ENT 189 COMPUTER PROGRAMMING

LAB-1 INTRODUCTION TO UBUNTU ENVIRONMENT AND SEQUENTIAL STRUCTUTRE

Lecturer   :   Mdm. Humairah Binti Mansor
Teaching Engineer   :   Mdm. Sharifah Nurul Husna Binti
          Syed Hanapi
Technician   :   Mdm. Siti Khalijah Binti Hasan @ Yusuf

Name   : _____

Matric Number   : _____

Program   : Mechatronic Engineering

ENT 189 COMPUTER PROGRAMMING

LAB-1 INTRODUCTION TO UBUNTU ENVIRONMENT AND SEQUENTIAL STRUCTUTRE

Lecturer : Mdm. Humairah Binti Mansor
Teaching Engineer : Mdm. Sharifah Nurul Husna Binti Syed Hanapi
Technician : Mdm. Siti Khalijah Binti Hasan @ Yusuf

Name : _____

Matric Number : _____

Program : Mechanical Engineering

UBUNTU OPERATING SYSTEM

Ubuntu is a Unix – like operating system. Ubuntu operating system is a freeware. Any device can be plugged in and no installation CD is required. Ubuntu is compatible with Windows and we can open, edit and share Microsoft Office documents very easily.

Ubuntu has all the features of Unix-like systems. The major advantage of Ubuntu operating system is that it can generally run on a much wider range of hardware, including both system types and processor types.

Licensed under the GNU General Public License (GPL), Ubuntu is the flagship product of the open source community. Ubuntu can also cut administration and maintenance costs as compared with the Microsoft Windows operating systems because it is considerably more stable (it rarely crashes or needs rebooting) and is highly resistant to viruses and other malicious attacks.

Objective :

1. Able to use the Ubuntu Operating System.
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.
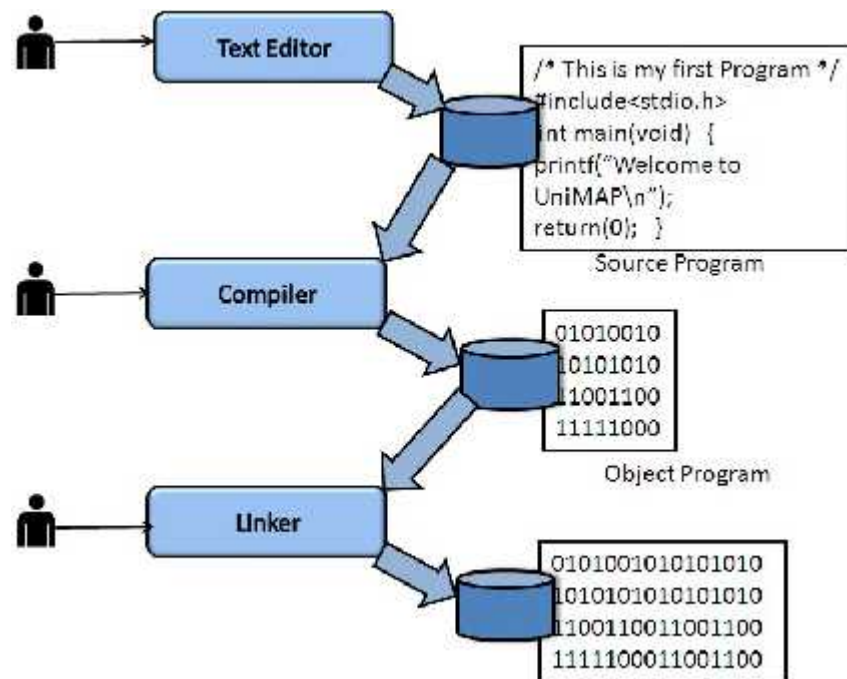
A text editor is used to write the programs. Using a text editor, a user can enter, modify and store character data. A text editor has also the capability of searching, locating and replacing statements, copying and pasting statements, moving statements from one location to another location. Ubuntu operating system has its own text editor called gedit.

