# Operating Systems

# Lab – 09

**Objectives:**

- I/O Redirection
- Inter Process Communication

## Linux Environment

**Perform all the tasks on your machine and write in your notebook the particular one's.**

1. Create a **lab09/** directory on your desktop and perform the following tasks in it.

## I/O Redirection

**Task 01:** Perform the following tasks:

a) Write a single command to copy the contents of **/etc/passwd** into **out.txt** without using **cp** command. (Hint: I/O Redirection)
b) Find all the files named ***libc.so*** in your root directory (using find command) and redirect the **output** to **libc_locations.txt**, and errors to **/dev/null**.

**Task 02:** Perform the following tasks:

a) Write a single command to add "**Hi, I am <Your Name>**" into **myself.txt**. (Hint: Use echo command)
b) Append "**My Roll No is : <Your Roll No.>**" using IO redirection.

**Task 03:**

```
#include<stdio.h>
#include<unistd.h>
#include<fcntl.h>
int main(void) {
        int fd = open("/tmp/fake", O_RDONLY);
        perror("ARM: Can't open file");
        printf("Ever wanted to be a Hacker?\n");
        printf("If Yes, Work hard and learn how OS throws errors to other files \n");
        return 0;
}
```

Save the above given source code as **hacking.c** then compile and make **executable** of the hacking.c and perform **I/O** redirection operations as described below:

a) Redirect the output to a file named **work_hard.txt**.
b) Redirect the error to a file named **failed.txt**.
c) Redirect the **stdout** and **stderr** to a file called **screen_copy.txt** using **copy descriptor.**

**Task 04:**

a) Assume that file **f1, f2 and f3** do **not** exist. Draw the **PPFDT** of the following command. Will **f1** and **f2** be created and what will be their contents?
   i) **$ cat f1 1 > f2 2 > f3**
   ii) **$ cat 0 < f1 1 > f2 2 > f3**

## Inter Process Communication

**Task 05:** Use pipes to perform the following task:

a) Write a single command to display all the lines containing **kali** in **/etc/passwd** counts the number of lines in the output.
b) Write a single command to count the **occurrences** of word root in **/etc/passwd**.
c) Draw **PPFDT** of each process that was created in the above questions **a** and **b**.

**Task 06:**

a) Create a fifo called **transporter**. Open two **shells** and display the contents of the /etc/passwd on **both shells**. (Hint: Use **tee** command to save data in the transporter and on the second shell use any command to **read the transporter**).

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"Work hard to learn Linux, and you'll discover the keys to unlocking a world of innovation and control over your computing journey."