
OS Lab 01 02

1. Create the following directories with one command.

OSSPRING2025/OSLAB -> OSLAB1

```
mufeez@mine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2$ mkdir -p OSSPRING2025/OSLAB/OSLAB1
mufeez@mine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2$ ls
OSSPRING2025
```

2. Create a group name 'OperatingSystemLab1'

sudo groupadd OperatingSystemLab1

3. Create a user account 'OSUser1' and 'OSUser2' and add it to the group 'OperatingSystemLab1'. Login in to that

user using terminal.

```
mufeez@mine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ groupadd OperatingSystemLab1
groupadd: Permission denied.
groupadd: cannot lock /etc/group; try again later.
mufeez@mine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ sudo groupadd OperatingSystemLab1
[sudo] password for mufeez:
mufeez@mine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ sudo useradd -G OperatingSystemLab1 OSUser1
mufeez@mine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ sudo useradd -G OperatingSystemLab1 OSUser2
mufeez@mine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ getent group OperatingSystemLab1
OperatingSystemLab1:x:1001:OSUser1,OSUser2
mufeez@mine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ su - OSUser1
su: user OSUser does not exist or the user entry does not contain all the required fields
mufeez@mine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ su - OSUser1
Password:
asu: Authentication failure
mufeez@mine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$
mufeez@mine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ a
a: command not found
mufeez@mine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ sudo passwd OSUser1
sudo: passwd: command not found
mufeez@mine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ sudo passwd OSUser1
New password:
BAD PASSWORD: The password is shorter than 8 characters
Retype new password:
passwd: password updated successfully
mufeez@mine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ su - OSUser1
Password:
su: warning: cannot change directory to /home/OSUser1: No such file or directory
$ groups
OSUser1 OperatingSystemLab1
$ ls
$ ls
$ cd
-sh: 4: cd: can't cd to /home/OSUser1
$
```

4. Create a file 'file1.txt' and write "LinuxOperating system".
5. Create another file 'file2.txt'.
6. Copy the content of 'file1.txt' into 'file2.txt'.
7. On one line, use the "cd" command to first go to your home directory then to the rollnumber subdirectory. [Ans:

cd/home; cd rollnumber]

```
mufeez@mine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ echo "LinuxOperating system" > file1.txt
mufeez@mine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ touch file2.txt
mufeez@mine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ cp file1.txt file2.txt
mufeez@mine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ cd /home
mufeez@mine:/home$ cd 23k0800
bash: cd: 23k0800: No such file or directory
mufeez@mine:/home$
```

8. Explain the difference between the 'mv' and 'cp' commands.

mv commands move a file or directory from one directory to another while cp commands copy a file or folder from one location to another.

9. How would you move a file named "doc.txt" to a directory named "documents"?

mv doc.txt documents/

10. Write a C++ program that uses the <cmath> library to calculate the square root of a number. Compile

```
mufeez@mine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ g++ q10.cpp -o q10
mufeez@mine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ ./q10 108
10.3923
```

```
#include<iostream>
```

```
#include<cmath>
```

```
using namespace std;
```

```
int main(int argc, char * arg[]){
```

```

    int a;

    a = atoi(arg[1]);

    cout<<sqrt(a)<<endl;

return 0;

}

```

11. Write a C++ program that initializes an array of integers and finds the sum of its elements. Compile and run the program.

```

Segmentation fault (core dumped)
mufeez@nine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ g++ q11.cpp -o q11
mufeez@nine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ ./q11
Sum :96
mufeez@nine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ 

```

```

#include<iostream>

using namespace std;

int main(int argc, char *arg[]){

    int arr[8] = {12,54,13,1,2,5,6,3};

    int sum =0;

    for(int i =0;i<8      ;++i){

        sum += arr[i];

    }

    cout<<"Sum :"<<sum <<endl;

return 0;

