UNIVERSITI MALAYSIA PERLIS

ENT 189 COMPUTER PROGRAMMING

LAB-1 INTRODUCTION TO CODE::BLOCKS AND SEQUENTIAL STRUCTUTRE

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Matric Number : _____

Program : Mechatronic Engineering

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CODE::BLOCKS

Code::Blocks is a free, open-source cross-platform IDE that supports multiple compilers including GCC, Clang and Visual C++. It is developed in C++ using wxWidgets as the GUI toolkit. Using a plugin architecture, its capabilities and features are defined by the provided plugins. Currently, Code::Blocks is oriented towards C, C++, and Fortran. It has a custom build system and optional Make support.

Code::Blocks is being developed for Windows and Linux and has been ported to FreeBSD, OpenBSD and Solaris.

Objective:

1. Able to use the Code::Blocks compiler.
2. Able to use Terminal Editor, compile and interpret the error messages.
3. Able to identify possible compilation errors and to correct them.
4. Able to understand the data types and sequential structure

## Writing, Editing and Compiling Programs

A computer can understand a program written in its machine language. A programmer writes a source program and converts it into machine language. This process involves three steps: (1) writing and editing the program, (2) Compiling the program, and (3) linking the program with the required library modules.
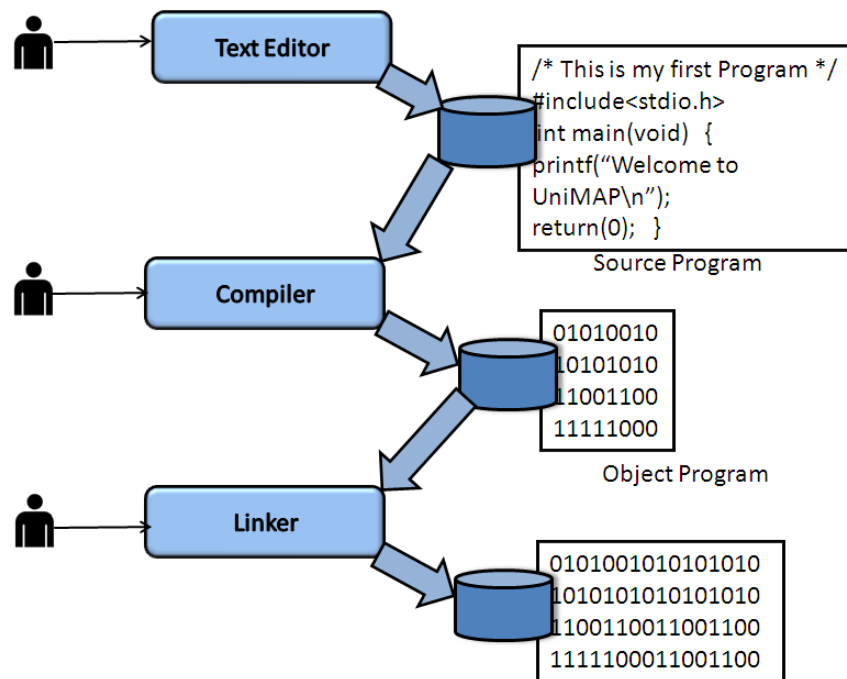
A text editor is used to write the programs. Using a text editor, a user can enter, modify and store character data. A text editor has also the capability of searching, locating and replacing statements, copying