**Submitted in partial fulfillment of the requirements, of course, CSE324: Operating System Lab, for the B.Sc program in CSE**

# Project Report

**Report Title:** File Management System Project

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## INTRODUCTION:

Computer users spend time every day interacting with digital files and folders, including creating, downloading, naming, moving, saving, copying, reviewing, navigating, searching for,sharing, and deleting them. This activity, called file management (FM).
File management is an art of storing, naming, sorting and handling documents files in a systematic manner. So that in future it will easy to retrieve data.

**A file management system** is a type of software that manages data files in a computer system. It has limited capabilities and is designed to manage individual or group files, such as special office documents and records.

The following are some of the tasks performed by file management of operating system of any computer system:

- It helps to create new files in computer system and placing them at the specific locations.
- It helps in easily and quickly locating these files in computer system.
- It helps to stores the files in separate folders known as directories. These directories help users to search file quickly or to manage the files according to their types or uses.
- It helps the user to modify the data of files or to modify the name of the file in the directories etc.

File management helps users to organize their valuable documents in a systematic manner for better and efficient use of it.

## MOTIVATION:

File management is a process of maintaining any kind of records in a proper manner like your work document or your money records this is the process to divide things in different stages and in writing from so that in future when needed it will be easy to get that particular record.
In the 20th century, vertical filing cabinets were introduced to store a different kind of files. Then the computer was used to store a different kind of file in the system with the help of the LAN/wan network. Then portable flash drive was introduced to store files and to transfer data from one system to another. Then cloud storage was introduced this cloud storage made easy to store files from anywhere and from any computer this prevent the user from losing the data or from any data threat with their high-security methods.

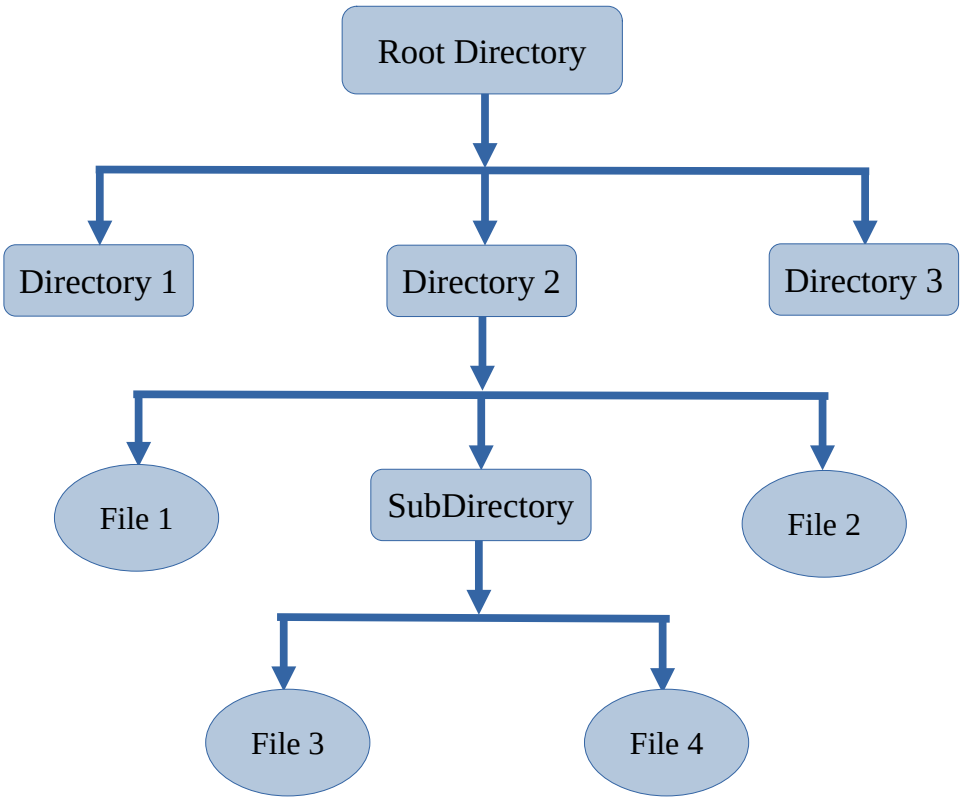
## OBJECTIVE:

File management is one of the basic and important features of operating system. Operating system is used to manage files of computer system. All the files with different extensions are managed by operating system.

A file is collection of specific information stored in the memory of computer system. File management is defined as the process of manipulating files in computer system, it management includes the process of creating, modifying and deleting the files.
Our files have several common characteristics built in. Each file is made up of data, but also metadata is embedded into the file to help the operating system (OS) manage how the file works and how it is stored. Metadata records file information such as the author, file creation date, modified date, and file size.

## METHODOLOGY:

The file is actually the collection of associated information. This file-system prearranged into directory for efficient usage. Every directory has a number of files and other directories. The directory is defined as a bit which distinguish the entries that explained file and subdirectories in the recent directory. By theoretically we may change the file into a directory by changing its bit. A file system is considered as an element of an operating system that manage the storage space and operation of files on media like disks.




The above figure shows the general hierarchy of the storage in an operating system. In this figure the root directory is present at the highest level in the hierarchical structure. It includes all the subdirectories in which the files are stored. Subdirectory is a directory present inside another directory in the file storage system. The directory base storage system ensures better organization of files in the memory of the computer system.

## MECHANISM AND WORKING:

### Main Menu Source Code:

```
#include <stdio.h>
int main(void) {
    printf("================================================\n");
    printf("--------Welcome File Management Project--------\n");
    printf("================================================\n");
        printf("The Main Menu is given below:\n");
        printf("01- List all Files and Directories\n");
        printf("02- Create New Files\n");
        printf("03- Delete Existing Files\n");
        printf("04- Rename Files\n");
        printf("05- Edit File Content\n");
        printf("06- Search Files\n");
        printf("07- Details of Particular File\n");
        printf("08- View Content of File\n");
        printf("09- Sort File Content\n");
        printf("10- List only Directories(Folders)\n");
        printf("11- List Files of Particular Extension\n");
        printf("12- Count Number of Directories\n");
        printf("13- Count Number of Files\n");
        printf("14- Sort Files in a Directory\n");
        printf("0-  Exit\n");
        printf("\nWhat action you want to Perform?\nEnter:\n");

return 0;
}
```

