editor
- Buid >> Run

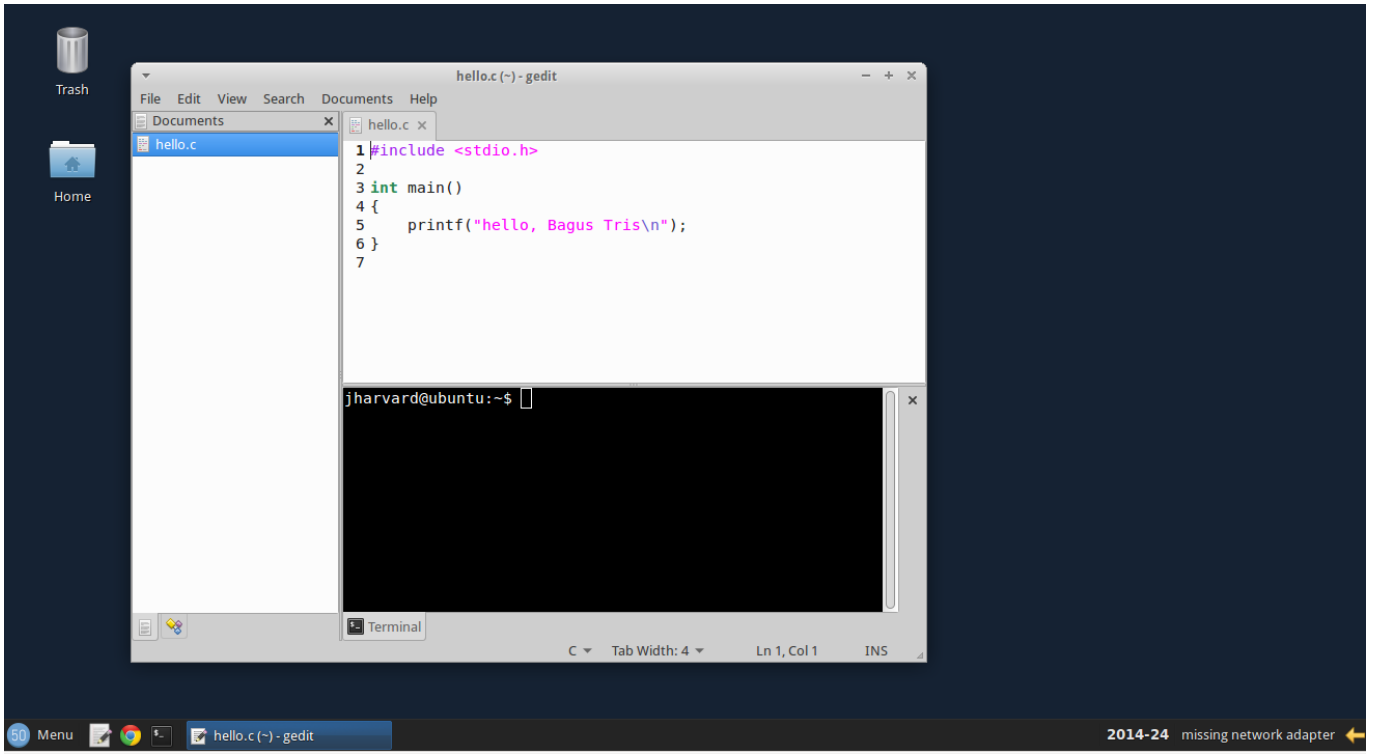


Dev-C++


Dev-C++ 4 - Jackpot - [main.cpp]
File Edit Search View Project Execute Options Tools Window Help
New
Insert
Toggle bookmarks
Goto bookmarks
Jackpot
main.cpp
/*
Name: JackPot
Author: Colin Laplace
Description: small JackPot game
Date: 11/10/1999
Copyright: Public Domain
*/
#include <iostream>
#include <stdlib.h>
#include <time.h>
using namespace std;
void Start();
void GetResults();
int i, j, life, max;
Insertion
Compiler
Linker
Resource
Compile log
Line
Unit
Message
Jackpot compiled successfully

To-do (aka TUGAS)

- Install Dev-C++ atau Code::Blocks
- Install VMware atau VirtualBox
- Install CS50 pada Vmware/VirtualBox
- Run hello world.



