Cloud-Based Smart File Storage & Sharing system

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Internship Project Report

1. Introduction

This project is a mini **cloud-based file storage and sharing system**, similar to Google   Drive. The goal is to allow users to upload files, store them securely in the cloud, access them from anywhere, and generate shareable links. The system uses cloud services for reliability, scalability, and secure file management.

2. Objective

To design and deploy a secure, scalable cloud storage application where users can upload, view, and share files through a simple and user-friendly web application.

3. Technologies & Tools Used

- **Frontend:** HTML, CSS, JavaScript (or React.js)

- **Backend:** Flask / Node.js

- **Cloud Platform:** Amazon Web Services (AWS)

- **Storage:** Amazon S3

- **Compute:** AWS EC2

- **Database:** DynamoDB / MongoDB Atlas (for file metadata)

- **Deployment:** AWS EC2, Docker

- **Version Control:** Git & Github

4. System Architecture

The architecture consists of three main layers:

1. **Frontend (Web UI):**

Allows the user to upload files, view uploaded files, and copy shareable links.

2. **Backend (API Server):**

- Handles file upload requests

- Stores files in S3

- Stores file metadata (file name, owner, URL, upload date)

- Generates public/private URLs

3. **Cloud Storage & Infrastructure:**

- **Amazon EC2** hosts the web application

- **Amazon S3** stores uploaded files

- **IAM Roles** control access between EC2 and S3

- **Security Groups** restrict network access

5. Project Workflow

1. User signs up or logs in

2. User uploads a file

3. File is sent to backend API

4. Backend stores file in **S3 bucket**

5. Backend returns a **file URL**

6. User can download, view, or share the link

7. File information is stored in database

6. Implementation Steps

1. Created AWS account and S3 bucket

2. Launched EC2 instance and installed required packages

3. Built and deployed backend using Flask/Node (or Docker container)

4. Connected backend to S3 bucket

5. Developed frontend for file upload and viewing

6. Integrated frontend with backend APIs

7. Generated shareable file links

8. Tested full workflow: upload → store → share → download

7. Features Developed

- File upload

- Secure cloud storage

- File metadata storage

- Download/share link generation

- Simple and clean web interface

- Backend deployed on AWS EC2

- Files stored in S3 bucket

8. Challenges Faced

- Configuring IAM permissions

- Connecting frontend with backend APIs

- Handling CORS policies

- Understanding Docker deployment

- Ensuring secure storage access

9. Final Output

The final application successfully allows users to:

- Upload files to S3

- View uploaded files

- Generate shareable links

- Access files from any device

- Use a simple and clean user interface

- Run the app from a cloud server (EC2)

Live URL: Instance currently stopped. Application was deployed successfully during the project execution.

10. Conclusion

This project demonstrates how cloud technologies can be used to build a reliable, secure, and scalable file storage system. It helped in understanding cloud storage, compute, IAM, deployment, and real-world application integration. This project strengthens both cloud knowledge and practical deployment skills, which are essential for AWS and cloud support roles.