### Main Source Code:

```
#!/bin/bash
i="0"
while [ $i -lt 100 ]
do
gcc project_code.c -o project_code
./project_code
read opt1
if [ $opt1 == 1 ]
then
```

```
    echo "List all files and directories..."
    echo "Showing all file and directories..."
    sleep 3

    echo "Loading..."
    sleep 3

    echo "---------------Output---------------"
    ls
    echo " "

elif [ $opt1 == 2 ]
then
    echo "Create new file..."
    echo "Which type of file you want to create:"
    echo "1- .c"
    echo "2- .sh"
    echo "3- .txt"
    echo "Enter your choice:"
    read filechoice

        if [ $filechoice == 1 ]
        then
            echo "Enter file name without .c extension:"
            read filename
            touch $filename.c
            echo "---------------Output---------------"
            echo "File created successfully."
            echo " "

        elif [ $filechoice == 2 ]
        then
            echo "Enter file name without .sh extension:"
            read filename2
            touch $filename2.sh
            echo "---------------Output---------------"
            echo "File created successfully."
            echo " "

        elif [ $filechoice == 3 ]
        then
```

```
            echo "Enter file name without .txt extension:"
            read filename3
            touch $filename3.txt
            echo "---------------Output---------------"
            echo "File created successfully."
            echo " "
        else
            echo "Invalid input...try again!"
            echo " "
            fi

elif [ $opt1 == 3 ]
then
    echo "Delete exixting file..."
    echo "Enter the name of file you want to delete:"
    echo "Note: Please enter full name with extension."
    read delfile
    echo "---------------Output---------------"

    if [ -f "$delfile" ];
    then
        rm $delfile
        echo "Successfully deleted."
        echo " "
    else
    else
        echo "File does not exist.... try again!"
        echo " "
        fi

elif [ $opt1 == 4 ]
then
    echo "---------------Output---------------"
    echo "Rename file..."
    echo "Enter old name of file with extension:"
    read old
    echo "Checking for file..."
    sleep 3

    if [ -f "$old" ];
    then
        echo "File existed."
```

```
        echo "Now Enter new name for file with extension:"
        read new
        mv $old $new
        echo "Successfully renamed."
        echo "Now your file exist with $new name"
    else
        echo "$old does not exist...try again with current filename."
        fi
        echo " "

elif [ $opt1 == 5 ]
then
    echo "Edit file contant..."
    echo "Enter file name with extension:"
    read edit
    echo "---------------Output---------------"
    echo "Checking for file..."
    sleep 3

    if [ -f "$edit" ];
    then
        echo "Opening file..."
        sleep 3
        nano $edit
        echo " "

   else
       echo "$edit File does not exist...try again."
       fi

elif [ $opt1 == 6 ]
then
    echo "Search file..."
    echo "Enter the file name with extension to search:"
    read f
    echo "---------------Outut---------------"

    if [ -f "$f" ];
    then
        echo "Searching for $f file"
        echo "File found."
        find /home -name $f
```

```
        echo " "

    else
        echo "File does not exist...try again."
        echo " "
        fi

elif [ $opt1 == 7 ]
then
    echo "Details of file..."
    echo "Enter file name with extension to see details:"
    read details
    echo "---------------Output---------------"
    echo "Checking for file..."
    sleep 4

    if [ -f "$details" ];
    then
        echo "Loading properties.."
        stat  $details

    else
        echo "$details File does not exist...try again."
        fi
        echo " "

elif [ $opt1 == 8 ]
then
    echo "View contant of file..."
    echo "Enter file name:"
    read readfile
    echo "---------------Output---------------"

    if [ -f "$readfile" ];
    then
        echo "Showing file content:"
        sleep 3

        cat $readfile

    else
        echo "$readfile does not exist."
```

```
        fi
        echo " "

elif [ $opt1 == 9 ]
then
    echo "Sort file content..."
    echo "Enter the file name with extension to sort:"
    read sortfile
    echo "---------------Output---------------"

    if [ -f "$sortfile" ];
    then
        echo "Sorting file content..."
        sleep 3

        sort $sortfile

    else
        echo "$sortfile File does not exist...try again."
        fi
        echo " "

elif [ $opt1 == 10 ]
then
    echo "---------------Output---------------"
    echo "List of all directories..."
    echo "Showing all directories..."
    echo "Loading..."
    sleep 3

    ls -d *\

    echo " "

elif [ $opt1 == 11 ]
then
    echo "List of files with particular extension..."
    echo "Which type of file list you want to see?"
    echo "1- .c"
    echo "2- .sh"
    echo "3- .txt"
    echo "Enter your choice:"
```

```
    read extopt
    echo "---------------Output---------------"

    if [ $extopt == 1 ]
    then
        echo "List of .c files shown bellow:"
        echo "Loading..."
        sleep 3

        ls *.c

    elif [ $extopt == 2 ]
    then
        echo "List of .sh files shown below:"
        echo "Loading..."
        sleep 3
        ls *.sh

    elif [ $extopt == 3 ]
    then
        echo "List of .txt file shown below:"
        echo "Loading..."
        sleep 3
        ls *.txt

   else
       echo "Invalid input...try again."
       fi
       echo " "

elif [ $opt1 == 12 ]
then
    echo "---------------Output---------------"
    echo "Total number of directories..."
    echo "Loading all directories..."
    sleep 3

    echo "Counting..."
    sleep 3

    echo "Number of directories are:"
    echo */ | wc -w
```

```
    echo " "

elif [ $opt1 == 13 ]
then
    echo "----------Output----------"
    echo "Total number of files in current directory..."
    echo "Loading all files..."
    sleep 3

    echo "Number of files are:"
    ls -l | grep -v 'total' | grep -v '^d' | wc -l
    echo " "

elif [ $opt1 == 14 ]
then
    echo "----------Output----------"
    echo "Sort files..."
    echo "Your request of sorting files is generated."
    echo "Sorting..."
    sleep 3

    ls | sort

    echo " "

elif [ $opt1 == 0 ]
then
    echo "That's all."
    echo "Successfuly exist."
    break

else
    echo "Invalid input...try again."
    fi

     i=$[$i+1]

done
```

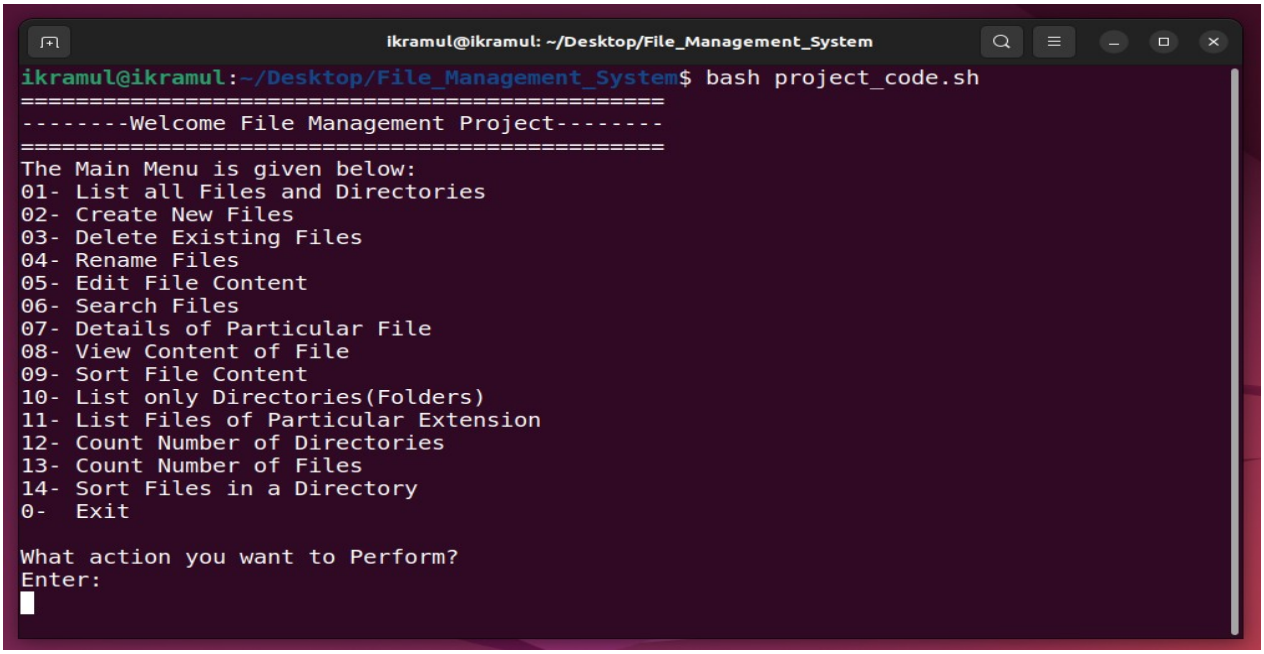
## RESULT DISCUSSION:

### Main Manu:

Main menu of Project that display all the available option to the users. The users need to choose one out of 14 and the particular command will be executed according to the user input.