To access the gedit follow the following steps:

1. Switch on the power supply to the system and wait for the login screen.

2. Once the login screen appears type in the login id as student.

3. Type in the password as student.

4. The system will boot and the system will display the main Ubuntu desktop screen.
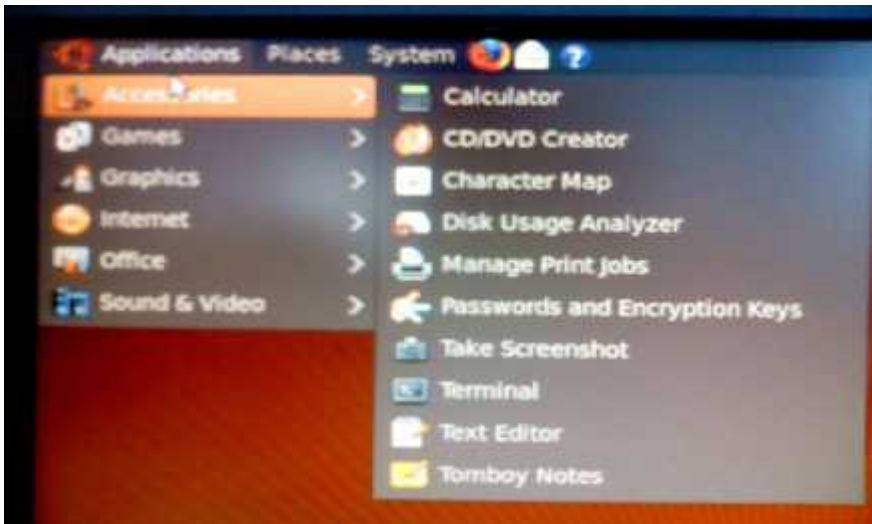
5. Now click Application > Accessories > text editor
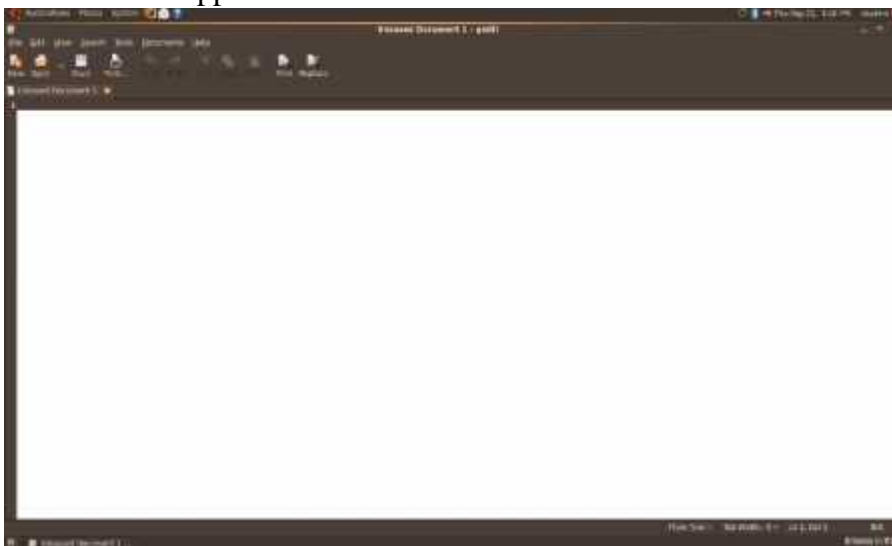
Now the system will display the gedit text editor.

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 providing a suitable file name. The file name should end with a file name extension '.c'. The file name extension indicates the type of file. Once saving the file, you have successfully created your source program.

To save the file, use the following steps:

1. In Text Editor screen, click File and chose the save option.
2. Type the name of the file as welcome.c in the provided space.

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. Select Application > Accessories > Terminals

The above process will display the Command window.

In the command window type the following command and press enter to compile your program:

gcc welcome.c

If the program is error free then the above command compiles the program welcome.c and converts into an executable module. The excitable module (a binary file) named by default "a.out" will be created.

Steps to execute the program

1. In the command window type the following command to execute the program:

./a.out

We can also compile and create the executable module with a specific name as:

gcc –o myresult welcome.c

In the above case, to execute the program, we have to specify the name of the executable module.

./myresult

1. Write a program in C to find the size of the various data types. 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 the various data types. 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