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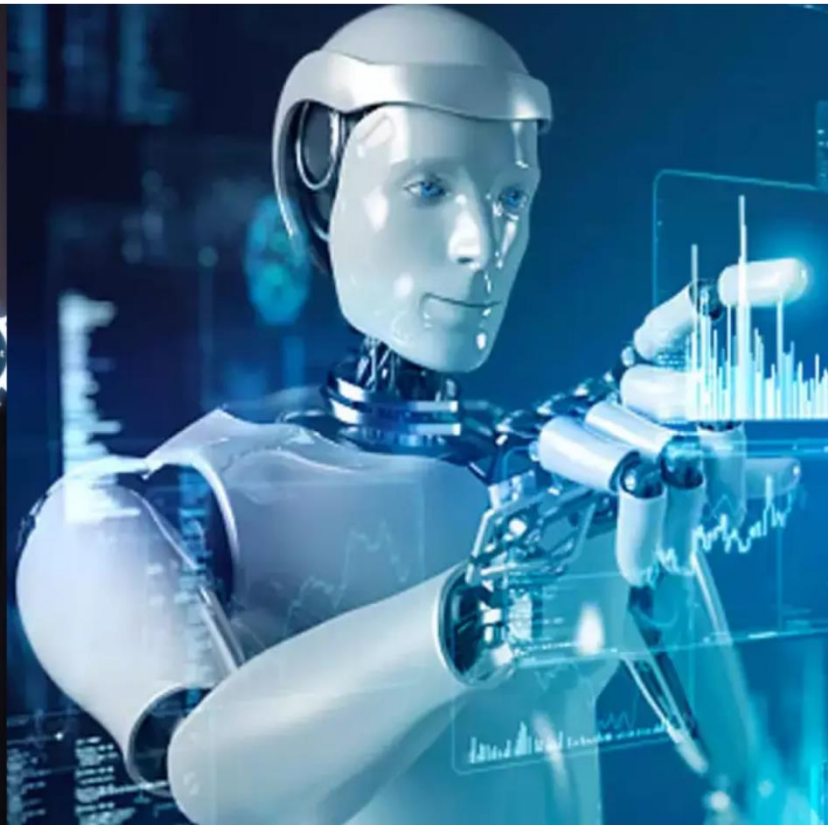

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File Sharing using AWS S3 Bucket

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ABSTRACT: This paper presents a secure and scalable file-sharing architecture utilizing Amazon Web Services (AWS) cloud infrastructure. The proposed system leverages Amazon S3 for reliable object storage, AWS Lambda for serverless backend processing, and Amazon Cognito for robust user authentication and identity management. Secure file access is facilitated through the use of time-limited, pre-signed URLs, ensuring confidentiality and controlled distribution. Additionally, data transmission and storage are protected via encryption mechanisms, adhering to industry-standard security practices. The architecture is designed to offer high scalability, cost-effectiveness, and availability, making it a suitable solution for both academic and enterprise-level applications.

I. INTRODUCTION

The increasing need for secure and efficient file-sharing solutions is evident in both academic and enterprise environments. With growing concerns over data breaches, unauthorized access, and the limitations of traditional file servers, cloud-based approaches offer a more scalable and secure alternative.

Amazon Web Services (AWS), a leading cloud platform, provides a suite of services that can be used to build robust applications without managing physical infrastructure. In this paper, we propose a serverless file-sharing system that leverages key AWS services to provide secure access, storage scalability, and minimal operational overhead.

The system ensures secure file sharing using encrypted transmission, pre-signed URLs for access control, and identity management through AWS Cognito. The use of serverless functions (AWS Lambda) reduces cost and complexity while ensuring automatic scaling.

II. RELATED WORK

Previous approaches to file sharing include centralized file servers, peer-to-peer (P2P) systems, and hybrid models. While traditional file servers offer control, they often lack scalability and are prone to single points of failure. P2P systems, on the other hand, suffer from data availability and consistency issues.

Cloud-based storage systems such as Dropbox, Google Drive, and OneDrive offer convenient interfaces but are proprietary and may not meet custom security or compliance requirements. Several academic efforts have proposed secure file-sharing frameworks, but many still rely on virtual machine (VM)-based architectures that require significant maintenance.

In contrast, the system presented in this paper uses a fully managed serverless model, minimizing infrastructure management while maximizing scalability and security using AWS.

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III. METHODOLOGY

1. Requirement Analysis
Understand the file sharing needs (e.g., size limits, file types, user roles).
Define system goals: secure uploads/downloads, access control, scalability.

2. AWS S3 Bucket Setup
Create an S3 bucket via AWS Management Console or AWS CLI.
Configure bucket policies and permissions to restrict public access.
Enable CORS (Cross-Origin Resource Sharing) if used with a web frontend.