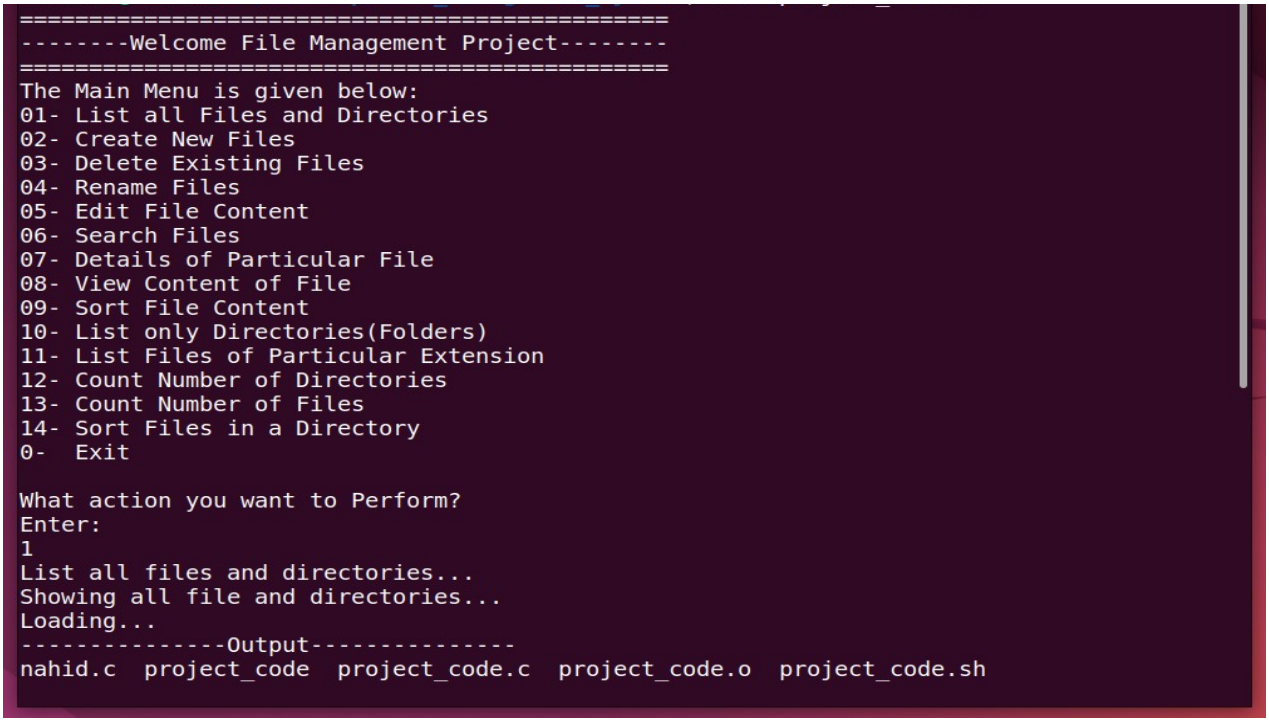
### Choice 01 Output:

If user enter 1 then the List of all Files and Directories will be displayed.



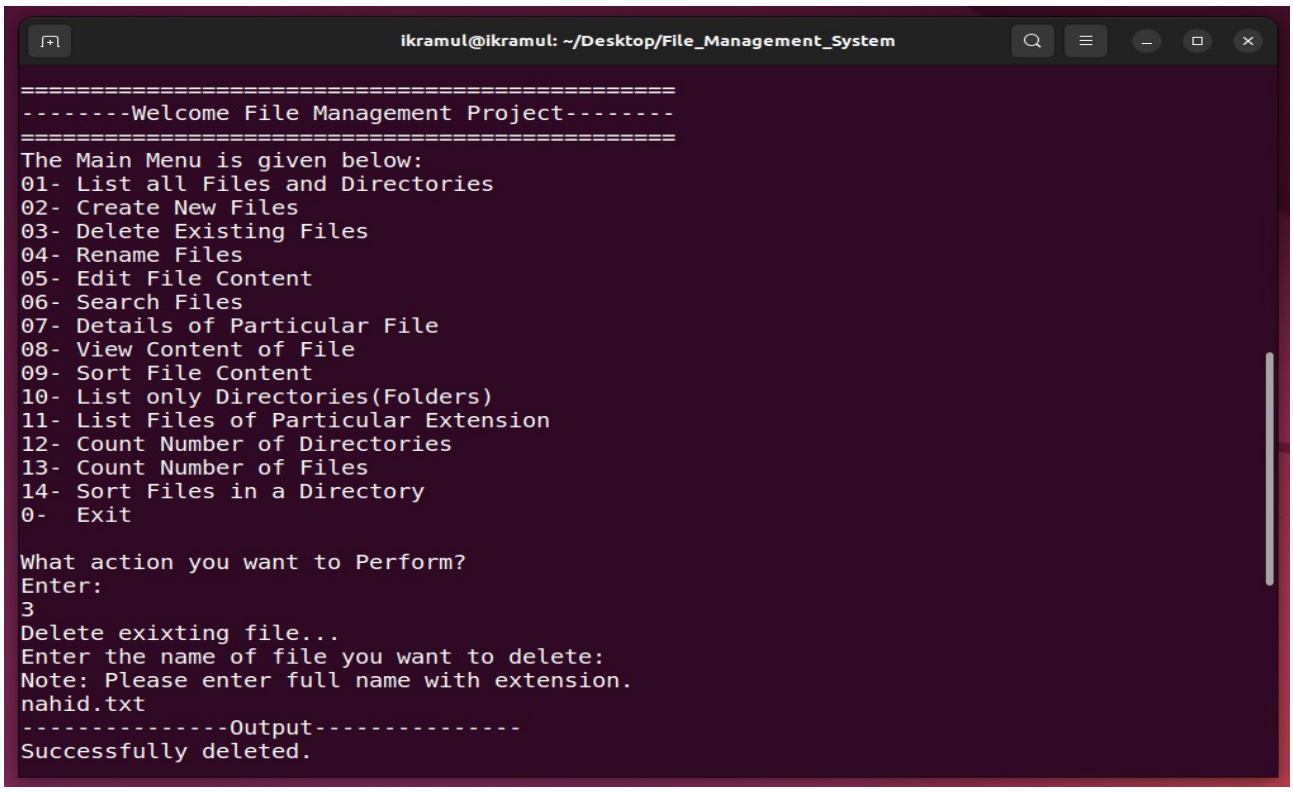

### Choice 02 Output:

If user wants to create new file then he needs to enter 2.



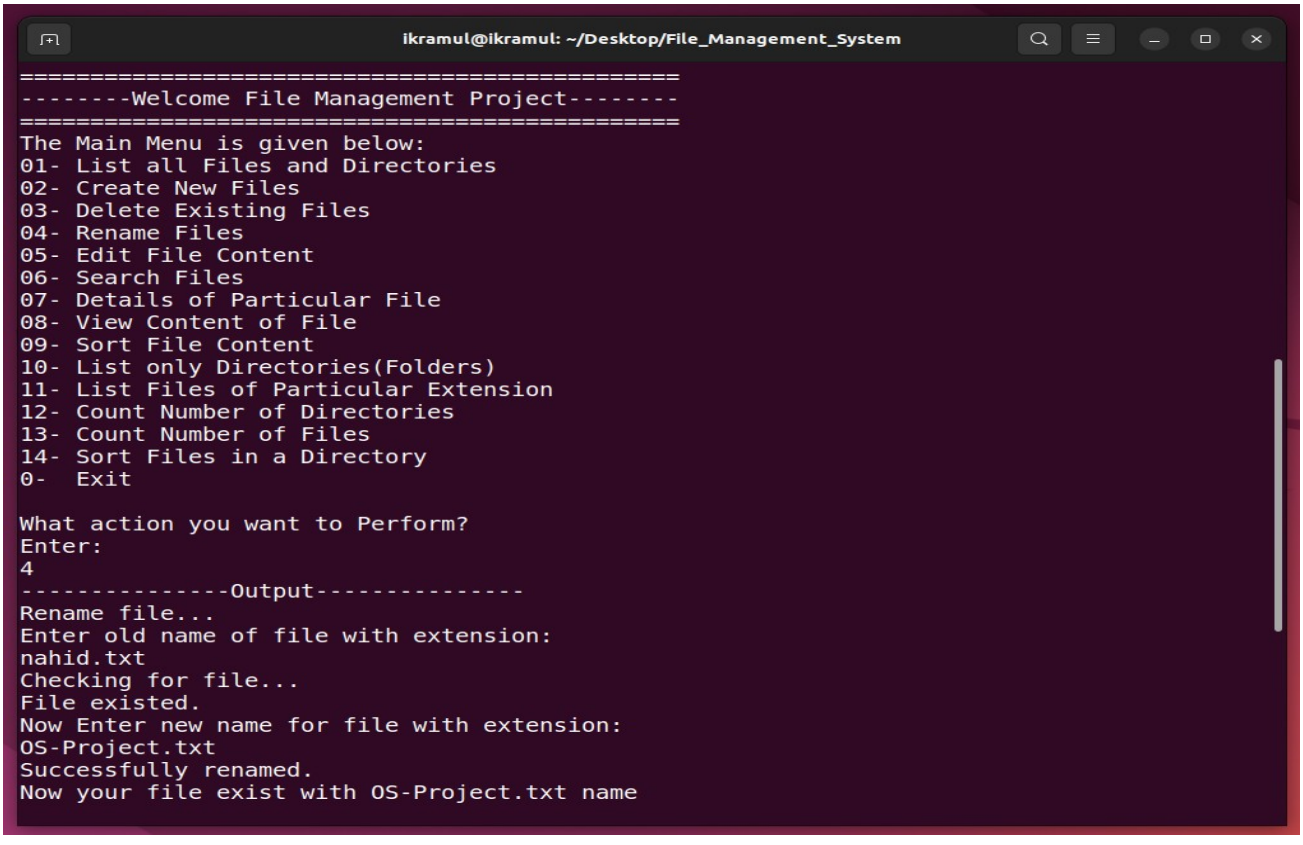
## Choice 03 Output:

If user wants to delete existing file then he needs to enter 3.



