Introduction

In today's digital age, the management of electronic files is crucial for businesses and individuals alike. The amount of digital data we generate and store has grown exponentially, making it increasingly difficult to organise, locate, and manage files efficiently. This is where a file management system comes in.

A file management system is a software solution that helps users organise and manage their digital files effectively. It provides a central location for storing and accessing files.

The aim of this project is to design and develop a file management system that meets the needs of basic file management systems.This project aims to give a better understanding of how and what operation can be performed on files. Our project aims to provide all the following functionalities given below :

- List of all Files and Directories
- Create (file)
- Delete (file)
- Details (Particular File)
- View (Content of File)
- Edit (Content of File)
- Rename (file)
- Search (file)
- Alphabetically sort (content of file)
- Number of Files(COUNT)
- Number of Directories(COUNT)

What are files ?

Files are typically organised into a file system, which is a hierarchical structure of directories or folders that store and organise files. Each file is identified by a unique name, which is used to locate and access the file within the file system.

Files can be created, modified, and deleted by the user or by software applications. They can also be copied, moved, or shared between different devices or users.

In summary, a file is a digital container that holds information, which can be accessed and manipulated by a computer or other electronic device.

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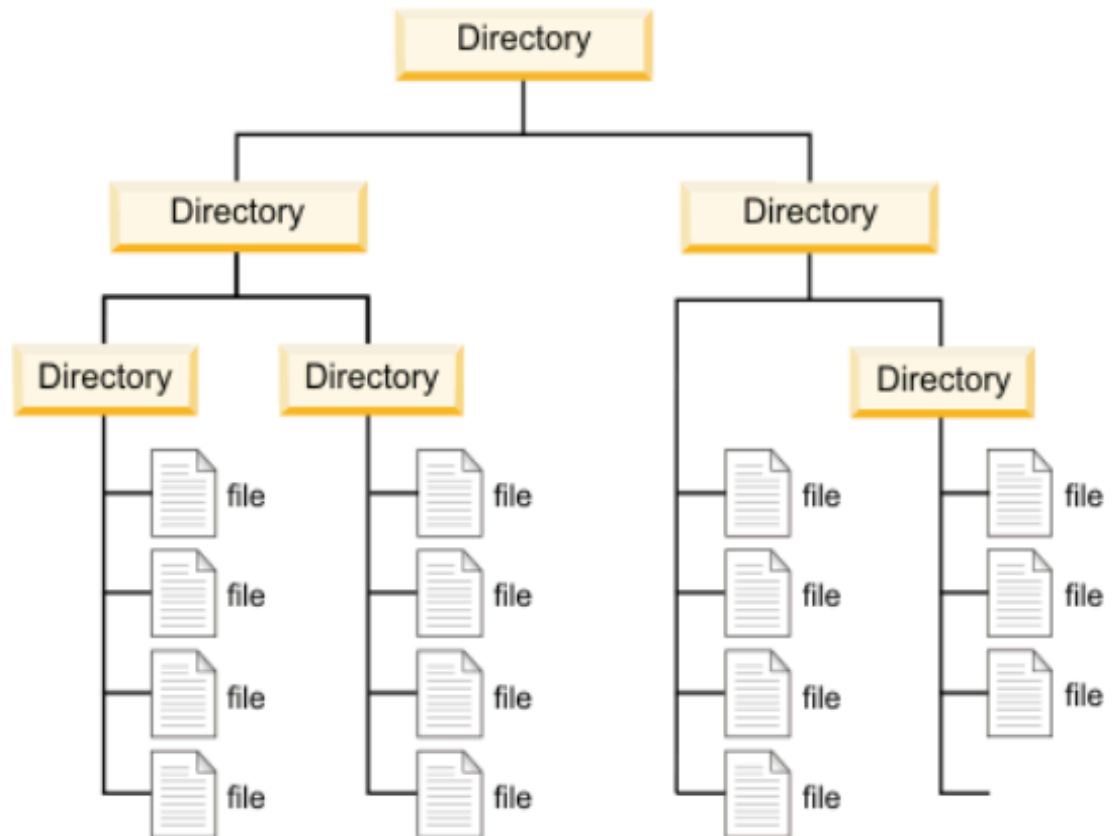
The above figure shows the general hierarchy of the storage in an operating system. In this figure the root directory is present at the highest level in the hierarchical structure. It includes all the subdirectories in which the files are stored. Subdirectory is a directory present inside another directory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

Technology Stack

BASH SCRIPTING(95%)

A bash script is a file containing a sequence of commands that are executed by the bash program line by line. It allows you to perform a series of actions, such as navigating to a specific directory, creating a folder, and launching a process using the command line.

By saving these commands in a script, you can repeat the same sequence of steps multiple times and execute them by running the script.We can run our script ("test.sh" in our project) in any shell / bash. We preferred "**Git Bash**" for the project.

