RIPHAH INTERNATIONAL UNIVERSITY, ISLAMABAD

Lab # 4

Bachelors of Computer Science – 6th Semester

Subject: Operating System

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Task: 1

- User (Owner): Full permissions (read, write, and execute).
- Group: Read and write permissions.
- Others: Read permission only.

Method 1: Using Symbolic Method

Method 1: Using Numerical Method

Task: 2

- Create a directory called lab4 and create three files say quiz, report and cprogram inside the directory.

```
[root@localhost ~]# cd
[root@localhost ~]# ls
bench.py  hello.c  Lab4  LINUXOS
[root@localhost ~]# cd Lab4
[root@localhost Lab4]# touch quiz
[root@localhost Lab4]# touch report
[root@localhost Lab4]# touch cprogram
[root@localhost Lab4]# ls
cprogram  quiz  report
[root@localhost Lab4]#
```

- **-rw-r- - r- - quiz**

```
[root@localhost Lab4]# ls -l
total 0
-rw-r--r-- 1 root root 0 Sep  7 18:37 cprogram
-rw-r--r-- 1 root root 0 Sep  7 18:36 quiz
-rw-r--r-- 1 root root 0 Sep  7 18:36 report
[root@localhost Lab4]# chmod 644 quiz
[root@localhost Lab4]# ls -l
total 0
-rw-r--r-- 1 root root 0 Sep  7 18:37 cprogram
-rw-r--r-- 1 root root 0 Sep  7 18:36 quiz
-rw-r--r-- 1 root root 0 Sep  7 18:36 report
```

- **-rw-rw - r- - report**

```
[root@localhost Lab4]# chmod 664 report
[root@localhost Lab4]# ls -l
total 0
-rw-r--r-- 1 root root 0 Sep  7 18:37 cprogram
-rw-r--r-- 1 root root 0 Sep  7 18:36 quiz
-rw-rw-r-- 1 root root 0 Sep  7 18:36 report
[root@localhost Lab4]#
```

- **-rwx rwx x cprogram**

```
[root@localhost Lab4]# chmod 771 cprogram
[root@localhost Lab4]# ls -l
total 0
-rwxrwx--x 1 root root 0 Sep  7 18:37 cprogram
-rw-r--r-- 1 root root 0 Sep  7 18:36 quiz
-rw-rw-r-- 1 root root 0 Sep  7 18:36 report
[root@localhost Lab4]#
```

Task: 3

- On your Linux system, you have two directories named OSLAB and OSTheory.

```
[root@localhost ~]# ls
bench.py  hello.c  Lab4  LINUXOS
[root@localhost ~]# mkdir OSLAB
[root@localhost ~]# mkdir OSTHEORY
[root@localhost ~]# ls
bench.py  hello.c  Lab4  LINUXOS  OSLAB  OSTHEORY
```

- In the OSLAB directory, your task is to create three text files: overview.txt with the text "Overview of Operating Systems," details.txt with the text "Detailed study of key OS concepts," and applications.txt with the text "Applications and examples of OS concepts."

```
[root@localhost ~]# cd OSLAB
[root@localhost OSLAB]# cat > overview.txt
Overview of Operating System[root@localhost OSLAB]# cat > details.txt
Detailed studey of key OS concept.^C
[root@localhost OSLAB]# cat > Application.txt
Applications and Examples of OS Concept^C
[root@localhost OSLAB]# ls
Application.txt  details.txt  overview.txt
```

- Once these files are created and populated, you need to combine their contents into a single file named Combinedtext. Now display the data in a Combinedtext.

```
[root@localhost OSLAB]# cat overview.txt details.txt Application.txt > CombinedT
ext
[root@localhost OSLAB]# cat CombinedText
Overview of Operating SystemDetailed study of key OS concept.Applications and E
xamples of OS Concept[root@localhost OSLAB]#
```

Task: 4

- Directory A contains at least two files named "FinalTerm" and "MidTerm". Directory B contains at least two files named "OSTheory" and "OSLAB".

```
[root@localhost ~]# mkdir A
[root@localhost ~]# mkdir B
[root@localhost ~]# cd A
[root@localhost A]# touch FinalTerm
[root@localhost A]# touch MidTerm
[root@localhost A]# ls
FinalTerm  MidTerm
[root@localhost A]# cd ..
[root@localhost ~]# cd B
[root@localhost B]# touch OSTheory
[root@localhost B]# touch OSLab
[root@localhost B]# ls
OSLab  OSTheory
```

- Move the "MidTerm" file from the existing Directory to the Directory where the OSLAB file exists and Rename it with TASK.

```
[root@localhost B]# cd
[root@localhost ~]# mv /root/A/MidTerm /root/B/Task
[root@localhost ~]# ls
A  B  bench.py  hello.c  Lab4  LINUXOS  OSLAB  OSTHEORY
[root@localhost ~]# cd A
[root@localhost A]# ls
FinalTerm
[root@localhost A]# cd ..
[root@localhost ~]# cd B
[root@localhost B]# ls
OSLab  OSTheory  Task
[root@localhost B]#
```

Task: 5

```
[root@localhost ~]# nano circle.cpp
```

- writing the C++ code, compiling the program, and running it to display the circle.

```cpp
GNU nano 5.3                          circle.cpp
#include <iostream>
#include <cmath> // for sqrt and pow functions
const int WIDTH = 40; // Width of the console output
const int HEIGHT = 20; // Height of the console output
const char CIRCLE_CHAR = '*'; // Character used to draw the circle
void DrawCircle(int centerX, int
centerY, int radius) {
    for (int y = 0; y < HEIGHT; ++y) { for (int x = 0; x < WIDTH; ++x) {
        // Calculate distance from the center
        int dx = x - centerX; int dy = y - centerY;
if (std::sqrt(std::pow(dx, 2) + std::pow(dy, 2)) <= radius) {
            std::cout << CIRCLE_CHAR;
        } else {
            std::cout << ' ';
        }
    }
        std::cout << '\n';
    }
}
int main() { int centerX = WIDTH / 2; int centerY = HEIGHT / 2;
    int radius = 8; // Radius of the circle
DrawCircle(centerX, centerY, radius);
return 0;
}
```

- What commands and procedures would you use to accomplish this?

```
[root@localhost ~]# chmod 777 circle.cpp
[root@localhost ~]# g++ -o circle circle.cpp
[root@localhost ~]# ./circle


                *
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        *****************
        *****************
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        *****************
        *****************
         ***************
          *************
          *************
           **********
             *******
                *
```