



PROJECT REPORT

“File Management System”

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BACKGROUND:

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

A file is a collection of specific information stored in the memory of a computer system. File management is defined as the process of manipulating files in a computer system, its 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.

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 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 drives were introduced to store files and to transfer data from one system to another. Then cloud storage was introduced. This cloud storage made it easy to store files from anywhere and from any computer. This prevents the user from losing the data or from any data threat with their high-security methods.

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 be 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.

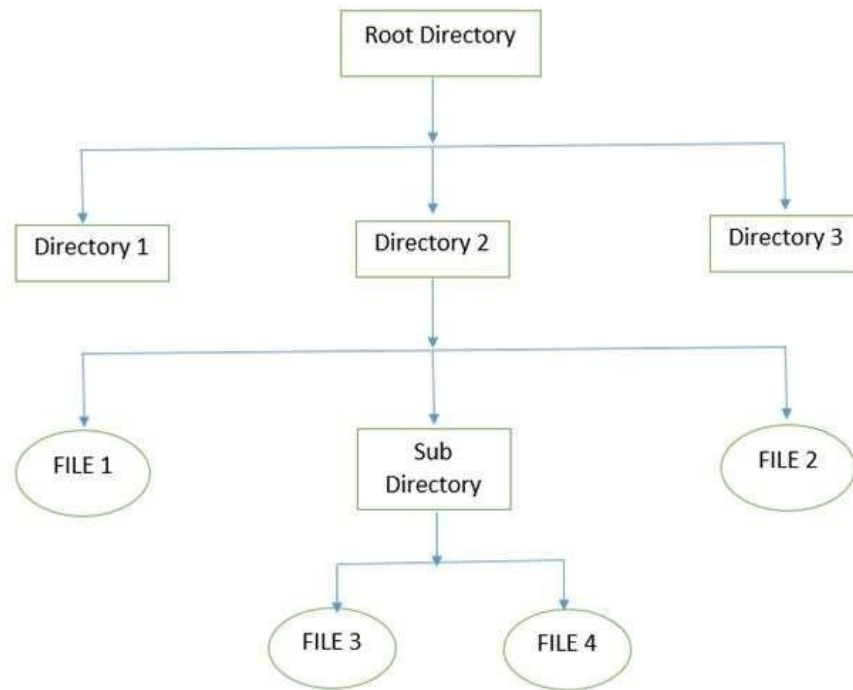
The following are some of the tasks performed by file management of operating system of any computer system:

1. It helps to create new files in the computer system and place them at specific locations.
2. It helps in easily and quickly locating these files in the computer system.
3. It helps to store the files in separate folders known as directories. These directories help users to search files quickly or to manage the files according to their types or uses.
4. 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.

PROJECT PARADIGM

The file is actually the collection of associated information. This file-system is prearranged into a directory for efficient usage. Every directory has a number of files and other directories. The directory is defined as a bit which distinguishes 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 manages 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:

Menu Code:

```
#include <stdio.h> int

main(void) {

printf("=====
\n");

        printf("  -----File Management Project  -----
\n");

printf("=====
\n");

        printf("Welcome, The Main Menu is given below:\n");


        printf("1- List all Files and Directories\n"); printf("2- Create
New Files\n");
        printf("3- Delete Existing Files\n"); printf("4-
Rename Files\n"); printf("5- Edit File Content\n");
        printf("6- Search Files\n");
        printf("7- Details of Particular File\n"); printf("8- View
Content of File\n"); printf("9- 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 1-14\n");;

return 0;

}
```

Main Code:

```
#!/bin/bash i="0"

while [ $i -lt 100 ] do

gcc project.c -o proj

./proj read

opt1

if [ $opt1 == 1 ] then

    echo "List all files and Directories here.." echo "Showing all
    files and directories."
    sleep 3
    echo "Loading.." sleep 3
    echo " -----OutPut -----"
    -----"

    ls

    echo " "

elif [ $opt1 == 2 ] then

    echo "Create New Files here.."
```

```

        echo "Which type of file you want to create !" echo "1- .c"

        echo "2- .sh"
echo "3- .txt"
echo "Enter your choice from 1-3" 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 "Inavlid Input..Try Again." echo " "

fi

elif [ $opt1 == 3 ] then

echo "Delete existing files here.. "

echo "Enter name of File you want to Delete!"

echo "Note: Please Enter full Name with Extension." read delfile

echo " -----OutPut -----"
-----"


if [ -f "$delfile" ]; then

if [ -f "$delfile" ]; then

rm $delfile

echo "Successfully Deleted."

echo " "