Bash scripting is a powerful and versatile tool for automating system administration tasks, managing system resources, and performing other routine tasks in Unix/Linux systems. Some advantages of shell scripting are:

- **Automation**: Shell scripts allow you to automate repetitive tasks and processes, saving time and reducing the risk of errors that can occur with manual execution.

- **Portability**: Shell scripts can be run on various platforms and operating systems, including Unix, Linux, macOS, and even Windows through the use of emulators or virtual machines.

- **Flexibility**: Shell scripts are highly customizable and can be easily modified to suit specific requirements. They can also be combined with other programming languages or utilities to create more powerful scripts.

- **Accessibility**: Shell scripts are easy to write and don't require any special tools or software. They can be edited using any text editor, and most operating systems have a built-in shell interpreter.

- **Integration**: Shell scripts can be integrated with other tools and applications, such as databases, web servers, and cloud services, allowing for more complex automation and system management tasks.

- **Debugging**: Shell scripts are easy to debug, and most shells have built-in debugging and error-reporting tools that can help identify and fix issues quickly.

C (5%)

C is a Procedural Programming language. But in our project we used it just to create an executable file (named "proj.exe") for our project so that users can interact with it .

Some Important Linux Commands

Here is a list of all the Linux commands used in this script:

- #!/bin/bash - Shebang specifying that this is a bash script
- while, do, done - A loop construct in bash
- gcc - A compiler command for C programs
- read - Reads user input from the command line
- if, elif, else, fi - Conditional constructs in bash
- echo - Displays text on the command line
- sleep - Delays the script for a specified amount of time
- ls - Lists the files and directories in a directory
- touch - Creates an empty file
- rm - Deletes a file
- mv - Renames a file
- nano - A simple text editor for the command line
- find - Searches for files in a directory hierarchy
- stat - Displays the status of a file
- cat - Displays the contents of a file
- sort - Sorts the lines of a text file.

Github Link to Source Code

https://github.com/niharikaa26/File-Management-System-Bash-Script

How to Run ?

- Open GitBash Shell.
- Locate the Project Folder using command "cd" (change directory)
- Use the "bash test.sh" command to launch the script.
- Select the desired operation you want to do with the files .

Screenshots From the Output

Screenshot 1


```
$ bash test.sh
OUR PROJECT CAN PERFORM THESE FUNCTIONS
YOU CAN PRESS THE RESPECTIVE NUMBER TO USE
1--> List of all Files and Directories
2--> Create (file)
3--> Delete (file)
4--> Details (Particular File)
5--> View (Content of File)
6--> Edit (Content of File)
7--> Rename (file)
8--> Search (file)
9--> Alphabetically sort (content of file)
10--> Number of Files(COUNT)
11--> Number of Directories(COUNT)

PRESS ANY NUMBER BETWEEN 1 AND 11
```

Screenshot 2


```
What action you want to Perform?
Enter 1-14
1
List all files and Directories here..
Showing all files and directories....
Loading..
----------------------------OutPut-----------------------
----------
-1.14-windows.xml                                               Recent
'3D Objects'                                                    'Saved Games'
'ASUSSystemControlInterfacev3_ASUS_Z_V3.1.11.0_14765(1).exe'    Searches
ASUSSystemControlInterfacev3_ASUS_Z_V3.1.11.0_14765.exe        SendTo
AndroidStudioProjects                                           'Start Menu'
AppData                                                         Templates
'Application Data'                                              Tracing
Contacts                                                        Videos
Cookies                                                         'VirtualBox VMs'
Desktop                                                         WirelessLan_ROG_MediaTek_Z_V3.00.01.1264Sub1_30243.exe
Documents                                                       ansel
Downloads                                                       cli.exe
Favorites                                                       codesof
IntelGraphicsProfiles                                           hello.cpp
Links                                                           iSST_ROG_Intel_B_V10.25.00.5427_28260_1.exe
'Local Settings'                                                ntuser.dat.LOG1
Music                                                           ntuser.dat.LOG2
'My Documents'                                                  ntuser.ini
NTUSER.DAT                                                      proj.exe
NTUSER.DAT{f91e089b-b842-11ed-a09f-93ff4de5a97f}.TM.blf         project.c
NTUSER.DAT{f91e089b-b842-11ed-a09f-93ff4de5a97f}.TMContainer00000000000000000001.regtrans-ms  project.exe
NTUSER.DAT{f91e089b-b842-11ed-a09f-93ff4de5a97f}.TMContainer00000000000000000002.regtrans-ms  saksham.txt
NetHood                                                         scripts
'New folder'                                                    source
OneDrive                                                        test
Pictures                                                        test.sh
PrintHood                                                       userinterface
```

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 the user's input from the 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.