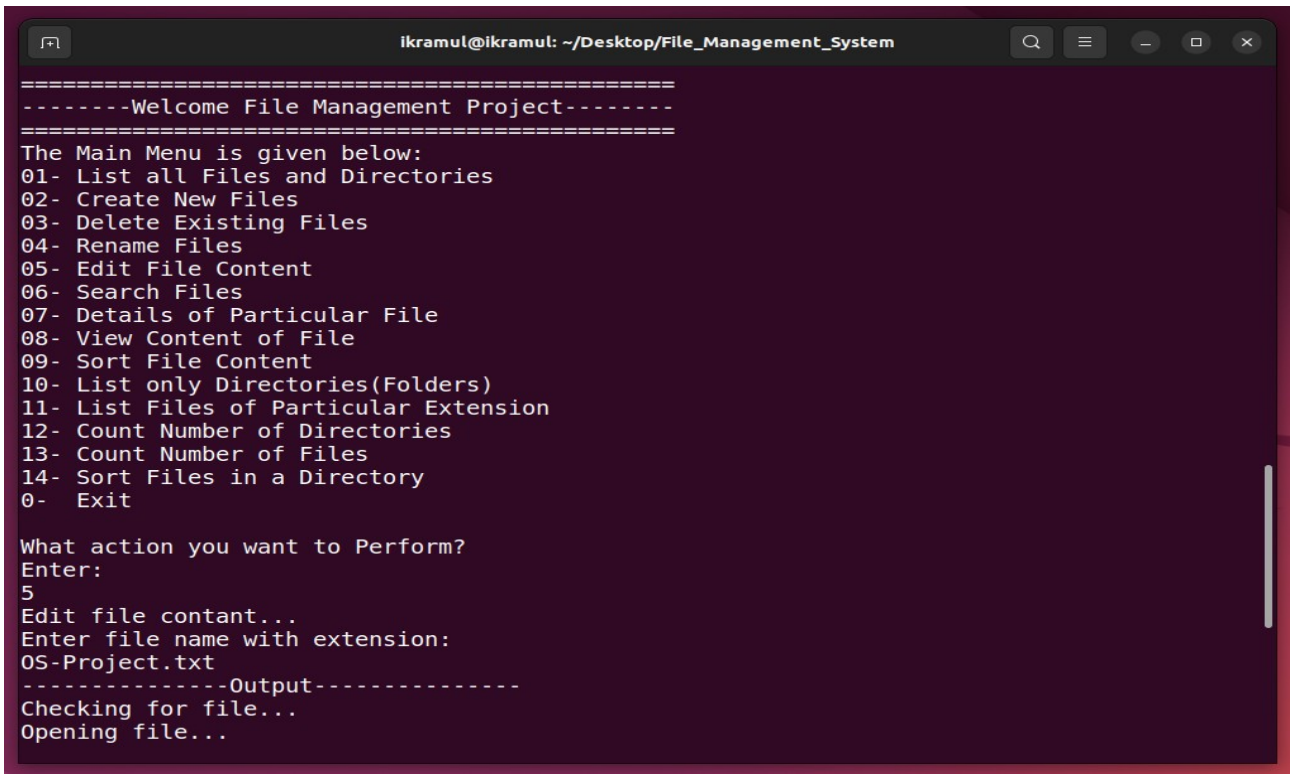

## Choice 04 Output:

If user wants to rename an existing file then he needs to enter 4.



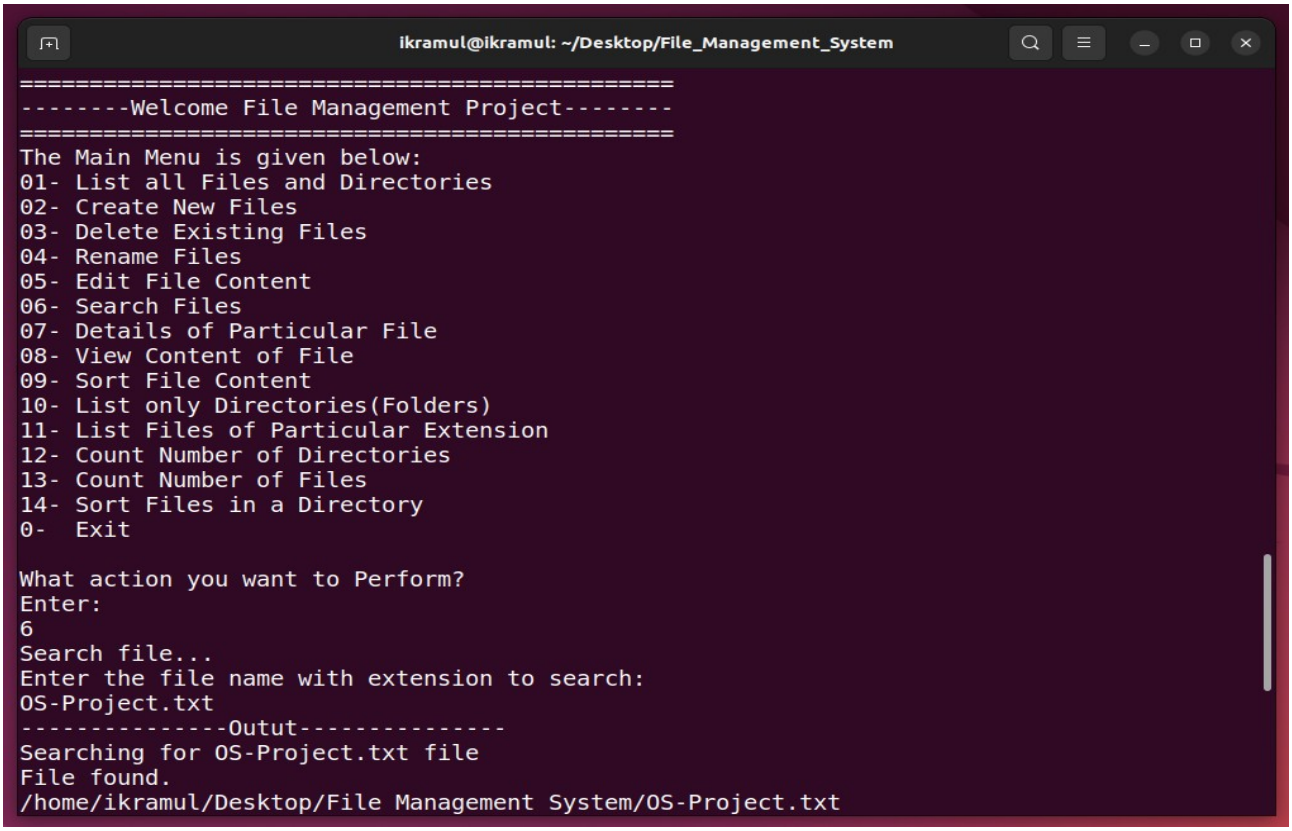
## Choice 05 Output:

If user wants to edit file content then he needs to enter 5.