```

```
        else
echo "File Does not Exist..Try again" echo " "
fi
```

```
elif [ $opt1 == 4 ] then
```

```
        echo " -----OutPut -----"
-----"
```

```
        echo "Rename files here.."
```

```
        echo "Enter Old Name of File with Extension.." read old
```

```
        echo "Checking for file..." sleep 3
```

```
        if [ -f "$old" ]; then
```

```
            echo "Ok File Exist."
```

```
            echo "Now Enter New Name for file with Extension" read new
```

```
            mv $old $new
```

```
            echo "Successfully Rename."
```

```
            echo "Now Your File Exist with $new Name"
```

```
        else
```

```
            echo "$old does not exist..Try again with correct filename."
```

```
        fi
```

```
echo " "
```

```

elif [ $opt1 == 5 ] then
    echo "Edit file content here.."
    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 files here.."
    echo "Enter File Name with Extension to search" read f

    echo " -----OutPut -----"
    -----

    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
then
    echo "Detail of file here.."
    echo "Enter File Name with Extension to see Detail : " read detail
    echo " -----OutPut -----"
    -----"
    echo "Checking for file.." sleep 4

    if [ -f "$detail" ]; then
        echo "Loading Properties.." stat $detail

    else
        echo "$detail File does not exist..Try again"

```

```

        fi
echo " "

elif [ $opt1 == 8 ] then
    echo "View content of file here.." echo "Enter File
    Name : "
    read readfile
    echo " -----OutPut -----
    -----"
    if [ -f "$readfile" ]; then
echo "Showing file content.."
        sleep 3
        cat $readfile
    else
        echo "$readfile does not exist"
    fi
echo " "

elif [ $opt1 == 9 ] then
    echo "Sort files content here.."
    echo "Enter File Name with Extension to sort :" read sortfile
    echo " -----OutPut -----
    -----"
    if [ -f "$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 here.." echo "showing
all Directories..." echo "Loading.."

    sleep 3 ls

    -d */ echo

    " "


elif [ $opt1 == 11 ] then

    echo "List of Files with Particular extensions here.." echo "Which type of file
list you want to see?"

    echo "1- .c"

    echo "2- .sh"

```

```
        echo "3- .txt"

        echo "Enter your choice from 1-3" read extopt

        echo " -----OutPut -----"
        -----"
if [ $extopt == 1 ] then

        echo "List of .c Files shown below." 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 Files 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 here.." 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 Numbers of Files in Current Directory here.." 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 here.."
echo "Your Request of Sorting file is Generated." echo "Sorting.."
sleep 3
```

```
ls | sort echo " "
```

```
elif [ $opt1 == 0 ] then
```

```
    echo "Good Bye.."
```

```
    echo "Successfully Exit" break
```

```
else
```

```
echo "Invalid Input..Try again.          "
```

```
fi i=${i+1}
```

```
done
```

Output Screenshots:

Main Menu:

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

```
aqib@AqibMehmood: ~$ bash test.sh
-----File Management Project-----
Welcome, The Main Menu is given below:
1- List all Files and Directories
2- Create New Files
3- Delete Existing Files
4- Rename Files
5- Edit File Content
6- Search Files
7- Details of Particular File
8- View Content of File
9- Sort File Content
10- List only Directories(Folders)
11- List Files of Particular Extension
12- Count Number of Directories
13- Count Number of Files
14- Sort Files in a Directory
0- Exit

What action you want to Perform?
Enter 1-14
```

Choice 01 Output:

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

```
aqib@AqibMehmood: ~$ bash test.sh
2- Create New Files
3- Delete Existing Files
4- Rename Files
5- Edit File Content
6- Search Files
7- Details of Particular File
8- View Content of File
9- Sort File Content
10- List only Directories(Folders)
11- List Files of Particular Extension
12- Count Number of Directories
13- Count Number of Files
14- Sort Files in a Directory
0- Exit

What action you want to Perform?
Enter 1-14
1
List all files and Directories here..
Showing all files and directories....
Loading..
-----OutPut-----
F1.txt    another.txt    ccppaste.txt.save    hello.c    lab471.sh    lab6task2.c    project.c    test1
F2.txt    assign1.c      ccppaste.txt.save.1  ila.sh     lab473.sh    lab6task3.c    project.sh   test2
F3.txt    assign1.txt    empty.txt            lab1.sh    lab474.c     lab8task3.c    record.txt   test3
File.txt  assign1T2.c    fact.c               lab2.c     lab5t0.sh    lab9Task02.c   rubab.txt    text.txt
IoT       combine.sh      fibo.c               lab3.sh    lab5t001.sh  main.rs        sample.c     tracefile.txt
OEL_1     copyPaste.txt  fiboNew.c            lab3.txt   lab5t002.sh  mylog          shell.sh     tracing.sh
OEL_2     ccppaste.txt   grep.txt             lab471     lab5task2.sh  proj           test.sh      z.txt.txt
```

Choice 02 Output:

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

```
aqib@AqibMehmood:~$
2- Create New Files
3- Delete Existing Files
4- Rename Files
5- Edit File Content
6- Search Files
7- Details of Particular File
8- View Content of File
9- Sort File Content
10- List only Directories(Folders)
11- List Files of Particular Extension
12- Count Number of Directories
13- Count Number of Files
14- Sort Files in a Directory
0- Exit

What action you want to Perform?
Enter 1-14
2
Create New Files here..
Which type of file you want to create !
1- .c
2- .sh
3- .txt
Enter your choice from 1-3
1
Enter File Name without .c Extension
z
-----OutPut-----
File Created Successfully
=====
```

Choice 03 Output:

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

```
aqib@AqibMehmood:~$
-----File Management Project-----
Welcome, The Main Menu is given below:
1- List all Files and Directories
2- Create New Files
3- Delete Existing Files
4- Rename Files
5- Edit File Content
6- Search Files
7- Details of Particular File
8- View Content of File
9- Sort File Content
10- List only Directories(Folders)
11- List Files of Particular Extension
12- Count Number of Directories
13- Count Number of Files
14- Sort Files in a Directory
0- Exit

What action you want to Perform?
Enter 1-14
3
Delete existing files here..
Enter name of File you want to Delete!
Note: Please Enter full Name with Extension.
z.c
-----OutPut-----
Successfully Deleted.
=====
```

Choice 04 Output:

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

```
aqib@aqibMehmood: ~
1- List all Files and Directories
2- Create New Files
3- Delete Existing Files
4- Rename Files
5- Edit File Content
6- Search Files
7- Details of Particular File
8- View Content of File
9- Sort File Content
10- List only Directories(Folders)
11- List Files of Particular Extension
12- Count Number of Directories
13- Count Number of Files
14- Sort Files in a Directory
0- Exit

What action you want to Perform?
Enter 1-14
4
-----OutPut-----
Rename files here..
Enter Old Name of File with Extension..
file.sh
Checking for file...
Ok File Exist.
Now Enter New Name for file with Extension
ali.sh
Successfully Rename.
Now Your File Exist with ali.sh Name
=====
```

Choice 05 Output:

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

```
aqib@aqibMehmood: ~
-----File Management Project-----
Welcome, The Main Menu is given below:
1- List all Files and Directories
2- Create New Files
3- Delete Existing Files
4- Rename Files
5- Edit File Content
6- Search Files
7- Details of Particular File
8- View Content of File
9- Sort File Content
10- List only Directories(Folders)
11- List Files of Particular Extension
12- Count Number of Directories
13- Count Number of Files
14- Sort Files in a Directory
0- Exit

What action you want to Perform?
Enter 1-14
5
Edit file content here..
Enter File Name with Extension :
F1.txt
-----OutPut-----
Checking for file..
Opening file..
=====
```