and pasting statements, moving statements from one location to another location.
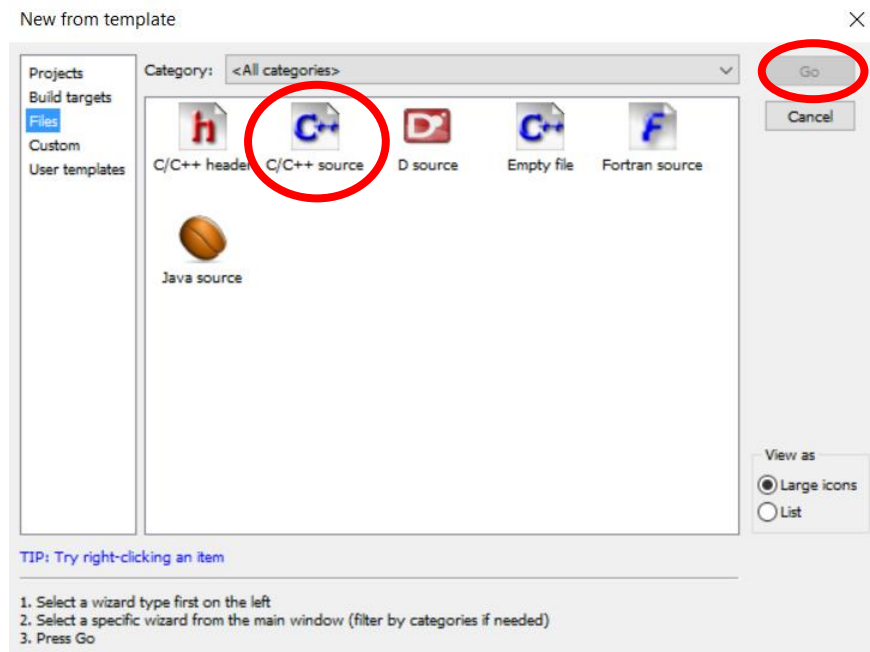
To create a new project, follow the following steps:
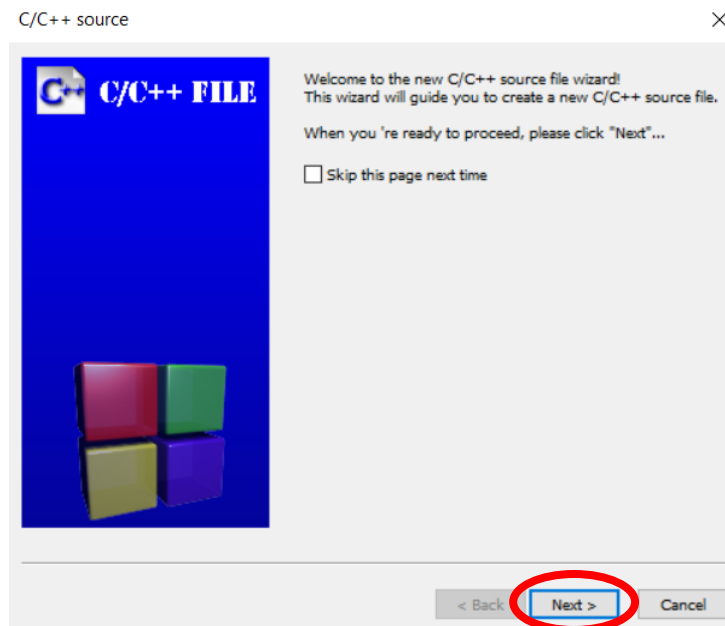
1. Click "Create a new project" on the screen.
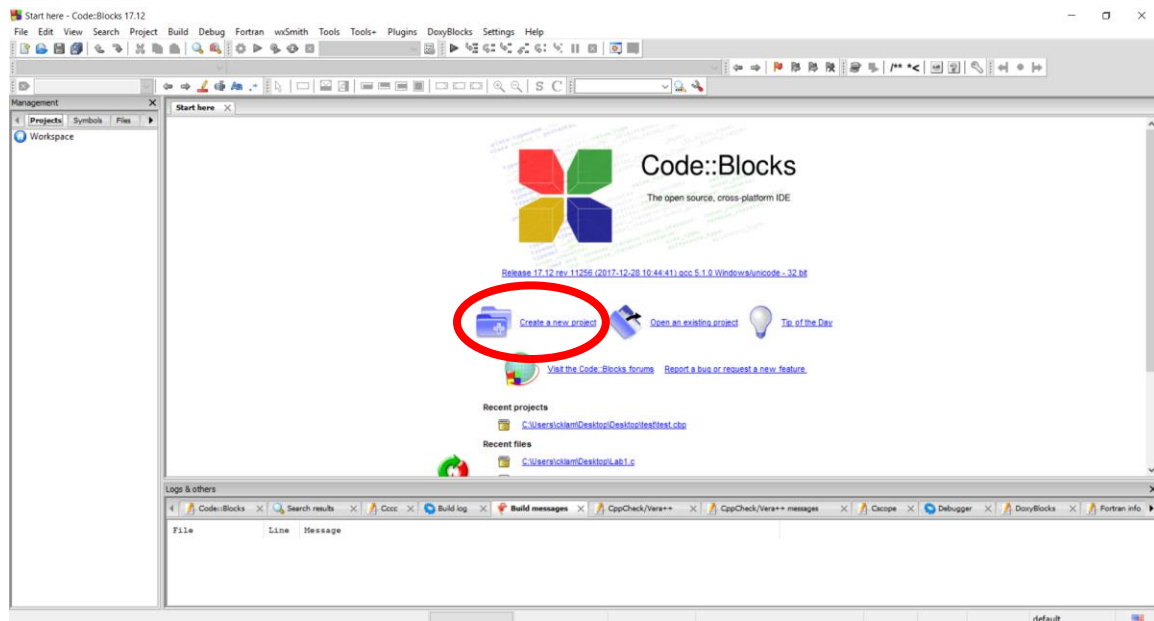
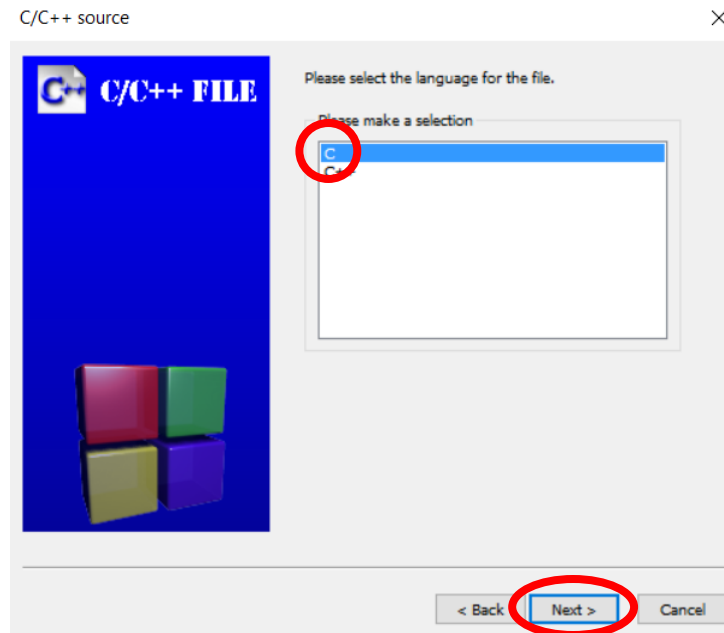2. Select "Files" on the left column.
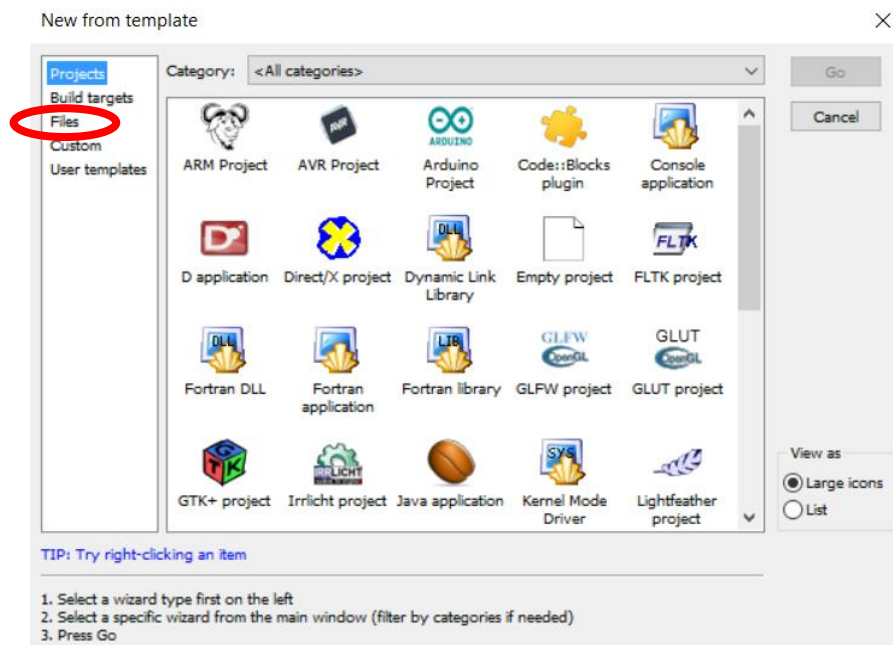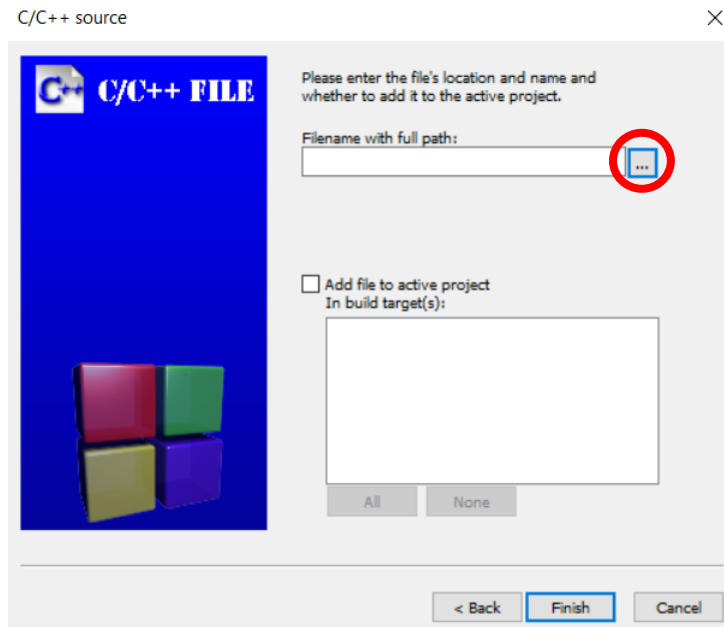
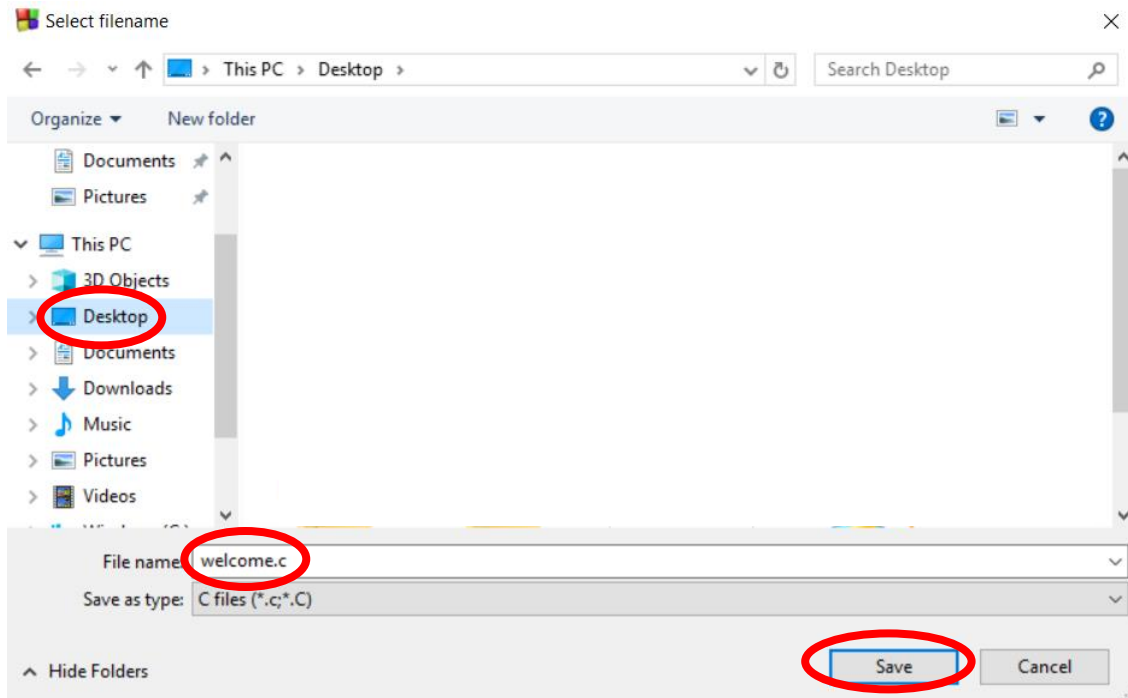3. Select "C/C++ source" and click "Go".