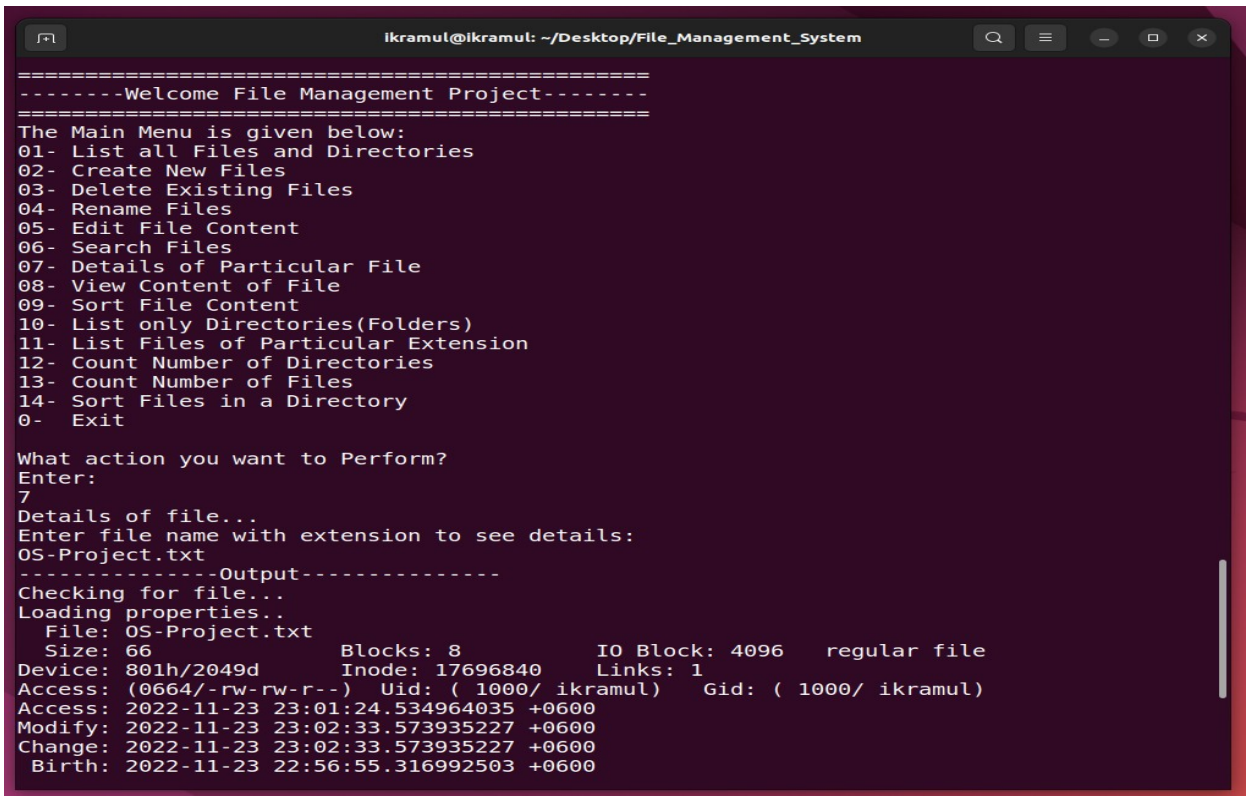

## Choice 06 Output:

If user wants to search for a file then he needs to enter 6.



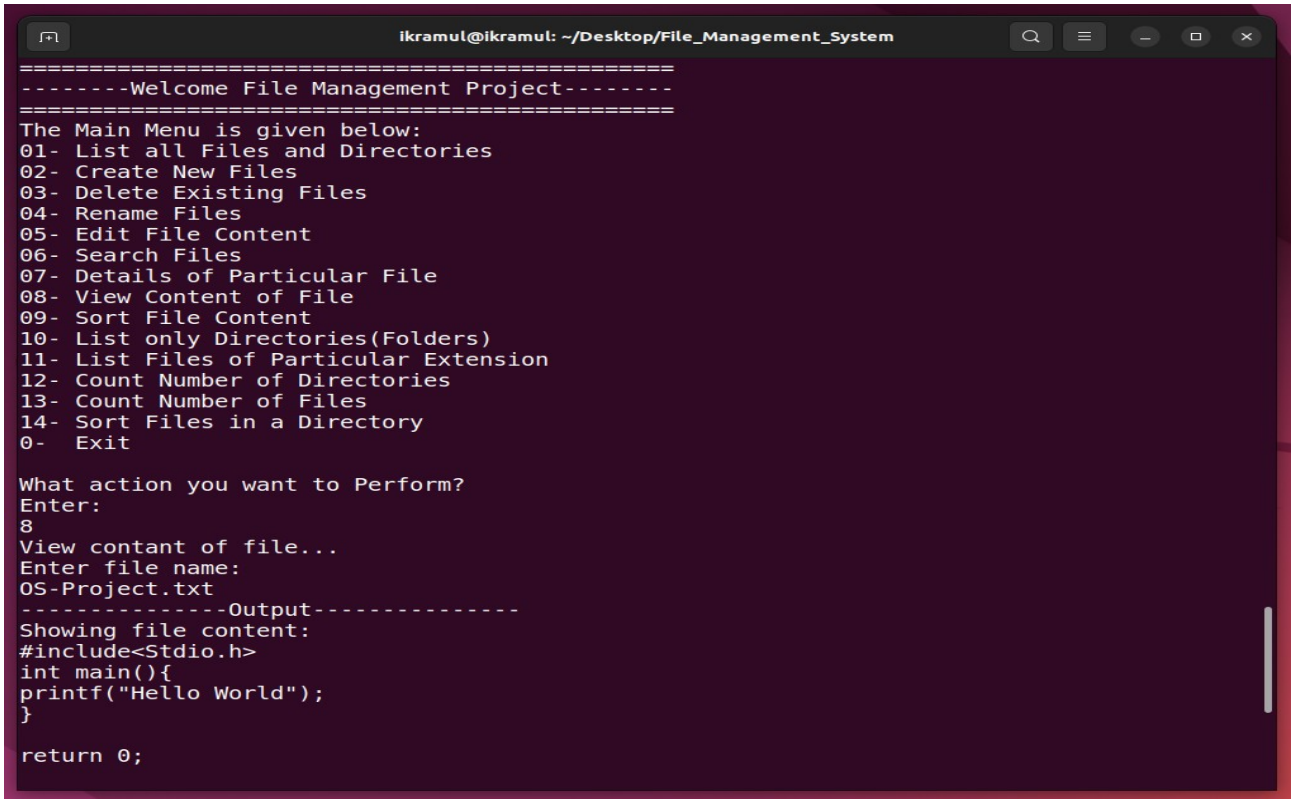
## Choice 07 Output:

If user wants to see the details of file then he needs to enter 7.



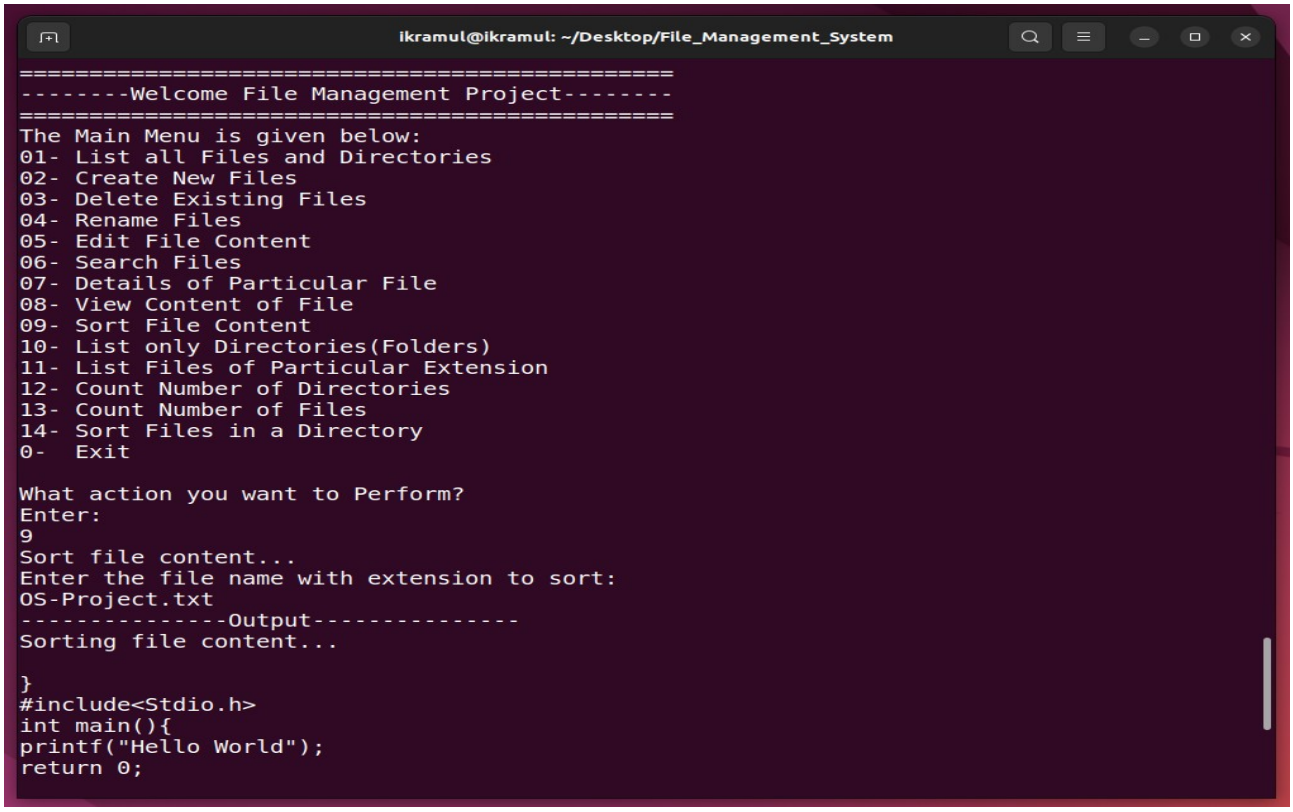

## Choice 08 Output:

If user wants to view content of file then he needs to enter 8.



