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Personal Cloud Storage

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Abstract— In the digital era, people generate a large amount of personal data such as documents, images, videos, and project files. Managing and accessing these files from different devices can be difficult without a proper storage solution. Personal Cloud Storage systems provide a convenient way to store, manage, and access files through the internet. This project proposes a web-based Personal Cloud Storage platform that allows users to upload, store, organize, and download their files securely. The system is designed using modern web technologies where the frontend interface allows easy interaction and the backend manages file storage and authentication. The platform ensures data safety, accessibility, and efficient file management for users.

Keywords— ***Cloud Storage, File Management, Web Application, Data Storage, Secure File Access.***

1. INTRODUCTION

With the increasing use of computers and smartphones, people continuously create and store digital files. These files may include academic documents, personal images, videos, and other important data. Traditionally, users store these files on local devices such as hard drives or USB drives. However, this approach has several limitations including risk of data loss, limited storage capacity, and difficulty accessing files from multiple devices. Cloud storage technology provides a solution by allowing users to store their files on remote servers that can be accessed through the internet. Personal cloud storage systems allow individuals to manage their own digital storage space securely while maintaining control over their data. The aim of this project is to design and develop a simple Personal Cloud Storage platform where users can create accounts, upload files, organize them, and access them anytime from any device with internet connectivity.

2. LITERATURE SURVEY

Several researchers and developers have explored cloud storage systems to improve how users store and manage digital data. Traditional storage methods rely on local devices such as hard drives and flash drives, which often lead to issues like limited capacity, device damage, or data loss. To address these limitations, cloud computing introduced the concept of remote storage systems that allow users to access their files through the internet. According to Mell and Grance in the NIST definition of cloud computing, cloud storage is part of the broader cloud computing model where computing resources such as servers, storage, and applications are delivered over the internet on demand. This model provides scalability, reliability, and remote accessibility.

3. PROBLEM STATEMENT

Many users face difficulties in managing personal files across multiple devices. Traditional storage methods like USB drives or local hard disks may lead to data loss due to hardware failure, accidental deletion, or system crashes. In addition, sharing or accessing files remotely becomes difficult without internet-based storage. Existing public cloud services may also raise concerns regarding privacy, storage limitations, or complicated interfaces for some users. Therefore, there is a need for a simple and secure Personal Cloud Storage system that allows users to store, manage, and retrieve files easily while maintaining data security and accessibility.

(1) To develop a secure platform for storing personal files online

(2) To allow users to upload, download, and manage files easily.

(3) To provide authentication features such as user registration and login.

4. METHODOLOGY

The Personal Cloud Storage system was developed using a structured approach that started with analyzing user requirements for secure online file storage. The system follows a client–server architecture where the frontend provides a user-friendly interface for uploading and managing files. The backend processes user requests and connects with the database to store user details and file information. Each module was implemented and tested to ensure reliable file upload, storage, and retrieval.

A. Requirment Analysis

Before starting development, we first tried to understand the common problems people face while storing and managing personal files.

UNDERSTANDING USER PROBLEMS :

We discussed with some students and computer users to understand the difficulties they experience while storing files on different devices. The most common issues were loss of files due to device failure, difficulty accessing files from multiple devices, and lack of proper backup.

UNDERSTANDING USER PROBLEMS :

We also analyzed how users manage their documents, images, and project files. Many users wanted a simple system where they could upload files, access them anytime, and keep their data organized.

IDENTIFYING IMPORTANT FEATURES:

we decided to include the following main features:

- User registration and login
- File upload functionality
- File download option
- File management (view and delete files)
- Secure file storage
- Users will have basic internet access.
- File organization using folders for better file management.
- Users will have basic knowledge of using a website.
-

DATABASE PLANNING :

We designed the database structure to store user and file information. Tables were created for **Users, Files, and Storage Records**. Proper primary keys and relationships were defined to keep the data organized and prevent duplicate entries.

B. System Design

After finalizing the all requirements we started a designing part.

ARCHITECTURE DESIGN :

The system follows a simple **client-server architecture**. The frontend is responsible for displaying the user interface and handling user interactions. The backend processes user requests and manages file storage operations. A database is used to store user information and file details.

