National University of Computer and Emerging Sciences

Laboratory Manuals

for

Computer Networks Lab

(CL -3001)

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Lab Manual 01

Objectives:
•   Introduction to GCC Compiler

•   Revision of Programming Concepts with C Programming Language

GCC Compiler:
In this lab, we will use the GCC Compiler on Ubuntu to Compile the programs in C Language and we will use POSIX Thread Libraries for multithreading in the later part of the lab. One important thing to note is that you will not be provided any IDE to code in C Language. You will use a simple text editor to code in Linux which is called GEDIT. The text editor will not provide you any help in coding. You will have to write out the correct code yourself without any errors (we expect this from you in your 6th semester).

After you have written your code, you will save your file with *.c* extension e.g *MyCode.c* and then you will move to the directory where you have saved your file from your home folder using command line in Ubuntu. To list the files and folders in the current directory you can simply write "ls" command. To move into any directory you have to write "cd <directory_name>". To go directly into home directory we simply write "cd". To go one step down in the hierarchy of directories we write "cd ..".

➢ To **COMPILE YOUR FILE** using gcc compiler you first have to go to the directory where the file is placed and then you will write the following:

<div align="center">

gcc <file_name>.c –o <executable_fileName>

</div>

If there is any error in your code then compiler will tell you those errors and you will correct them. If there will be no error you will see an executable formed in the same directory having a diamond like shape.

➢ Then you will **RUN YOUR EXECUTABLE** by issuing the following command in the directory where your executable is placed:

<div align="center">

./<executable_fileName>

</div>

Make sure you write the correct file name in any case otherwise you will get error. You can use **TAB** after writing two to three letters of file and it will auto complete your file name for you.

➢ To open the terminal you will either open it using GUI or press "**Ctrl+Alt+T**". To open two windows in the same terminal you will use "**Ctrl+Shift+T**". To paste something in the Terminal you will press "**Ctrl+Shift+V**". To copy something from your terminal you will use "**Ctrl+Shift+C**". To terminate any running program you will use "**Ctrl+C**" or "**Ctrl+Z**".

In Lab Statements:

1. **Write a code in c which performs the following functions:**

a) Reads the text file Input_File.txt and displays its data on terminal. **[3]**

b) Write only the integers from the Input_File.txt file to another file which will be created at runtime. **[3]**

c) Write non-alphabet words (non-alphabet word is the one in which all letters are non-alphabet e.g., "a#$2#" is not an alphabet word but "$%^&#32" is a non-alphabet word) from the Input_File.txt file into another text file which will be created at run-time. **[6]**

d) Invert all the words in Input_File.txt file which contain one or more vowels and write the complete content (with inverted and non-inverted words) into another file which will be created at run time. For example 'computer' will be inverted to 'retupmoc'. **[8]**