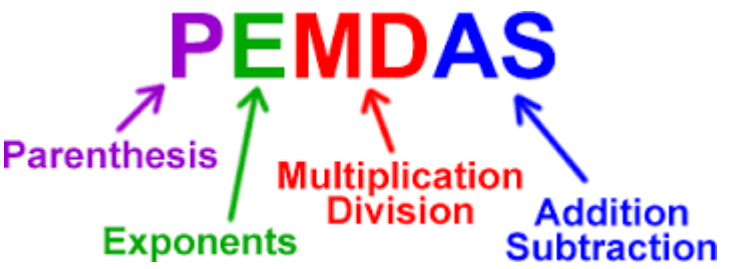
Operator

- Operator Assignment
- Operator Unary / Arithmetic
- Operator Binary / Boole
- Operator Ternary / Coditional / Relational

Operators

- Add + 4 + 4 = 6
- Substract - 4 - 4 = 0
- Multiply * 4 * 4 = 16
- Divide / 4 / 4 = 1
- Modulo % 4 % 4 = 0

- Order of operator >>



Assignment

- = Assignment operator
- += Increment and assign
- -= Decrement and assign
- *= Multiply and assign
- /= Divide and assign
- %= Modulo and assign
- &= Bitwise AND and assign
- ^= Bitwise exclusive OR and assign
- |= Bitwise inclusive (normal) OR and assign
- <<= Bitwise shift left and assign
- >>= Bitwise shift right and assign

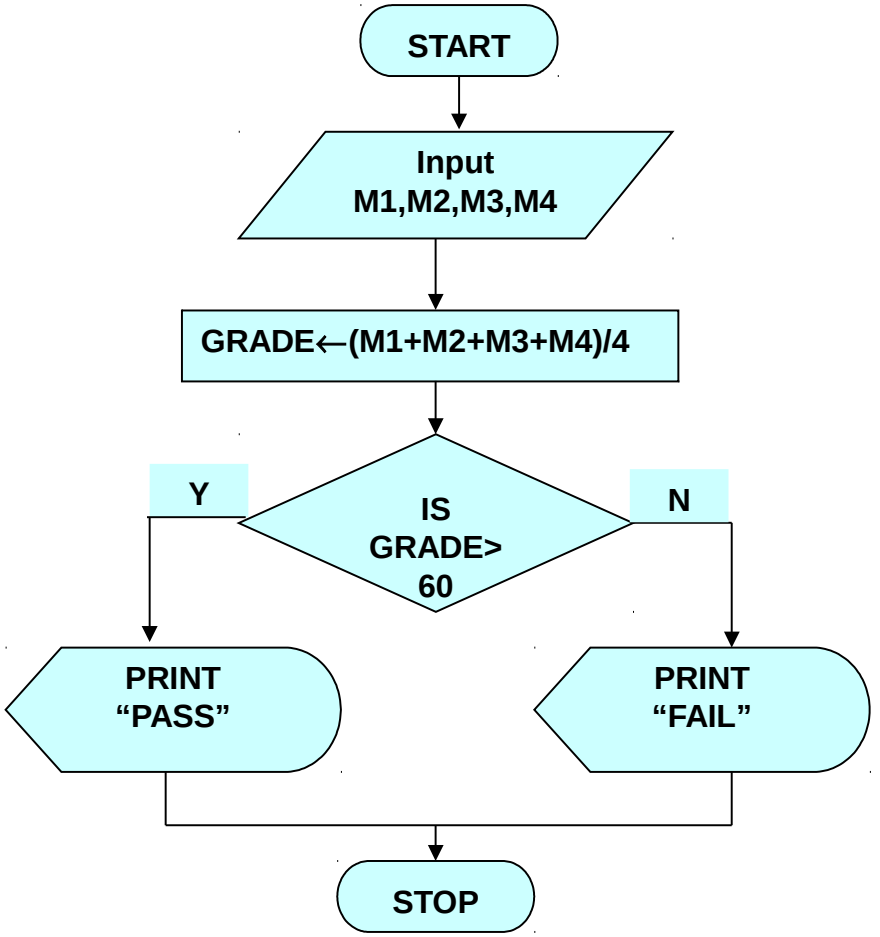
Relational

- > greater than 5 > 4 is TRUE
- < less than 4 < 5 is TRUE
- >= greater than or equal 4 >= 4 is TRUE
- <= less than or equal 3 <= 4 is TRUE
- == equal to 5 == 5 is TRUE
- != not equal to 5 != 4 is TRUE

Decision Tree: IF .. ELSE

- Jika nila kurang dari 60
  cetak “anda lolos”
- Sebaliknya
  anda “tidak lolos”

```
if (x > 60)
    printf(“Anda Lolos”);
else
    printf(“Anda tidak lolos”);
```



IF ... ELSE IF ... ELSE

```
if (n > 0)
        printf("Anda memasukkan bilangan positif!");
else if (n == 0)
        printf("Anda memasukkan bilangan 0");
else
        printf("Anda memasukkan bilangan negatif!");
```

Selamat Belajar

Work Hard

Work Smart

Learning by Doing

One day, One Code

Keep coding!

Referensi:

share.its.ac.id

github.com/bagustris

cplusplus.com

cppshell.com

cs50.net

@btatmaja