FRONTEND DESIGN :

The user interface was designed to be simple and easy to use. Users can easily register, log in, upload files, and view stored files through the dashboard.

BACKEND LOGIC :

Backend scripts handle user authentication, file upload processing, and file retrieval. When a user uploads a file, the backend stores the file on the server and saves the file information in the database for future access.

DATABASE HANDLING :

MySQL is used to store all information such as user details and file metadata. The database keeps records of uploaded files, file names, storage paths, and upload dates. Proper relationships were defined between tables to maintain data accuracy and ensure that each user's files are stored and managed correctly

MAIN MODULES OF THE SYSTEM:

- **User Module:** Handles user registration and login.
- **File Upload Module:** Allows users to upload files to the cloud storage.
- **File Management Module:** Displays stored files and allows users to view or delete them..
- **Download Module:** Enables users to download their stored files from the system..

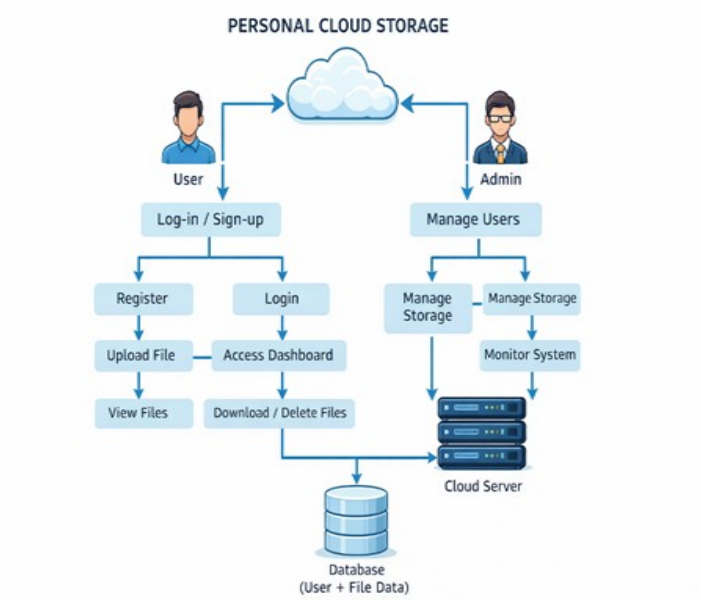

Fig.1 System Architecture

5. *RESULTS*

While developing the Personal Cloud Storage system, we tested the application carefully to ensure that all features worked properly. We observed how quickly the website loads, how smoothly the file upload and download processes function, and whether users can easily understand and use the interface. Each module, such as registration, file upload, and file management, was tested in different situations to check its reliability. We also collected feedback from a few test users to evaluate their experience and ensure that the system feels secure, simple, and easy to use.

5.1 *SYSTEM PERFORMANCE AND FUNCTIONALITY*

During testing, the **Personal Cloud Storage system** worked smoothly without any major issues. Users were able to move between pages like **login, registration, dashboard, and file management** easily. All the main features were connected properly, and users did not face any confusion while using the system .Since the system uses a **MySQL database**, all user details and uploaded file information were saved correctly. Multiple tests were performed to make sure the data was **stored, retrieved, and updated properly**. The database connection remained stable throughout the testing process. When we tested **file uploads, downloads, and deletions** several times, the system handled them correctly and saved all the file information without errors. Overall, the application performed reliably and provided a **smooth and secure cloud storage experience for users**.

5.2 *RESULTS OF THE USER INTERFACE*

a. HOME PAGE:

The **Personal Cloud Storage interface** is clean and simple to use. When users open the homepage, they can clearly see the main purpose of the platform along with easy options for **login and registration**. Important features such as **uploading files, viewing stored files, and accessing the user dashboard** are clearly presented, which makes it easy for users to understand the platform.

This screen serves as the starting point for users when they Visit the **Personal Cloud Storage platform**. It provides simple and clear options like **"Register"** and **"Login,"** making it easy for users to begin using the system. The interface design is simple and clean, which helps users understand the platform quickly. During testing, users found the interface easy to navigate.