```

```
}
```

12. Write a C++ program that takes a string as a command line argument and checks whether it is a palindrome or not.

```
mufeez@nine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ touch q12.cpp
mufeez@nine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ g++ q12.cpp -o q12
mufeez@nine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ ./q12 hello
not a palindrome
mufeez@nine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ ./q12 bogob
palindrome
```

```
#include <iostream>
```

```
#include <cstring>
```

```
using namespace std;
```

```
bool isPalindrome(const char *str) {
```

```
    int left = 0;
```

```
    int right = strlen(str) - 1;
```

```
    while (left < right) {
```

```
        if (str[left] != str[right]) {
```

```
            return false;
```

```
        }
```

```
        left++;
```

```
        right--;
```

```
    }
```

```
    return true;
```

```
}
```

```
int main(int argc, char *argv[]) {
```

```
    if (isPalindrome(argv[1])) {
```

```
        cout << "palindrome" << endl;
```

```

    } else {
        cout << "not a palindrome" << endl;
    }

    return 0;
}

```

13. Write a C++ program that acts as a simple calculator. It should take three command line arguments:

two numbers and an operation (+, -, *, /) and print the result.

```

mufeez@nine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ g++ q13.cpp -o q13
mufeez@nine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ ./q13 12 + 5
Result: 17
mufeez@nine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ ./q13 12 - 5
Result: 7
mufeez@nine:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OSSPRING2025/OSLAB/OSLAB1$ 

```

```
#include <iostream>
```

```
using namespace std;
```

```
int main(int argc, char *argv[]) {
```

```
    double num1 = atoi(argv[1]);
```

```
    double num2 = atoi(argv[3]);
```

```
    char op = argv[2][0];
```

```
    double result;
```

```
    switch (op) {
```

```
        case '+':
```

```
            result = num1 + num2;
```

```

        break;
    case '-':
        result = num1 - num2;
        break;
    case '*':
        result = num1 * num2;
        break;
    case '/':
        result = num1 / num2;
        break;
    default:
        cout << "Error" << endl;
        return 1;
}

cout << "Result: " << result << endl;

return 0;
}

```

14. Your task is to develop a simple Student Management System in C that allows users to add a student, display all

students, and search for a student by ID. Organize your code into five files: main.c (handles the main menu),

add_student.c (adds student records), display_students.c (displays all students), search_student.c (searches for a

student by ID), and student.h (defines the Student structure with fields like id and name, and declares function

prototypes).

You must write a Makefile to compile all .c files into a single executable named student_mgmt, with a

clean target to remove the executable. Compile the program using make, run it with ./student_mgmt,

and clean up using make clean.

The program should display a menu with options to add, display, search for students, and exit. It should

loop until the user chooses to exit. Handle invalid inputs appropriately.

Submission: Zip all source files (.c, .h, Makefile) as StudentManagement_<YourName>; with terminal

screenshots showing successful compilation and execution.

```
mufeez@mlne:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OS5SPRING2025/OSLAB/OSLAB1$ make
make: 'student_mgmt' is up to date.
mufeez@mlne:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OS5SPRING2025/OSLAB/OSLAB1$ ./student_mgmt

Enter your choice:
1 - Display students
2 - Add new student
3 - Search student by ID
4 - Exit
Choice: 2
Enter student ID: 12
Enter student name: mufeez
Student added successfully.

Enter your choice:
1 - Display students
2 - Add new student
3 - Search student by ID
4 - Exit
Choice: 2
Enter student ID: 123
Enter student name: adasd
Student added successfully.

Enter your choice:
1 - Display students
2 - Add new student
3 - Search student by ID
4 - Exit
Choice: 1

Student List:
ID: 12 Name: mufeez
ID: 123 Name: adasd

Enter your choice:
1 - Display students
2 - Add new student
3 - Search student by ID
4 - Exit
Choice: 3

Enter Student ID: 123
ID: 123 Name: adasd

Enter your choice:
1 - Display students
2 - Add new student
3 - Search student by ID
4 - Exit
Choice: 4
Exiting program.
```

```
adding: Makefile (deflated 53%)
mufeez@mlne:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OS5SPRING2025/OSLAB/OSLAB1$ zip Student_Management_Mufeez.zip main.c add_student.c display_students.c search_student.c student.h Makefile
adding: main.c (deflated 62%)
adding: add_student.c (deflated 47%)
adding: display_students.c (deflated 42%)
adding: search_student.c (deflated 44%)
adding: student.h (deflated 44%)
adding: Makefile (deflated 53%)
mufeez@mlne:/media/mufeez/work1/FAST_KHI_SEMESTER_4/OS_lab/2_lab/work_1_2/OS5SPRING2025/OSLAB/OSLAB1$
```