

# Project Report

## Console-Based File Explorer in C++ (Linux)

### 1. Introduction

The Console File Explorer is a command-line application developed in C++17 for Linux-based systems. It allows users to explore, manage, and organize files and directories efficiently without relying on a graphical interface.

### 2. Objectives

- To design and implement a file management tool using C++.
- To provide functionalities for browsing and manipulating files via the terminal.
- To learn Linux system-level operations through C++ programming.
- To build an interactive and efficient text-based interface.

### 3. System Requirements

Hardware: Intel/AMD x64 processor, 2GB RAM, 100MB storage.

Software: Linux OS, g++ (C++17 or later), GNU Make.

### 4. Technologies Used

Programming Language: C++17

Libraries: <iostream>, <filesystem>, <fstream>, <sys/stat.h>

Development Environment: VS Code / Terminal

Version Control: Git & GitHub.

### 5. System Design

The application uses modular design with a FileManager class handling operations, and a main loop providing a shell-like interface for user commands.

### 6. Implementation Details

Commands supported: ls, cd, search, perm, chmod, touch, mkdir, cp, mv, rm, exit.

### 7. Working Principle

User enters a command → FileManager executes operation using C++17 filesystem → Results are displayed interactively.

### 8. Advantages

- Lightweight and fast CLI utility.
- Safe operations with confirmation.
- Cross-directory support.
- No external dependencies.

## 9. Limitations

- Works only on Linux.
- No graphical interface.
- Limited error handling.

## 10. Future Enhancements

- Add GUI using Qt or ncurses.
- Implement file preview.
- Add multithreading for faster searches.
- Maintain command history.

## 11. Conclusion

This project demonstrates system-level programming in C++17 using the filesystem library. It enhances understanding of file operations, permissions, and CLI tool development.

## 12. References

- <https://en.cppreference.com>
- <https://man7.org/linux/man-pages>
- <https://www.gnu.org/software/make/>