RV Educational Institutions ®

RV College of Engineering ®

Autonomous Institution
Affiliated to Visvesvaraya
Technological University,
Belagavi

Approved by AICTE,
New Delhi

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

OPERATING SYSTEMS - CS235AI

Exploring File Operations and Cloud-Integration

Submitted by

RAMCHANDRA M RAYAKAR -1RV22CS157
PRAVEEN PRAKASH HEBBAL-1RV22CS149
NITHIN GOWDA L-1RV22CS132

Under the Guidance of

Dr. Jyoti Shetty
Assistant Professor
Department of Computer Science
and Engineering
2023-2024

ACKNOWLEDGEMENT

We would like to express our deep sense of gratitude to our respected guide Dr. Jyoti Shetty, Associate Professor, Dept. of CSE, RVCE for her valuable help and guidance, and are thankful for the encouragement given to us.

We are also grateful to Dr. Ramakanth Kumar P, Head of Department, Dept. of CSE, RVCE.

We are also grateful to our respected Principal, Dr. K N Subramanya.

Lastly, we would like to thank our classmates and our parents for providing us with moral support and encouragement.

CONTENTS

INTRODUCTION:

This project is a command-line file manager offering basic operations like creating, deleting files/directories, renaming, and navigation. It integrates with Dropbox API for listing files and uploading. User interaction is menu-driven, with options for both local and cloud operations. The program utilizes system calls and libcurl for HTTP requests to Dropbox. Error handling is implemented for robustness during file operations and API interactions. It offers a seamless experience for managing files locally and in Dropbox cloud storage. Overall, it's a versatile tool for file management and cloud integration in a compact command-line interface.

SYSTEM ARCHITECTURE:

- The file manager's structure is modular, consisting of distinct components for handling file operations, user interface, text editor integration, and cloud storage integration.
- Components include functionalities for creating directories, creating files, deleting files/directories, reading files, listing directory contents, moving files, and opening files with a text editor.
- Interaction with the operating system is facilitated through system calls such as “chdir”, ‘open’, ‘read’, ‘write’, ‘mkdir’, ‘rmdir’, ‘unlink’, and ‘rename’, enabling manipulation of files and directories within the file system.
- External APIs, such as the Dropbox API, are utilized for cloud storage integration. The file manager communicates with these APIs over HTTP, sending requests to list files and upload files to cloud storage services.

The modular structure and interaction with both the operating system and external APIs enable the file manager to provide comprehensive file management capabilities, including local file operations and integration with cloud storage services.

METHODOLOGY:

- The file manager was developed iteratively, breaking down tasks into manageable chunks and prioritizing based on dependencies.
- Modular programming principles were applied to enhance code organization and maintainability, with each functionality encapsulated into separate modules or functions.
- Testing procedures, including unit testing, integration testing, and user acceptance testing, were integrated throughout the development process to ensure reliability and correctness.
- Various debugging techniques, such as print debugging and using debugging tools like gdb, were employed to identify and resolve issues in the codebase.
- Continuous improvement was emphasized, with feedback from testing and debugging used to refine the software and maintain code quality.
- Regular code reviews, refactoring, and documentation updates were conducted to align with project objectives.

SYSTEM CALLS

- cdir: Changing the current working directory.
- open: Opening files or creating new files.
- write: Writing data to files.
- read: Reading data from files.
- mkdir: Creating directories.
- rmdir: Deleting directories.
- unlink: Deleting files.
- readdir: Reading directory contents.
- rename: Renaming files or directories.

RESULTS

Current Functionality:

The file manager, coupled with Dropbox integration, is presently operational, providing users with a versatile solution for managing their files. Users can conveniently perform an array of file operations through a straightforward command-line interface, including tasks like creating, deleting, renaming, and moving files and directories. Moreover, the integration with the Dropbox API elevates the program's utility by enabling users to seamlessly interact with their Dropbox accounts. This functionality allows for the listing of Dropbox files and facilitates the effortless transfer of files between the local system and Dropbox cloud storage. Overall, the existing functionality of the file manager with Dropbox integration already offers users a robust platform for efficient file management.

Future Prospects:

Looking forward, there is ample opportunity for further development and expansion of the file manager's capabilities. Future iterations of the program could focus on enhancing the user interface to offer a more intuitive and streamlined experience. Additionally, the integration with cloud storage services could be broadened to include support for other platforms such as Google Drive or OneDrive, thereby providing users with more options for managing their files. Moreover, efforts can be directed towards implementing advanced features like file encryption, improved search functionality, and performance optimizations to enhance overall usability and efficiency. By continually evolving and adapting to user needs, the file manager with Dropbox integration holds promising potential for becoming an indispensable tool in file management workflows.

CONCLUSION

The file manager with Dropbox integration stands as a powerful tool for users seeking efficient file management solutions. With its current functionality enabling seamless local and cloud-based file operations through a user-friendly interface, the program already offers significant utility. However, the project's potential extends far beyond its current state. Future development avenues, including interface refinements, expanded cloud storage support, and the implementation of advanced features, promise to further enhance the program's capabilities and user experience. By continuing to evolve and adapt to emerging user needs, the file manager with Dropbox integration is poised to become an indispensable asset for individuals and organizations alike, streamlining file management workflows and empowering users to efficiently organize and access their files across different platforms.