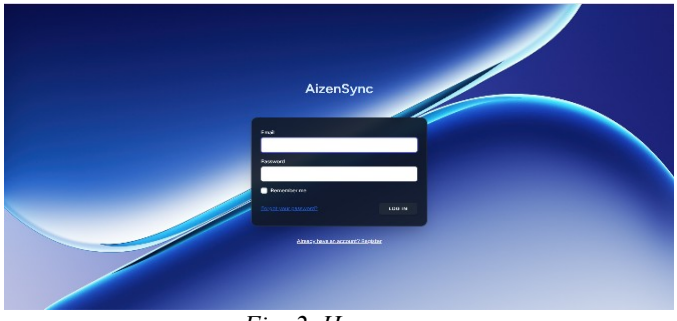

Fig. 2. Homepage

b. REGISTER PAGE

This screen serves as the starting point for users when they visit the Personal Cloud Storage platform. It provides simple and clear options like "Register" and "Login," making it easy for users to begin using the system. The interface design is simple and clean ,which helps users understand the platform quickly. During testing, users found the interface easy to navigate.

Fig. 3. Registration

c. FEATURES

The **Personal Cloud Storage System** provides several useful features for managing files online. Users can easily **upload files** from their device and store them securely in the cloud. The system allows users to **view and manage their files** in a dashboard where details such as file name, size, and last modified date are displayed. Users can also **download files** whenever needed and **delete unwanted files** to free storage space. A **search option** is available to quickly find files or folders. The system includes a **user-friendly dashboard** that makes file management simple and organized. All files and user data are stored securely in the database, ensuring **safe and reliable cloud storage**.

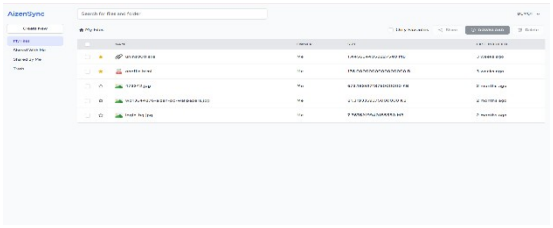

Fig. 4. Features

6. *SYSTEM REQUIREMENTS*

To run the Personal Cloud Storage project properly, some basic system requirements are needed. These requirements ensure that the application works smoothly during development and testing.

6.1 Hardware Requirements :

A system with at least **8 GB RAM** and a standard processor such as **Intel i5 (or equivalent)** is sufficient to run the project smoothly. Around **256 GB of storage** is enough for installing the required software and storing project files. A **stable internet connection** is helpful when uploading or downloading files and while testing the cloud storage features.

6.2 Software Requirements :

The Personal Cloud Storage project can run on **Windows 10 or Windows 11**. The frontend is developed using **HTML, CSS, and JavaScript**, while **PHP** is used for backend processing. **MySQL** is used to store user and file data. **XAMPP** provides the local server environment to run Apache and MySQL. The project code is written using **Visual Studio Code**, and it can be accessed through modern web browsers like **Google Chrome, Microsoft Edge, or Firefox**..

II. CONCLUSION

A. Summary

The Personal Cloud Storage system is a web-based platform that allows users to store and manage their files in a simple and organized way. It is built using React for the frontend, PHP for handling the backend logic, and MySQL for storing user and file information securely.

Through this website, users can create an account, upload files, and access their stored data anytime. All the file details are saved in the database, which helps maintain proper records and easy file management.

At present, the system mainly focuses on providing basic cloud storage features and organized file management. Even with these basic functions, it helps solve common problems such as file loss, difficulty accessing files from multiple devices, and lack of proper backup. In the future, additional features like file sharing, advanced security, and cloud deployment can be added to make the system more efficient and scalable.

B. Future Scope

Right now, the Personal Cloud Storage system mainly focuses on storing and managing user files in an organized way. However, the system can be improved in many ways in the future. One major improvement could be adding **file sharing functionality**, which would allow users to share their files with others through secure links. A **file backup and recovery feature** can also be implemented so that users can restore accidentally deleted files easily. We can also include features like **advanced encryption and security mechanisms** to protect user data more effectively. Deploying the system on a **cloud server** would make it more scalable and accessible from anywhere. In the future, a **mobile-friendly interface or a dedicated mobile application** can also be developed. With these improvements, the Personal Cloud Storage system can become more advanced, secure, and useful for individuals who want reliable online storage for their files.

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