4. Click "Next >".
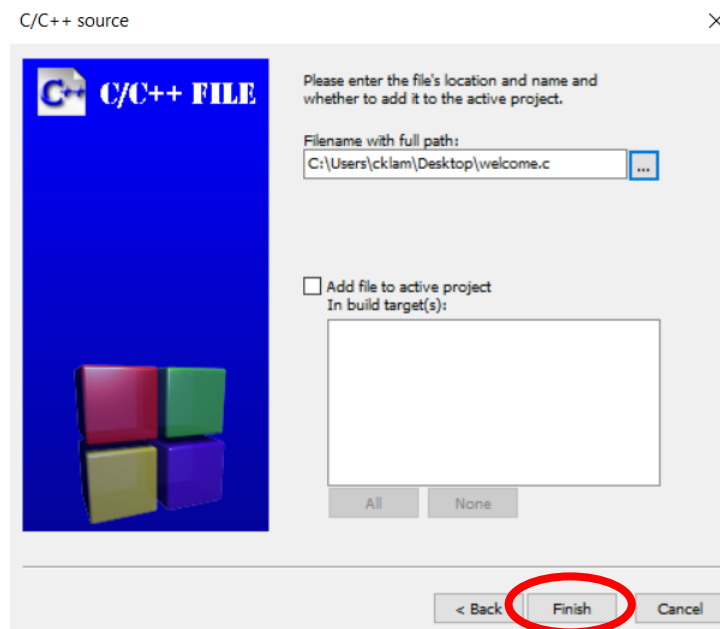
5. Now select "C" in the box and click "Next >".
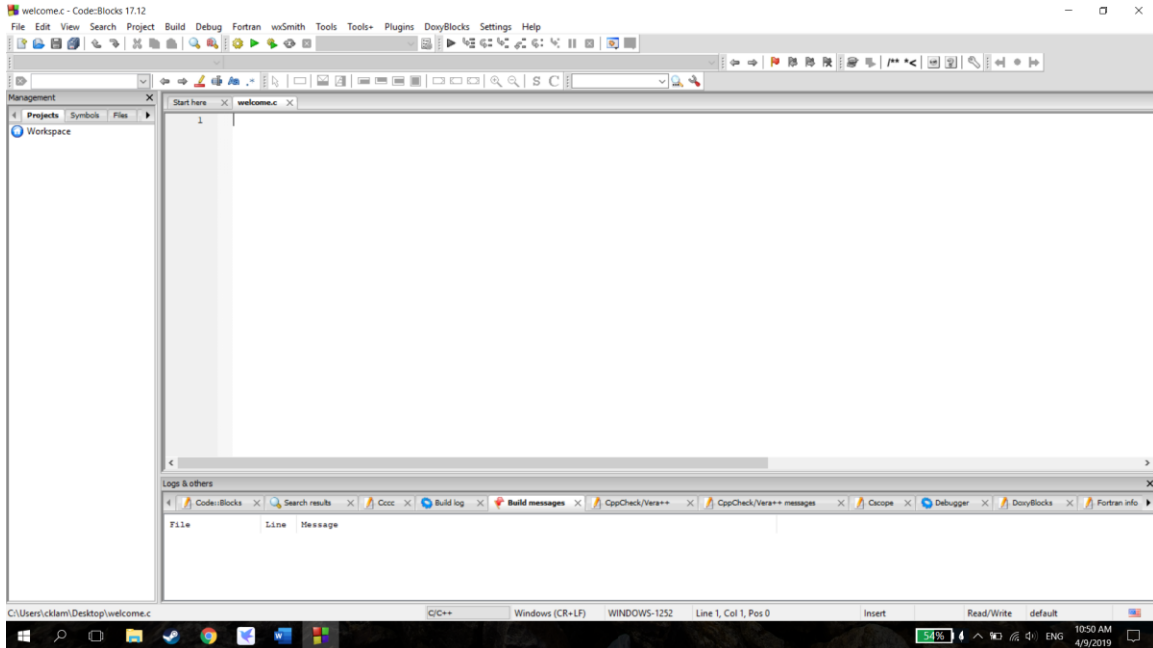

