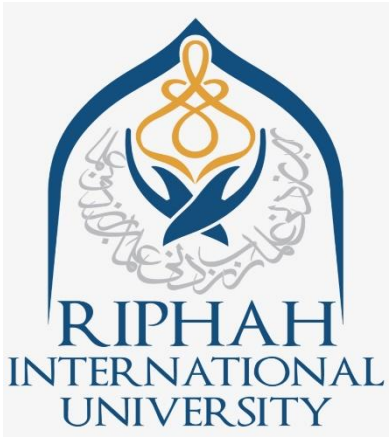



# Lab # 06

## Operating System

Name: Samreen Bibi

Sap Id:46484

Batch: BSCS-5th semester

Submitted to: Kauser Nasreen

**Q1.**

Explain the process of compiling a C program in Linux. What command is used to compile the program?

**Answer:**

To compile a C program in Linux using an online terminal, follow these steps:

- Begin by creating a file with a .c extension containing your code.

- Then, use the gcc command, which is the most widely used compiler for C programs in Linux, to compile the code.

```
gcc Samreen.c -o Samreen
```

Then, run it with.

```
./Samreen
```

**Q2.**

What is the purpose of the -o option in the gcc command? Provide an example.

**Answer:**

The -o option in the gcc command specifies the name of the output file.

```
g++ Samreen.cpp -o Samreen
```

**Q3.**

What is the difference between g++ and gcc? When would you use each?

**Answer:**

- gcc is used for compiling C programs, while g++ is for C++ programs.
- Use gcc for .c files and g++ for .cpp files.

**Q4.**

How do you compile and run a C++ program from the terminal? Provide the necessary commands.

**Answer:**

To compile a C++ program, use the g++ command and add -o to choose the name of the output file. After that, run the program by typing ./ before the output file name.

```
g++ Samreen.cpp -o Samreen
```

Run a program

```
./Samreen
```

**Q5.**

What are templates in C++ in Linux? Write a simple example of a function template.

**Answer:**

Templates in C++ let us create flexible and reusable code that can handle any data type. This means you can write functions and classes that work with different types without having to rewrite them for each one.

```
  GNU nano 5.3                                program.cpp
# include <iostream>
using namespace std;

template <typename T>
T add (T a, T b){
return a+b;
}

int main (){
cout << add(5,10) <<endl;
cout << add(4.9, 10.1) << endl;
return 0;
}
```

**Q6.**

Discuss the significance of file extensions in C programming. Why should source files be saved with .c or .cpp extensions?

**Answer:**

File extensions in C programming, like .c for C files and .cpp for C++ files, help the compiler identify the code type for proper processing. They also improve organization and allow code editors to provide features like syntax highlighting, making development easier and more efficient.

**Q7.**

What are the common errors that can occur when compiling C programs, and how can they be resolved?

**Answer:**

1.Undefined Variables: Using variables that haven't been declared.

Resolution: Declare all variables before using them.

2.Type Mismatch: Assigning values of incompatible types.

Resolution: Ensure variable types match when assigning values.
Linker Errors: Issues with unresolved references to functions or variables.

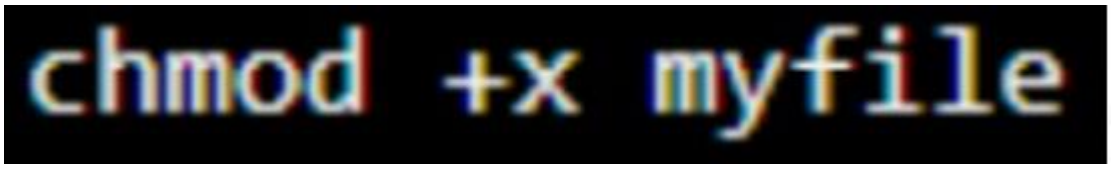
Resolution: Check that all required files are included and linked correctly.

**Q8.**

Explain how you can manage permissions for an executable file in Linux. What command is used for this purpose?

**Answer:**

In Linux, you can manage permissions for an executable file using the chmod command. This command allows you to change who can read, write or execute the file.




**Q9.**

What is a tarball, and what advantages does it offer for distributing software on Linux? Discuss the limitations of using tarballs for software installation and management.

**Answer:**

A tarball is a compressed archive file that combines multiple files and directories into one package for easier distribution. Advantages:

Easy to Share: Tarballs package all necessary files together, making them simple to download and share.

Reduced Size: They compress files, saving space and making downloads quicker.

**Limitations:**

Manual Installation: Installing software from a tarball often requires manual steps, which can be complicated for users.

No Dependency Handling: Tarballs do not manage software dependencies automatically, so users may need to install required libraries on their own.

**Q10.**

Explain the purpose of the RPM package format and how it addresses the shortcomings of tarballs?

**Answer:**

RPM, or Red Hat Package Manager, is a tool for installing software on Red Hat-based Linux systems. It bundles everything needed into one file with a .rpm extension, including details about the version, files included, and any dependencies. While the rpm command makes installation easy, it can sometimes have trouble handling dependencies, which can lead to issues if required software isn't already installed**.**