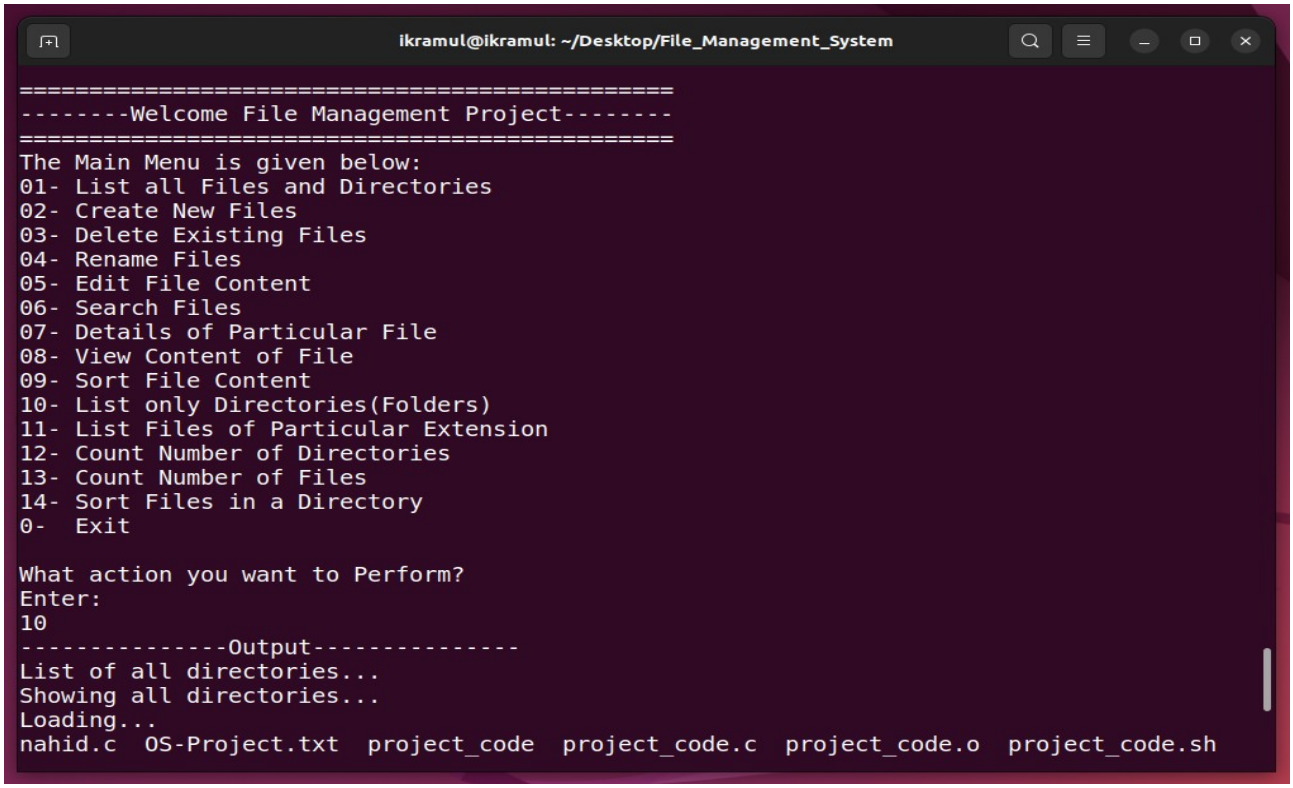
## Choice 09 Output:

If user wants to sort the file content then he needs to enter 9.



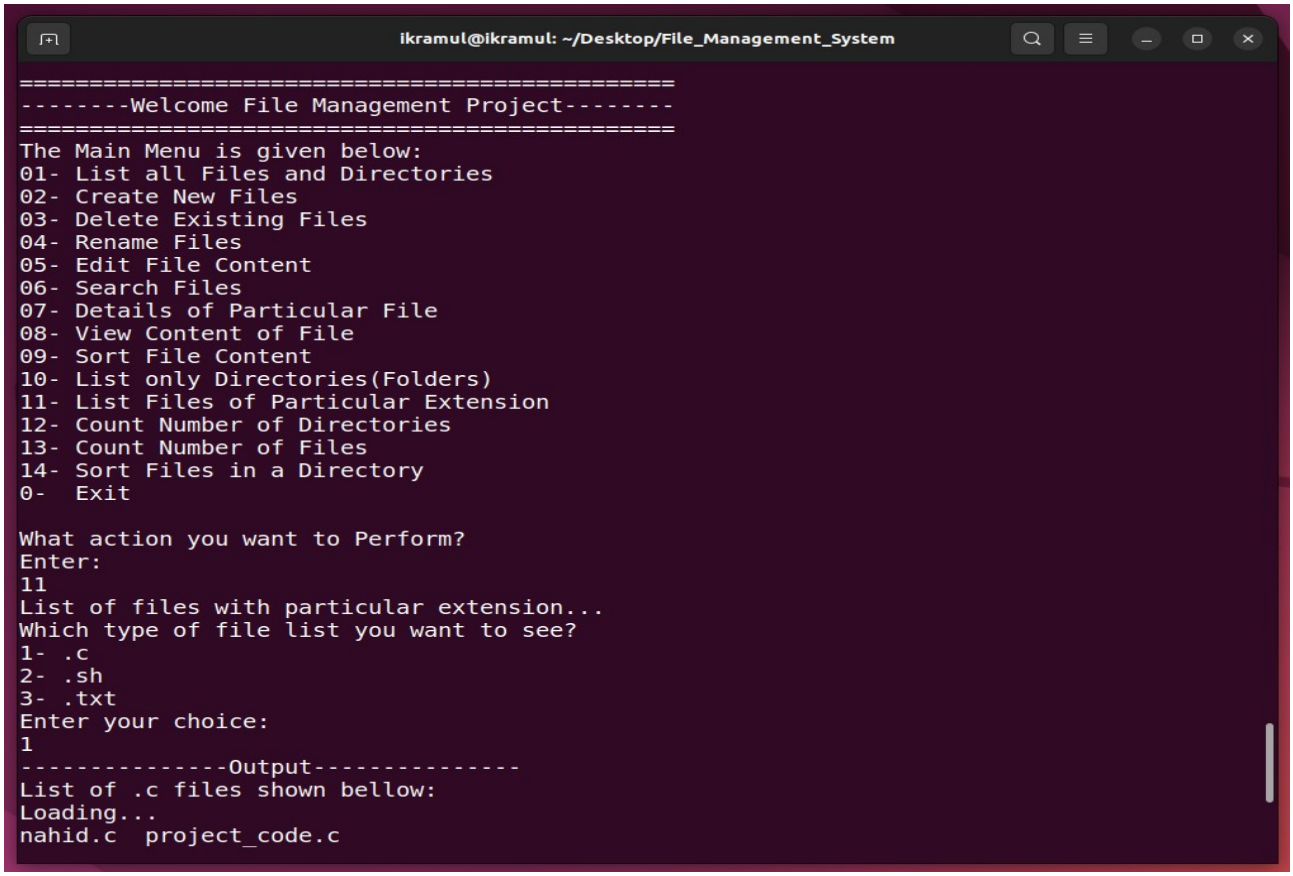

## Choice 10 Output:

If user wants to list all directories then he needs to enter 10.