6. Click "…" to create filename with path.

7. Select desired location and insert filename, then click "Save". The file name should end with a file name extension '.c'. The file name extension indicates the type of file.

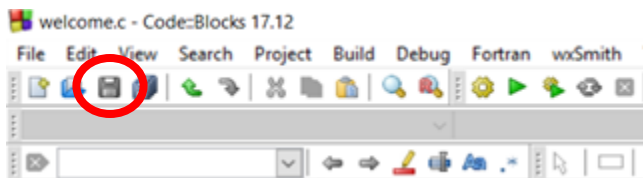8. Click "Finish" to create the C source file.

Now the system will display the code::blocks text editor.

In the text editor, type in the following program

/* This is my first Program */
#include<stdio.h>

int main(void)
{
printf("Welcome to UniMAP\n");
return(0);
}

After typing the program, save the program in a file by clicking the "Save" button as shown.
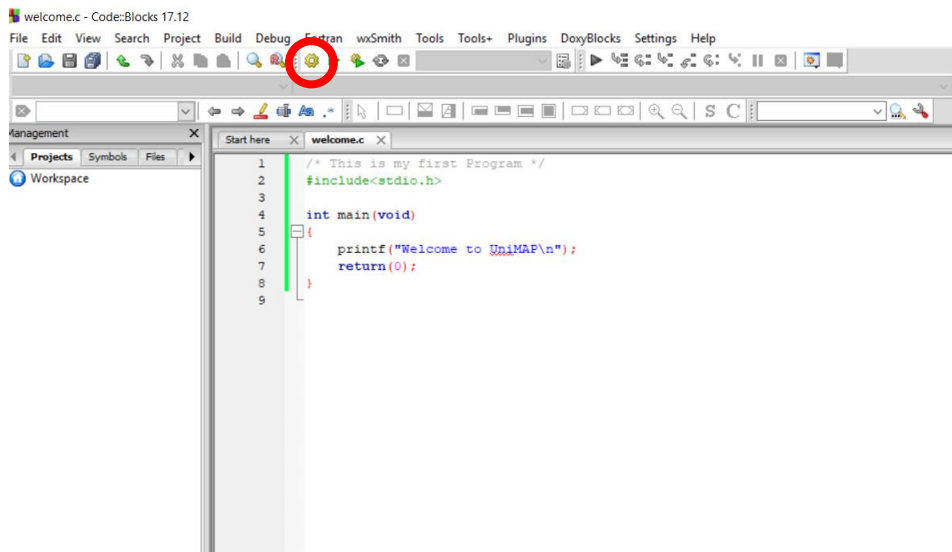
C Compiler

After saving the file to the system hard disk, we can input the source program file to the compiler. The compiler is a program that translates the source program into machine language. The C compiler contains two separate programs, namely, preprocessor and translator. The preprocessor scans the source program and identifies the special commands known as preprocessor directives and replaces the code with the special code libraries. The output from the preprocessor is known as preprocessed module. The translator takes the preprocessed module as the input and converts it into machine language and this module is called object module. The object module has to be linked with input/output processes and mathematical library functions. The linker program attaches and assembles all these library routines and finally creates the executable code.

**To compile the source program, use the following steps:**

1. In the code::blocks window click the "Build" button to compile the program.

If the program is error free then the above command compiles the program welcome.c and converts into an executable module. The executable file "welcome.exe" will be created at the same location with the source file.

Steps to execute the program

1. In the code::blocks window click the "Run" button to execute the program.
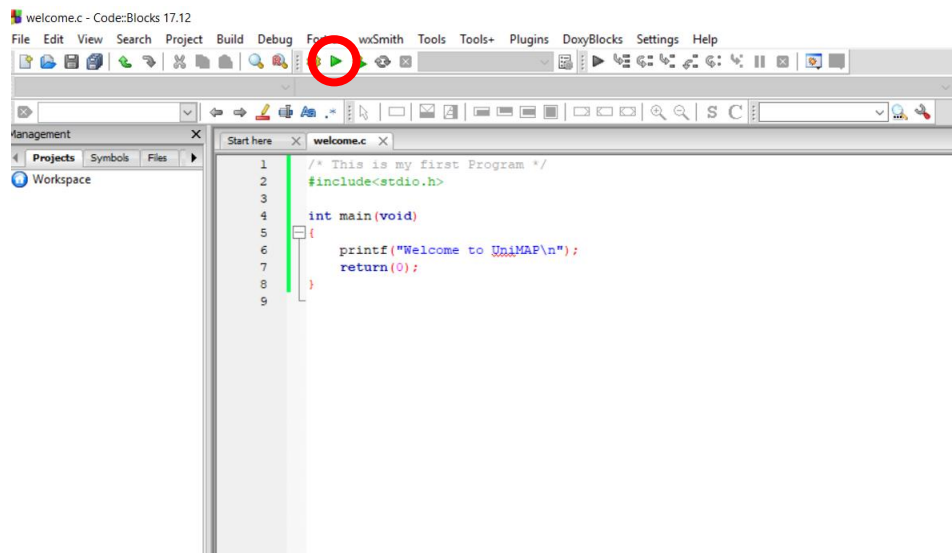
2. A terminal window will pop-up and the output of the program will be shown as follow.

1. Write a program in C to find the size of every data type. Compile and execute the program and write down the execution results. What do you infer from the result?

2. Write a program in C to determine the minimum and the maximum values that can be stored in every data type. Compile and execute the program and write down the execution results. What do you infer from the result?

3. It is required to compute the area of a triangle. The sides of the triangle are to be read in through the keyboard by the user. Write the pseudo code algorithm to solve the problem. Draw the flow chart also. Compile and execute the program and write down the execution results. What do you infer from the result?

4. Write a Program in C that reads the radius of a circle and computes:
(a) Area of the circle
(b) Circumference of the circle
(c) Area of the largest square that can be inscribed inside the circle