Choice 06 Output:

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

```
aqib@aqibMahmood: ~$ -----File Management Project-----
Welcome, The Main Menu is given below:
1- List all Files and Directories
2- Create New Files
3- Delete Existing Files
4- Rename Files
5- Edit File Content
6- Search Files
7- Details of Particular File
8- View Content of File
9- Sort File Content
10- List only Directories(Folders)
11- List Files of Particular Extension
12- Count Number of Directories
13- Count Number of Files
14- Sort Files in a Directory
0- Exit

What action you want to Perform?
Enter 1-14
6
Search files here..
Enter File Name with Extension to search
ali.sh

-----OutPut-----
Searching for ali.sh File
File Found.
/home/aqib/ali.sh
=====
```

Choice 07 Output:

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

```
aqib@aqibMahmood: ~$ 5- Edit File Content
6- Search Files
7- Details of Particular File
8- View Content of File
9- Sort File Content
10- List only Directories(Folders)
11- List Files of Particular Extension
12- Count Number of Directories
13- Count Number of Files
14- Sort Files in a Directory
0- Exit

What action you want to Perform?
Enter 1-14
7
Detail of file here..
Enter File Name with Extension to see Detail :
F2.txt

-----OutPut-----
Checking for file..
Loading Properties..
File: F2.txt
Size: 13          Blocks: 0          IO Block: 512    regular file
Device: 2h/2d   Inode: 1970324836990827   Links: 1
Access: (0666/-rw-rw-rw-)  Uid: ( 1000/   aqib)   Gid: ( 1000/   aqib)
Access: 2020-02-29 14:08:21.277237900 +0500
Modify: 2020-06-07 00:41:53.547858800 +0500
Change: 2020-06-07 00:41:53.547858800 +0500
Birth: -
=====
```

Choice 08 Output:

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

```
sqb@AqtMehmoed ~
-----File Management Project-----
Welcome, The Main Menu is given below:
1- List all Files and Directories
2- Create New Files
3- Delete Existing Files
4- Rename Files
5- Edit File Content
6- Search Files
7- Details of Particular File
8- View Content of File
9- Sort File Content
10- List only Directories(Folders)
11- List Files of Particular Extension
12- Count Number of Directories
13- Count Number of Files
14- Sort Files in a Directory
0- Exit

What action you want to Perform?
Enter 1-14
8
View content of file here..
Enter File Name :
F3.txt
-----OutPut-----
Showing file content..
8
```

Choice 09 Output:

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

```
sqb@AqtMehmoed ~
Enter File Name with Extension to sort :
project.c
-----OutPut-----
Sorting File Content..

printf("0- Exit\n");
printf("1- List all Files and Directories\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("2- Create New Files\n");
printf("3- Delete Existing Files\n");
printf("4- Rename Files\n");
printf("5- Edit File Content\n");
printf("6- Search Files\n");
printf("7- Details of Particular File\n");
printf("8- View Content of File\n");
printf("9- Sort File Content\n");
printf("\nWhat action you want to Perform?\nEnter 1-14\n");

printf("-----File Management Project-----\n");
printf("-----\n");
printf("-----\n");
printf("Welcome, The Main Menu is given below:\n");

#include <stdio.h>
int main(void) {
return 0;
}
```


Choice 10 Output:

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

```
sqb@AqbMehmood:~$
=====
-----File Management Project-----
=====
Welcome, The Main Menu is given below:
1- List all Files and Directories
2- Create New Files
3- Delete Existing Files
4- Rename Files
5- Edit File Content
6- Search Files
7- Details of Particular File
8- View Content of File
9- Sort File Content
10- List only Directories(Folders)
11- List Files of Particular Extension
12- Count Number of Directories
13- Count Number of Files
14- Sort Files in a Directory
0- Exit

What action you want to Perform?
Enter 1-14
10
-----OutPut-----
List of all Directories here..
showing all Directories...
Loading..
IoT/ OEL_1/ OEL_2/ mylog/ test1/ test2/ test3/
=====
```

Choice 11 Output:

