Project Title:Remote File Management Software

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Group No: 2

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Vision of the Department

Creating eminent and ethical leaders in the domain of Computational Sciences through quality professional education with a focus on holistic learning and excellence.

Mission of the Department

- To create technically competent and ethically conscious graduates in the field of Computer Science and Engineering by encouraging holistic learning and excellence.
- To prepare students for careers in Industry, Academia and the Government.
- To instill Entrepreneurial Orientation and research motivation among the students of the department.
- To emerge as a leader in education in the region by encouraging teaching, learning, industry and societal connect.

Programme Educational Objectives (PEOs)

1. The graduates shall have sound knowledge of Mathematics, Science, Engineering and Management to be able to offer practical software and hardware solutions for the problems of industry and society at large.

2. The graduates shall be able to establish themselves as practicing professionals, researchers or Entrepreneurs in computer science or allied areas and shall also be able to pursue higher education in reputed institutes.

3. The graduates shall be able to communicate effectively and work in multidisciplinary teams with team spirit demonstrating value driven and ethical leadership.

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Programme Outcomes

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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Programme Specific Outcomes (PSOs)

On the completion of Computer Science & Engineering program, the students will possess:

1. An ability to apply knowledge of data structures and algorithms appropriate to computational problems.
2. An ability to apply knowledge of operating systems, programming languages, data management, or networking principles to computational assignments.
3. An ability to apply design, development, maintenance or evaluation of software engineering principles in the construction of computer and software systems of varying complexity and quality.
4. An ability to understand concepts involved in modeling and design of computer science applications in a way that demonstrates comprehension of the fundamentals and trade-offs involved in design choices.

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Introduction

- Our project aimed to build a app for advanced file organization
- It enable users to perform various file related tasks such as creating,editing,sharing,moving and deleting files
- Our app has a server side compressor which helps to freeing space and reduce storage requirements for files

Objectives

To develop a software that aims to enable users to easily access, edit and share their files from anywhere and at any time.

The key objectives of remote file management software include:

- Accessibility
- Efficiency
- Collaboration
- Scalability

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•literature survey

Paper Number: 1

Paper type: Journal

Name of Publisher: IEEE

Year:2022

Title: An Efficient Data Compression Scheme in InterPlanetary File System

Authors: Hyeonsang Eom

Inferences:

- In this paper, we investigate the procedure of operations in IPFS. We find that the performance of IPFS is worse as the data size increases.
- To handle this issue, we present IPFSz which is a variant of IPFS to enable data compression functionality for better I/O performance and storage space consumption.

steps:

(1).In this scenario, the IPFSz uses the Compression API instead of UnixFS API because of compression requests. After then, the Compression API initiates the compression module to compress the data

(2). In the compression module, the compression detector checks whether the request type is compression or decompression

(3). If the request type is compression, the detector calls compressor. The compressor compresses data

(4). by using a compression algorithm. Then, the chunker divides an entire data to chunks as a unit of a certain size (e.g., 256KiB). After then, the Merkle DAG builder comprises a Merkle DAG with the chunks

(5).Then transfer data to specified application

ADVANTAGES:

- compress/decompress the data during I/O operations by using a compression algorithm, manage the states of data (e.g., compressed or decompressed), and provide a compression/decompression interface to applications.
- Efficient file access control by managing the files in a single server.

DISADVANTAGES:

- Quality of compressed image degrades with high ratio of compression
- User can not get back original image after compression

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Paper Number: 2

Paper type: Journal

Name of Publisher: Qatar National Library.

Year:2020

Title: Data Consistency in Multi-cloud storage systems with passive servers and Non-Communicating Clients

Authors: Naram Mhaisen

Inferences:

- Multi-cloud storage systems are becoming more popular due to the ever-expanding amount of consumer data. This growth is accompanied by increasing concerns regarding security, privacy, and reliability of cloud storage solutions
- Multi-cloud storage systems can detect conflicts and preserve consistency through utilizing a centralized coordination point (e.g., server) that receives and logs the modification requests from the different clients (append-log).

- One of the fundamental synchronization features is the ability to detect data conflicts and maintain data consistency . In general, data conflicts occur when multiple clients attempt to modify the same file at the same time.
- The cloud consumer typically has multiple computers sharing and concurrently accessing (reading and writing) the data

ADVANTAGES:

- Define data consistency in multi-cloud storage systems, identify how they can be violated, and introduce a new method that probably maintains the data consistency in these systems
- Provide accessibility from anywhere and across different devices
- Multiple businesses would also like to have guaranteed privacy and availability of their sensitive data.

DISADVANTAGES:

- The lack of communication between clients is a significant challenge to the consensus-based approach.
- An additional and essential challenge that faces multi-cloud storage systems is the heterogeneity of consistency models followed by different providers.
- Having a strict consistency assumption or atomicity of operations from a cloud storage provider is an impractical assumption that should be avoided

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Paper Number: 3

Paper type: Journal

Name of Publisher: I.Vakilinia is with the School of Computing, University of North Florida

Year:2023

Title: An Incentive-Compatible Mechanism for Decentralized Storage Network

Authors: Iman Vakilinia

Inferences:The dominance of a few big companies in the storage market arising various concerns including single point of failure, privacy violation, and oligopoly. To eliminate the dependency on such a centralized storage architecture, several Decentralized Storage Network (DSN) schemes such as Filecoin, Sia, and Storj have been introduced

- The outcome of this paper is a new incentive-compatible mechanism designed carefully for the blockchain-based DSN. The proposed mechanism utilizes different tools including game-theory, smart-contract, oracle network, and Merkle tree to improve the security and performance of storage verification in DSN

ADVANTAGES:

- The primary goal of DSN's mechanism design is to ensure that the storage provider stores the client's data and returns it upon the client's request following the SLA.
- Less burden to higher management
- Prevent service denying attack
- Moreover, our scheme prevents the dishonest storage provider to deliver PoS to the DSN while refusing the storage service to the client.

