File hosting/sharing website

Concept note -

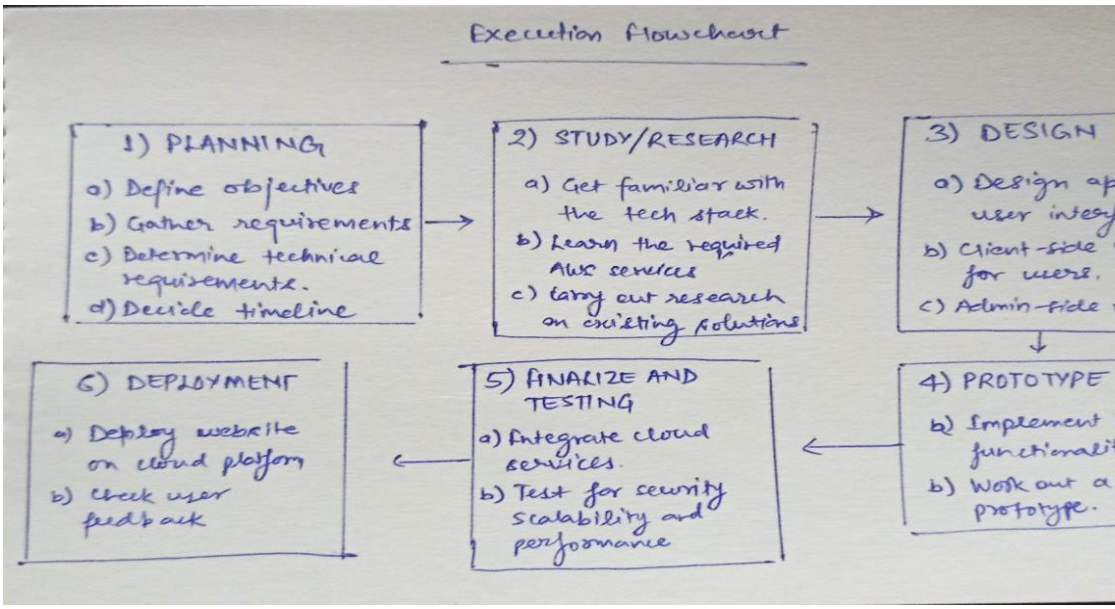
The development of a cloud-based file hosting website is proposed to offer users a secure, convenient, and scalable solution for storing, accessing, and sharing their files. With the increasing demand for remote work and collaboration, a cloud-based file hosting website provides a solution that meets these needs. A cloud-based file sharing heavily outweighs the traditional file sharing methods is terms of remote accessibility, reliability, scalability and speed. Cloud-based file sharing systems are better than traditional file sharing systems because they offer increased scalability, better security, and improved user experience with features such as real-time collaboration and anytime access to files from any device.

Objectives to be covered:

1. To provide users with a secure, cloud-based platform for storing and sharing their files.
2. To offer users a convenient and user-friendly interface for accessing their files from anywhere, at any time.
3. To provide users with scalable storage options that can grow as their needs grow.
4. To ensure that all data is protected and backed up regularly to minimize the risk of data loss.

Flowchart-

Execution flowchart:



Why the application requires cloud?

File sharing relies heavily on cloud for operation. Much of the requirements arise from the shortcomings of traditional file sharing systems. Traditional file sharing methods, such as physical storage devices (such as USB drives or CDs), email, and network file sharing, are compared to cloud-based file sharing methods as follows:

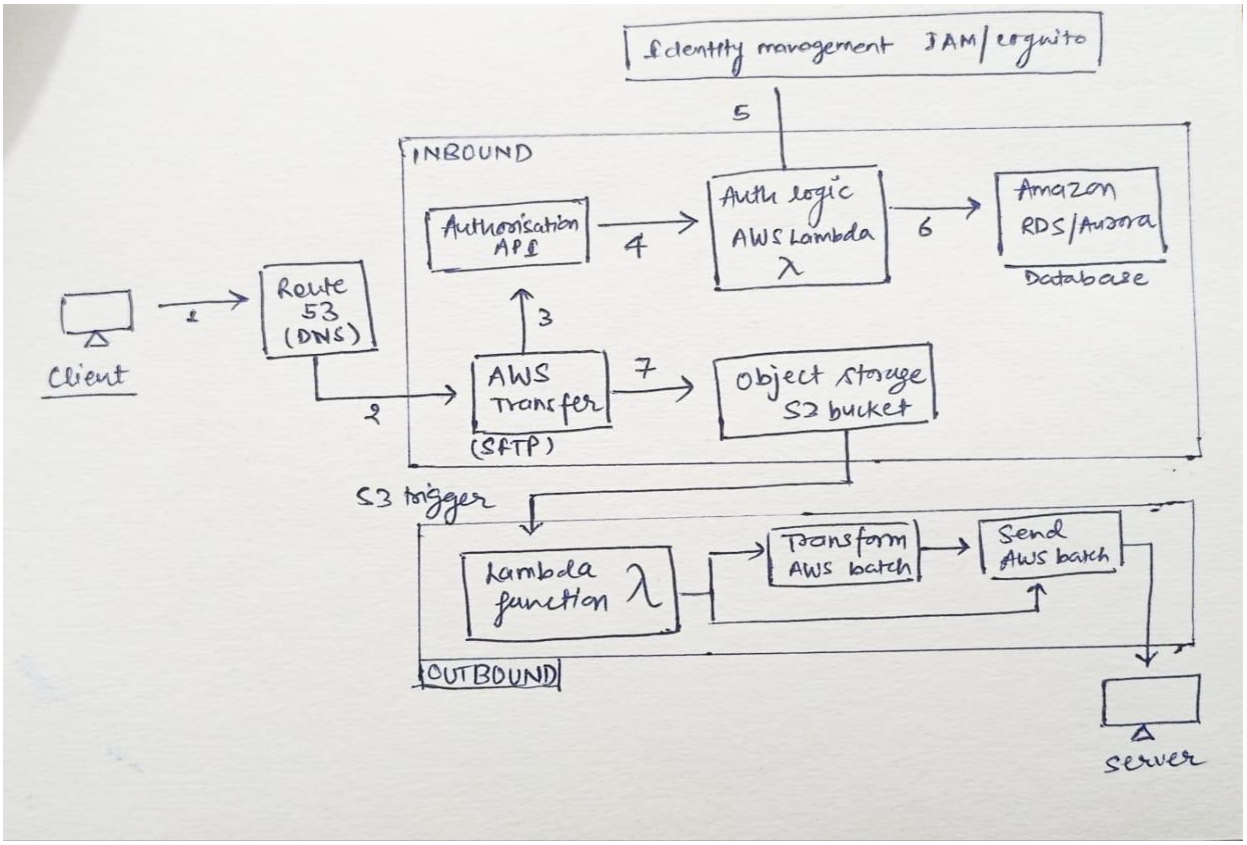
1) Scalability: Traditional file sharing methods have limited scalability and storage capabilities, making it difficult to share large files or collaborate with a large number of users. Cloud-based file sharing systems, on the other hand, can handle large amounts of data and accommodate a large number of users, making it easier to share large files and collaborate on projects with a large team.
2) Accessibility: Traditional file sharing methods are often limited in terms of accessibility, as you need physical access to the storage device or to be connected to the same network as the file in order to access it. Cloud-based file sharing, however, allows you to access your files from anywhere and at any time, as long as you have an internet connection.
3) Real-time collaboration: With traditional file sharing methods, it can be difficult to collaborate in real-time, as changes made by one user may not be immediately visible to others. Cloud-based file sharing, on the other hand, allows multiple users to collaborate and make changes to the same file in real-time, making it easier to work on projects together.
4) Cost-effectiveness: Traditional file sharing methods often require expensive hardware and IT infrastructure, making them a more expensive solution for businesses and individuals. Cloud-based file sharing, however, eliminates the need for expensive hardware and IT infrastructure, making it a cost-effective solution for businesses and individuals. You only pay for what you use, and you can easily scale up or down as your needs change.
5) Security: Traditional file sharing methods may not offer the same level of security as cloud-based file sharing, as physical storage devices can be lost or stolen and network file sharing can be vulnerable to hacking. Cloud-based file sharing systems, on the other hand, offer robust security features such as encryption, access controls, and disaster recovery, ensuring that your data is secure.