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

```
sqb@AqbMehmood:~$
3- Delete Existing Files
4- Rename Files
5- Edit File Content
6- Search Files
7- Details of Particular File
8- View Content of File
9- Sort File Content
10- List only Directories(Folders)
11- List Files of Particular Extension
12- Count Number of Directories
13- Count Number of Files
14- Sort Files in a Directory
0- Exit

What action you want to Perform?
Enter 1-14
11
List of Files with Particular extensions here..
Which type of file list you want to see?
1- .c
2- .sh
3- .txt
Enter your choice from 1-3
2
-----OutPut-----
List of .sh Files shown below.
Loading..
ali.sh      lab1.sh  lab4T1.sh lab5t0.sh  lab5t002.sh  project.sh  test.sh
combine.sh  lab3.sh  lab4T3.sh lab5t001.sh lab5task2.sh  shell.sh    tracing.sh
=====
```

Choice 12 Output:

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

```
aqb@AqbMehmood: ~
-----File Management Project-----
Welcome, The Main Menu is given below:
1- List all Files and Directories
2- Create New Files
3- Delete Existing Files
4- Rename Files
5- Edit File Content
6- Search Files
7- Details of Particular File
8- View Content of File
9- Sort File Content
10- List only Directories(Folders)
11- List Files of Particular Extension
12- Count Number of Directories
13- Count Number of Files
14- Sort Files in a Directory
0- Exit

What action you want to Perform?
Enter 1-14
12
-----OutPut-----
Total number of Directories here..
Loading all directories..
Counting..
Number of Directories are :
7
```

Choice 13 Output:

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

```
aqb@AqbMehmood: ~
-----File Management Project-----
Welcome, The Main Menu is given below:
1- List all Files and Directories
2- Create New Files
3- Delete Existing Files
4- Rename Files
5- Edit File Content
6- Search Files
7- Details of Particular File
8- View Content of File
9- Sort File Content
10- List only Directories(Folders)
11- List Files of Particular Extension
12- Count Number of Directories
13- Count Number of Files
14- Sort Files in a Directory
0- Exit

What action you want to Perform?
Enter 1-14
13
-----OutPut-----
Total Numbers of Files in Current Directory here..
Loading all files..
Counting..
Number of Files are :
49
```


Choice 14 Output:

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

```
aqib@AqibMehmood:~$ ls
lab4T1
lab4T1.sh
lab4T3.sh
lab4T4.c
lab5t0.sh
lab5t001.sh
lab5t002.sh
lab5task2.sh
lab6task1.c
lab6task3.c
lab8task3.c
lab9Task02.c
main.rs
mylog
proj
project.c
project.sh
record.txt
rubab.txt
sample.c
shell.sh
test.sh
test1
test2
test3
text.txt
tracefile.txt
tracing.sh
z.txt.txt
```

Exit option:

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

```
aqib@AqibMehmood:~$ bash test.sh
=====
-----File Management Project-----
=====
Welcome, The Main Menu is given below:
1- List all Files and Directories
2- Create New Files
3- Delete Existing Files
4- Rename Files
5- Edit File Content
6- Search Files
7- Details of Particular File
8- View Content of File
9- Sort File Content
10- List only Directories(Folders)
11- List Files of Particular Extension
12- Count Number of Directories
13- Count Number of Files
14- Sort Files in a Directory
0- Exit

What action you want to Perform?
Enter 1-14
0
Good Bye..
Successfully Exit
aqib@AqibMehmood:~$
```

FUNCTIONALITIES:

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 are already explained under **MECHANISM AND WORKING** heading in the form of code of each function.

REMAINING CODE MODULES, API'S AND PLATFORMS:

No other remaining side work apart from the displayed work above is used in this project. All the functionalities and code of each function is explained above. In this project we use Ubuntu subsystem terminal with C language and bash scripting. So no other platform, API or plugins used in this project.

FUTURE WORK:

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

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.

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%20one%20name%20to%20another.&text=where%20%E2%80%9Cfile1.>>>
- Use of stat command answer by <https://linuxhint.com/linux_stat_command/>

~~~~~\*\*/THE END/\*\*~~~~~