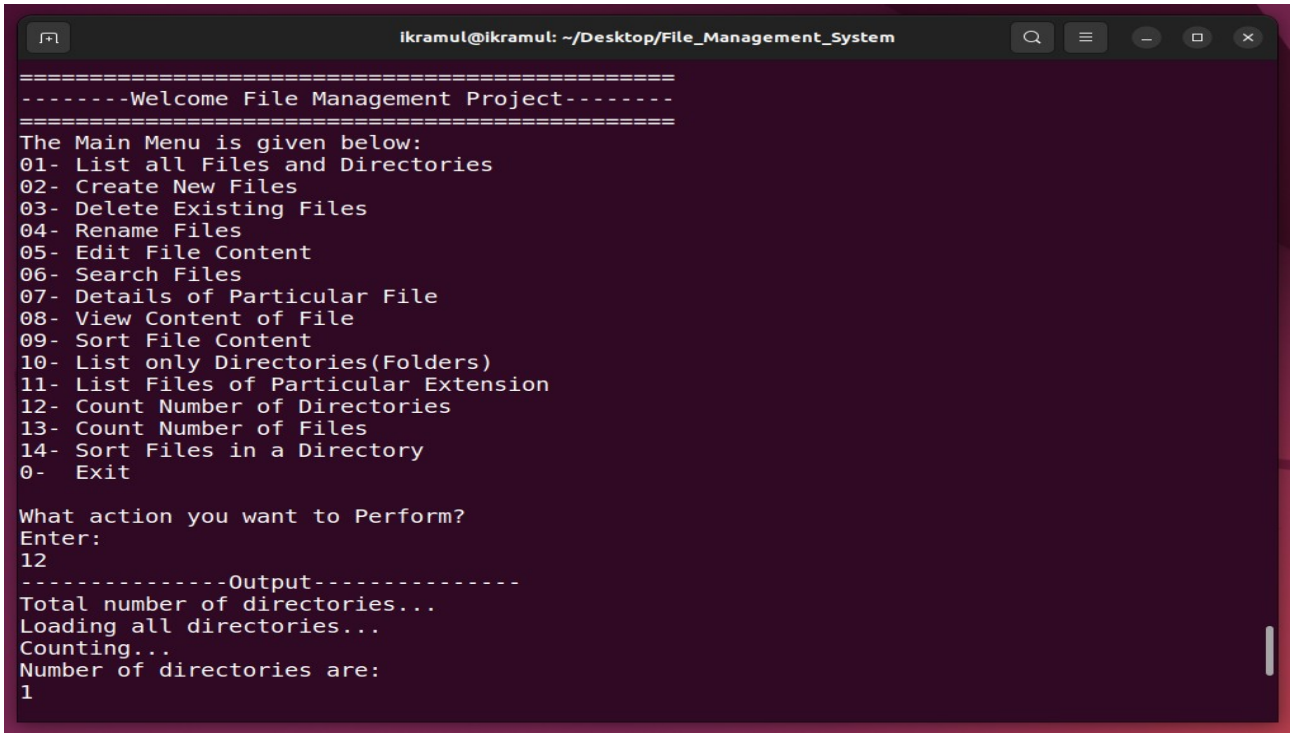
## Choice 11 Output:

If user wants to list all files with the same extension then he needs to enter 11.



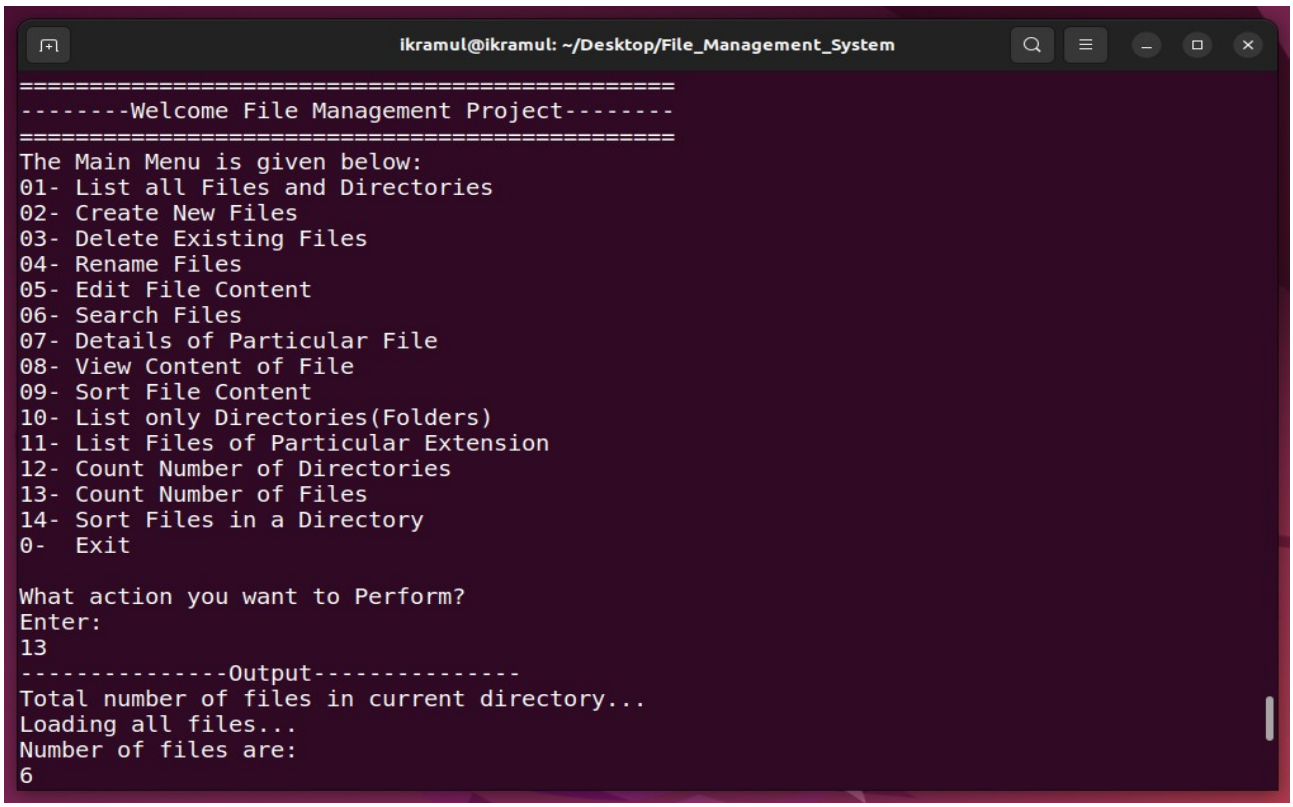

## Choice 12 Output:

If user wants to number of directories then he needs to enter 12.