Overall, cloud-based file sharing offers many benefits over traditional file sharing methods, including greater scalability, accessibility, real-time collaboration, cost-effectiveness, and security. We need cloud to capitalize on the mentioned forefronts. Also, without an internet connection, the application cannot be used

Basic outline for the workflow of the application:

1) User registration: Users create an account on the website by providing basic information such as name, email, and password. This involves maintaining a relational database for user details. (RDS)
2) File upload: Users upload files to the cloud-based server. This can be done through the website's user interface, or by using a desktop or mobile app. Uploaded files are stored in S3 bucket.
3) File storage: The uploaded files are stored on the cloud-based server, where they are encrypted for security and optimized for efficient storage.
4) File sharing: Users can share files with others by generating a link or inviting specific users to collaborate on a file. The recipients can access the shared files through the website or through a mobile app. This can be achieved by simply triggering a lambda function.
5) Real-time collaboration: The cloud-based file sharing system enables real-time collaboration, allowing multiple users to make changes to the same file and view each other's changes in real-time.
6) File version control: The cloud-based file sharing system tracks changes made to files and allows users to revert to previous versions of the file if necessary. S3 bucket versioning can be used to implement this feature.
7) Access control: The system allows administrators to set access controls for each file (IAM), determining who can view, edit, or download the file.
8) Data backup and recovery: The cloud-based file sharing system backs up data regularly to ensure that files are not lost in case of a disaster or system failure. (Using backup quarantine S3 buckets)
9) Reporting and analytics: The system provides reporting and analytics capabilities, allowing administrators to track usage, performance, and other key metrics.
10) Deployment: The system is deployed on cloud infrastructure, which provides the necessary computing resources and ensures high availability and scalability.

Rough outline of working of application



Literature review:

[1] This paper introduces the concept of cloud computing and data storage in cloud computing with its advantage and disadvantage. Then it goes through what is cloud storage and how it works and what are their benefits. The last part, it illustrates how to make data storage cheaper and faster.

[2] This paper discusses building of a file sharing server which enables the process of copying files from web server to clients' computers through online internet connection. This is implemented by creating a web application and hosting it on the local server. Within this web application, the users can upload and download files of different types like videos, audios, books

[3] This paper defines a set of important criteria to evaluate cloud storage providers and we review today's market cloud storage companies against this checklist. In addition, an attempt to evaluate read/write performances of selected storage systems over small and large file sizes is conducted as well.

[4] This AWS documentation provides steps and guidelines to perform file sharing through cloud by using AWS transfer family.

[5] This paper documents the process of developing a Web-based File Hosting Service with Object Oriented Logic in Cloud Computing called Pirus. The service gives users the ability to remotely store and access their personal files with no security compromises. It also offers the administrators the ability to manage users and roles.

References:

[1] Research on cloud storage: advantages and disadvantages by Prachi Kumari, Pooja Verma and Devansh Vashisht.

[2] Design and Implementation of File Sharing Server Article in International Journal of Emerging Trends & Technology in Computer Science · November 2015 by Firas Abdullah Thweny Al-Saedi and Zainab Al Taweel.

[3] **Cloud storage providers: A comparison review and evaluation (June 2014) by** Xhemal ZenuniJaumin Ajdari, Florie Ismaili and Bujar Raufi.

[4] https://aws.amazon.com/blogs/architecture/building-a-cloud-native-file-transfer-platform-using-aws-transfer-family-workflows/

[5] Pirus : A Web Based File Hosting Service with Object Oriented Logic in Cloud Computing Dimitrios Kallergis1 , Konstantinos Chimos2 , Vizikidis Stefanos3 , Theodoros Karvonunidis4 , Christos Douligeris5 Department of Informatics, University of Piraeus Piraeus, Greece.