DISADVANTAGES:

- Not appropriate for huge companies
- Chance of conflict and misunderstanding
- Difficult to maintain proper coordination
- Requires huge capital

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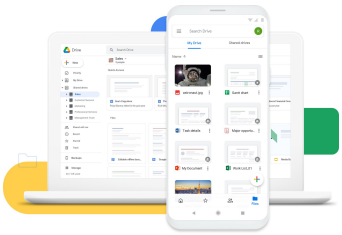
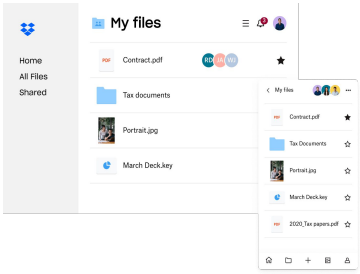
Existing Systems



Google Cloud Storage: Google Cloud Storage is another cloud-based storage solution that allows you to store and access your files from anywhere.

Dropbox: Dropbox is a popular file hosting service that allows you to store, access, and share your files from anywhere.



Our software offers a more comprehensive file organization and search functionality, as well as an innovative server-side compression feature that reduces storage requirements.

Problem statement

The proposed problem that remote file management software aims to solve is the challenge of efficiently managing files across multiple devices, locations, and users. With the increasing amount of data generated by individuals and organizations, the need for a centralized and accessible solution for managing files has become critical.

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Software Requirement Specification

- **Functional Requirements**
  a. User Management
  b. File Management
  c. File Organization
  d. Search
  e. Sharing
  f. File Compression
- **Non-Functional Requirements**
  a. Performance
  b. Scalability
  c. User Interface
  d. Compatibility
  e. Availability

•Proposed System

The proposed solution is a remote file management software that provides users with a centralized and secure platform for managing their files. The software is designed to be accessible from any device with an internet connection, enabling users to access and manage their files from anywhere.

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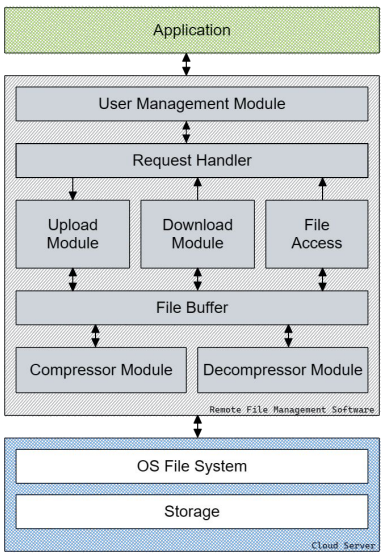
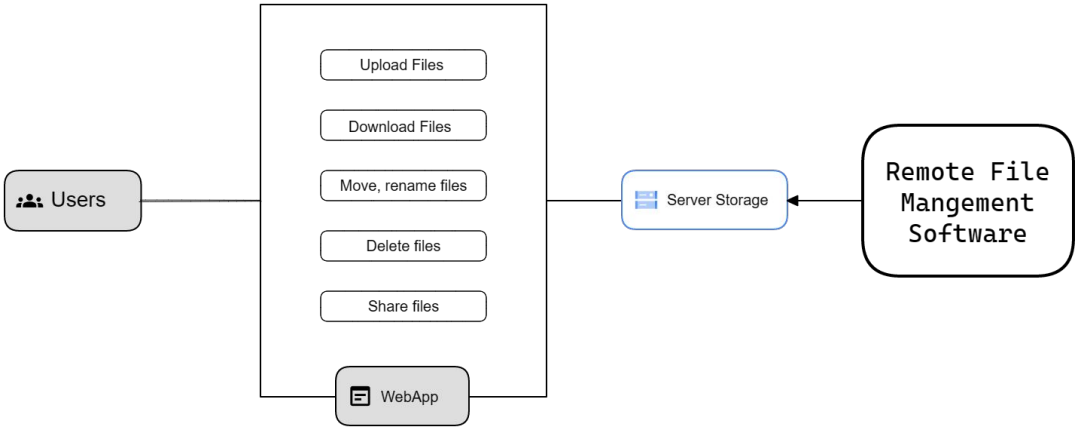
Architecture of Proposed System



Use Case Diagram



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Hardware Software Requirements

Hardware Requirement:

1.Server: Multi-core processor, 8GB RAM,Sufficient storage.

2.Network:Capable of faster download and upload.

Software Requirement:

1.Operating system: Windows 10 or 11.

2.File management: Python.

3.Web page & App: HTML,CSS & JAVA

Conclusion

A remote file management system is a software solution for accessing and managing files on a remote server or cloud storage service through an internet connection.

Completed phase:

- Problem identified, solution proposed.
- Functional and nonfunctional requirements are identified.
- Designed architecture.

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