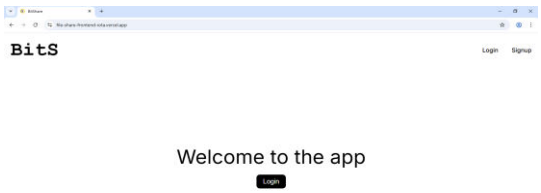
3. Backend Development
Use a backend to: MYSQL
Generate pre-signed URLs for upload/download.
Validate user requests.
Track file metadata (e.g., file name, size, timestamps) in a database if needed.

4. Frontend Integration
Build a user interface using HTML/CSS/JavaScript .
Use the pre-signed URLs to allow secure file upload/download from the browser.
Show upload progress, file previews, and download links.

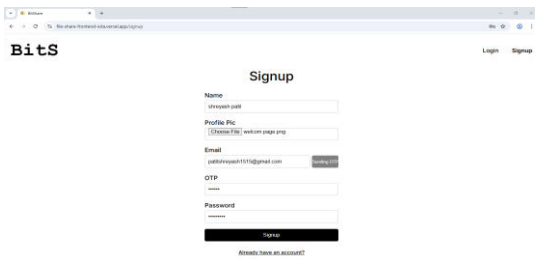
5. Security Implementation
Use AWS IAM roles to grant limited access.
Apply server-side encryption (SSE-S3 or SSE-KMS).
Set expiration on pre-signed URLs for time-bound access.
Enable logging and monitoring using AWS CloudTrail and S3 Access Logs.

IV. EXPERIMENTAL RESULTS

- **Welcome Page**



- **Signup Page**



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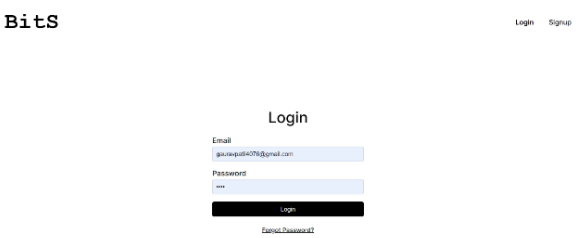
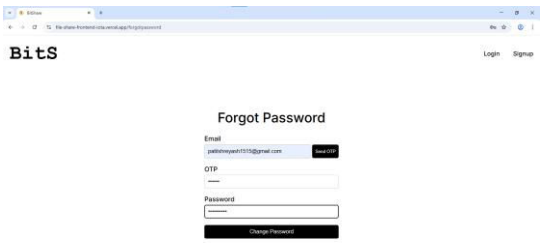
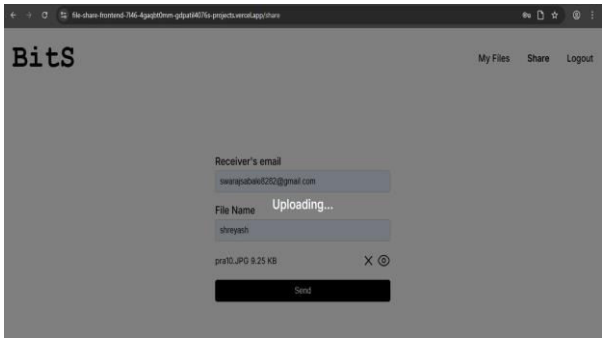
- **Login Page**



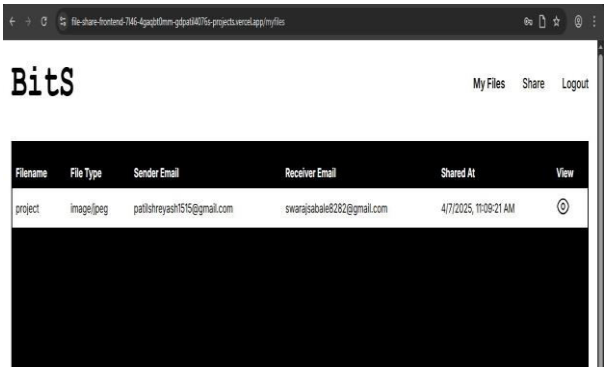
- **Forgot Password Page**



- **Share Page**



- **My Files Page**



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V. CONCLUSION

This paper presented a secure, serverless, and scalable file-sharing architecture using AWS cloud services. By integrating Amazon S3, Lambda, Cognito, and API Gateway, the system achieves a balance of security, scalability, and operational simplicity. The proposed solution is suitable for environments requiring robust access control and high availability, and it can be extended to support advanced features like file sharing across user groups, usage analytics, and integration with third-party platforms.

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