INF212
ALGORITHMS AND PROGRAMMING II
LABORATORY LEAFLET
STUDENTS VERSION

LABORATORY-0

Installing IDE and Compiling “Hello World!” in C

LAB 0

Task	Statement	Explanation
1	Creating a simple algorithm	Pseudo code and flow charts
2	What is a computer program?	Introduction to programming
3	What is compiler and IDE?	Converting the instructions into a machine code
4	Installation of Dev-C++ IDE	Introduction of the C
5	Compile and run “Hello World!” program	Beginning of the C

Task 1: Write pseudo code and draw flow chart of a simple algorithm which calculates the GPA and prints the student number and GPA, after getting the student's number, midterm, and final grade. (Final and midterm percentages can be taken as %60 and %40, respectively.)

Pseudo Code
Flow Chart

Task 2: What is a computer program?

A computer program is a list of instructions that tell a computer what to do. Everything a computer does is done by using a computer program. A computer program is written in a programming language.

Some examples of computer programs:

- Operating systems like Linux distributions, Android, MacOS and Windows.
- A web browser like Mozilla Firefox and Apple Safari can be used to view web pages on the Internet.
- An office suite can be used to write documents or spreadsheets.
- Video games are computer programs.

A computer program is stored as a file on the computer's hard drive. When the user runs the program, the file is read by the computer, and the processor reads the data in the file as a list of instructions. Then the computer does what the program tells it to do.

A computer program is written by a programmer. It is very difficult to write in the ones and zeroes of machine code, which is what the computer can read, so computer programmers write in a programming language, such as BASIC, C, or Java. Once it is written, the programmer uses a compiler to turn it into a language that the computer can understand.

There are also bad programs, called malware, written by people who want to do bad things to a computer. Some are spyware, trying to steal information from the computer. Some try to damage the data stored on the hard drive. Some others send users to web sites that offer to sell them things. Some are computer viruses or ransomware.

Task 3: What is compiler and IDE? [1] [2] [3]

A compiler is a computer program that translates computer code written in one programming language into another programming language. The first language is called the source language, and the code is called source code. The second language is called the target and can usually be understood by computers. In that case, the instructions become machine code.

A compiler usually has three steps. It reads the text and makes notes about how the words and sentences go together. If the words don't make sense, it will try to tell the programmer. Then it will use what it knows about the target language to make the instructions fit better. It then writes down the instructions in the target language. If the source instructions are on different pages, it may have to compile several before it can write everything down.

An integrated development environment, or IDE, is a computer program that makes it easier to write other computer programs. They are used by computer programmers to edit source code and can be

[1] https://simple.wikipedia.org/wiki/Computer_program
[2] https://simple.wikipedia.org/wiki/Compiler
[3] https://simple.wikipedia.org/wiki/Integrated_development_environment

easier to use than other text editors for new programmers. They can have compilers, so programmers don't have to open other programs to compile the source code. They also often have syntax highlighting. A feature of an IDE is to check the syntax, and libraries can be added to increase functionality. It also may have predictive coding that can finish lines with syntax such as brackets or semicolons and can suggest variables to be used. It also may have debuggers that can step through lines, take breaks and inspect variables.

An IDE often comes with an interpreter and a compiler. Certain IDEs can allow multi-language which means that functions can be written in different languages.

Some example of IDEs used by professionals are Eclipse, NetBeans, IntelliJ IDEA, CodeBlocks, Xcode, Visual Studio. On the other hand, one of the relatively simple IDEs is Dev-C++ which is used mainly for small projects and educational purposes.

Task 4: Installation of Dev-C++[4] [5]

We will use the latest version: *Dev-C++ 5.11.* Installation procedure is straight forward but be sure the checkbox "*TDM-GCC 4.9.2 compiler*" is selected on the options windows. This means we wish to install the IDE and the compiler at the same time.

The fastest way to produce a new project is as following: *File -> New -> Project*. After that a window appears. Select "Console Application" under the tab "Basic", then choose C project since we will use C language for coding, give a name to project and click to OK button. When the location is asked to save project files, choose where suits you but any path contains non-English characters is not advised. After the location is selected, the project is showed on the IDE with a template code according to the project specifications we have specified.