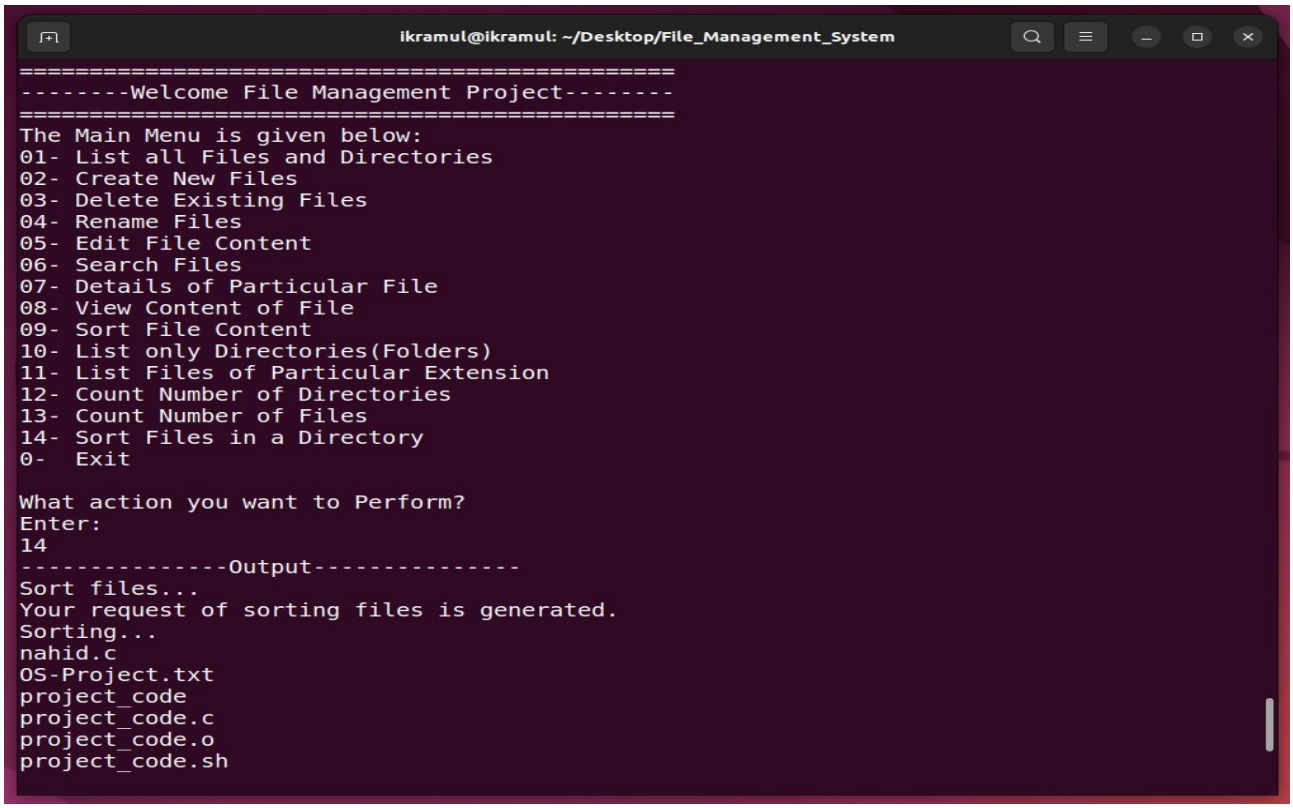
## Choice 13 Output:

If user wants to count number of files then he needs to enter 13.



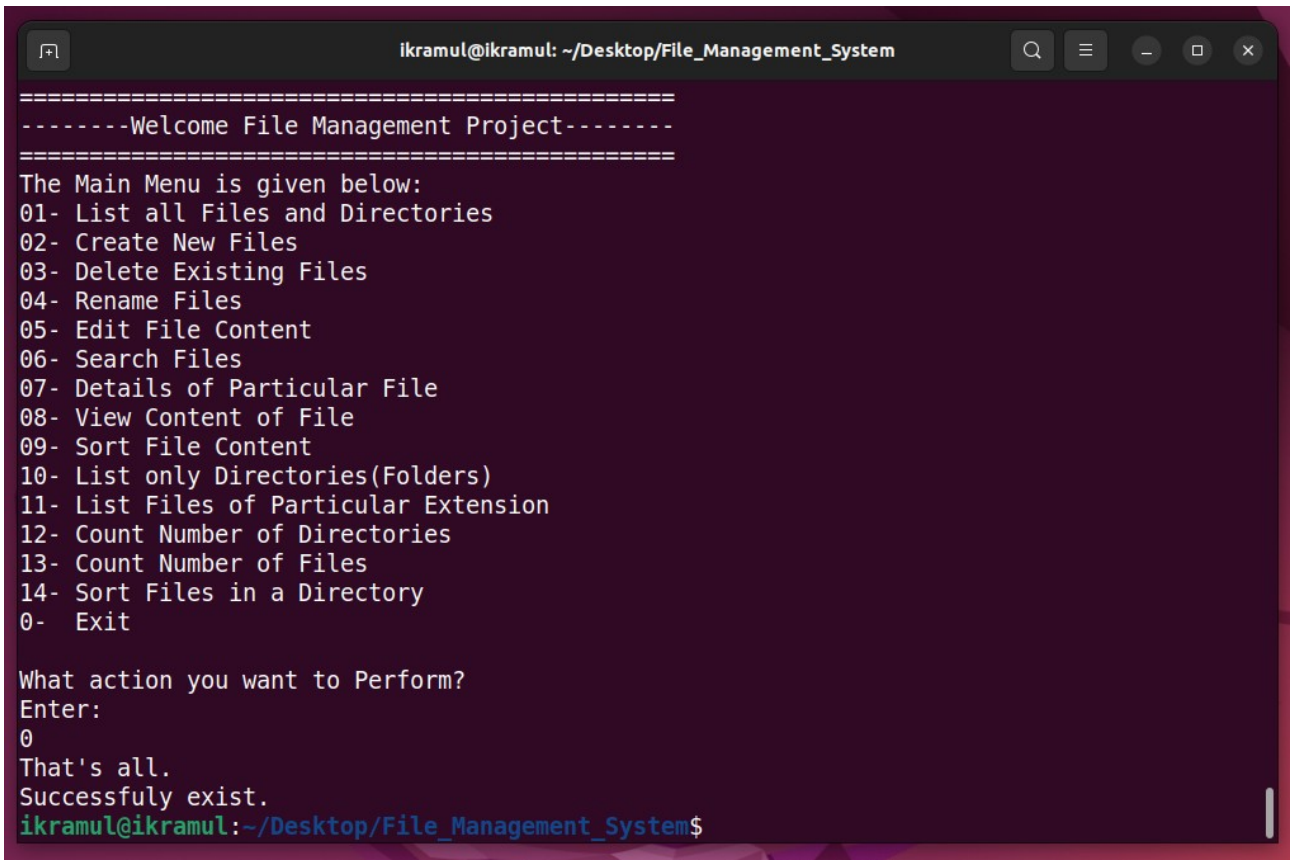

## Choice 14 Output:

If user wants to sort all files in a directories then he needs to enter 14.



## Exit option:

If user wants to exit from Management system then he needs to enter 0.




## FUFUNCTIONALITIES::

The following are some of the functionalities or tasks performed by file management system:

1. List all Files and Directories.
2. Create New Files.
3. Delete Existing Files.
4. Rename an Existing Files.
5. Edit Files Content.
6. Search for Files.
7. Details of Particular File.
8. View Content of File.
9. Sort Files Content.
10. List only Directories.
11. List Files of particular Extension.
12. Count Number of Directories.
13. Sort all Files in a Directories.

The details of all above functionalities is already explained under the main manu source code of MECHANISM AND WORKING heading in the form of code of each function.

## CONCLUSION:

The project contains some basic functionalities regarding file management like creating new files, delete existing files, rename files, edit files, read or write files and so on. All the functionalities are working on the basis of user's input from keyboard. There are different basic functions that users can perform on files. These functions are written in C language and bash scripting. All these functionalities are discussed above in the form of code as well as in simple natural language. So everyone having the basic knowledge of computer can use this file management system to perform different functions on files.

## LIMITATION:

- Converting the type of a file system:

  It may be advantageous or necessary to have files in a different file system than they currently exist. Reasons include the need for an increase in space requirements beyond the limits of the current file system. The depth of the path may need to be increased beyond the restrictions of the file system. There may be performance or reliability considerations. Providing access to another operating system that does not support the existing file system is another reason.

- Long file paths and long file names:

  In hierarchical file systems, files are accessed by means of a path that is a branching list of directories containing the file. Different file systems have different limits on the depth of the path. File systems also have a limit on the length of an individual filename.

## FUTURE WORK:

This is the most basic version of file management system. So in future we can improve the current version's functionalities and can add more new functionalities to the system. In the current version of files management system there are 13 different option for a user to manage files and directories. In future we can add more choices for users by understanding the advanced concept about file management in Linux operating system. So this will definitely help users to manage files in a more easy and comfortable manners.

## REFERENCES:


- Main Idea from includehelp.com Submitted by Amit Shukla, on August 14, 2017 <https://www.includehelp.com/operating-systems/file-management-in-operating-system.aspx>
- How to rename a file answer by Mazhar MIK on askubuntu.com <https://askubuntu.com/questions/280768/how-to-rename-a-file-in-terminal#:~:text=A%20simple%20way%20to%20rename,from%20on%20name%20to%20another.&text=where%20%E2%80%9Cfile1.>
- Use of stat command answer by <https://linuxhint.com/linux_stat_command/>