[4] https://en.wikipedia.org/wiki/Dev-C%2B%2B
[5] https://orwelldevcpp.blogspot.com/

Task 5: Compile and run "Hello World!" program

Step 1: Start
Step 2: Print "Hello World!"
Step 3: Stop

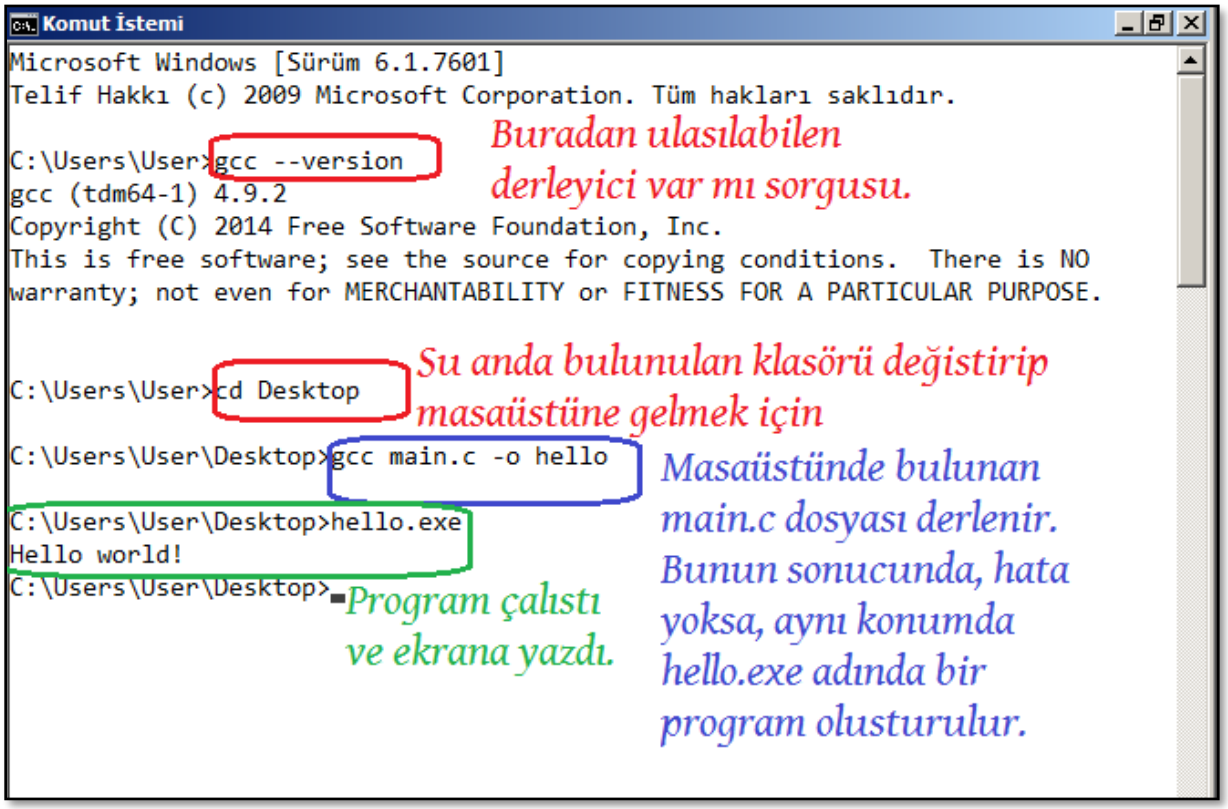
***Note:* Write the following code in main.c and press Compile&Run button on the toolbar.**

```
#include <stdio.h>


int main()
{
    int x;
    printf("Please enter your Student ID: ");
    scanf("%d", &x); //This line takes input from the user.
    printf("Student %d says: Hello World!",x);
    // This line prints out to the screen

    return 0;
}
```

It is also possible to compile and run a code directly from the Terminal/Console window as following:



Again, non-English characters are not allowed either in the file and folder names because the compiler would raise an error indicating the file and folders cannot be found.

ABOUT LABORATORY LEAFLET

This leaflet is prepared for the INF212 Algorithms and Programming II course laboratory given in the Department of Electronic Engineering of Gebze Technical University.

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