INDUSTRY INTERNSHIP

SUMMARY REPORT

AICTE AWS Cloud Internship

BACHELOR OF TECHNOLOGY

in

COMPUTER SCIENCE AND ENGINEERING

Submitted by

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Vth Sem III Year

SCHOOL OF COMPUTING SCIENCE AND ENGINEERING
GREATER NOIDA, UTTAR PRADESH

2024 – 2025

NATIONAL INTERNSHIP PORTAL

अखिल भारतीय तकनीकी शिक्षा परिषद्
All India Council for Technical Education

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AICTE - EduSkills 2024 VIRTUAL INTERNSHIP

Certificate of Virtual Internship

This is to certify that

Shreyash Upadhyay

Galgotias University

has successfully completed 10 weeks

Cloud Virtual Internship

During July - September 2024

Curriculum Provided by:

aws academy

Shri Buddha Chandrasekhar
Chief Coordinating Officer (CCO)
NEAT Cell, AICTE

Dr. Satya Ranjan Biswal
Chief Technology Officer (CTO)
EduSkills

Certificate ID :13d233e0ebb12b26d7024095820e80a7
Student ID :STU65919e7e05aa01704042110

INTERNSHIP GRADE B

GRADE- O (Outstanding):90-100 | E (Excellent):80-89 | A (Very Good):70-79 | B (Good): 60-69 | C (Fair): 50-59 | D (Average): 40-49 | P (Pass): 30-39 | F (Fail): Below 30

CERTIFICATE

I hereby certify that the work which is being presented in the Internship project report entitled AICTE AWS Cloud in partial fulfillment for the requirements for the award of the degree of Bachelor of Technology in the School of Computing Science and Engineering of Galgotias University , Greater Noida, is an authentic record of my own work carried out in the industry.

To the best of my knowledge, the matter embodied in the project report has not been submitted to any other University/Institute for the award of any Degree.

Shreyash Upadhyay (23SCSE1012304)

This is to certify that the above statement made by the candidate is correct and true to the best of my knowledge.

Signature of Internship Reviewer **Signature of Dean (SCSE)**

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ABSTRACT

Amazon Web Services (AWS) is a comprehensive cloud computing platform that offers a wide range of services to help organizations build, deploy, and manage applications and infrastructure in the cloud. AWS provides scalable and flexible solutions that cater to the needs of businesses of all sizes,from startups to enterprise-level organizations. The core services offered by AWS include computing power with Amazon EC2, storage with Amazon S3, and databases with Amazon RDS. Additionally, AWS offers a multitude of services to support various aspects of cloud computing, such as networking, security, machine learning, analytics, and IoT. These services enable businesses to leverage the power of the cloud to innovate, reduce costs, and scale their operations efficiently.

AWS provides a global infrastructure comprising multiple regions and availability zones, ensuring high availability and fault tolerance for applications and data. This global reach allows organizations to deploy their applications closer to their end-users, providing low-latency and improved performance. With AWS, organizations can benefit from a pay-as-you-go pricing model, allowing them to only pay for the resources they use. This flexibility makes it cost-effective for businesses to experiment, develop, and deploy their applications without upfront investments in hardware or infrastructure. Moreover, AWS offers a robust set of management tools that automate processes, simplify administration, and enhance operational efficiency. These tools enable businesses to monitor, secure, and optimize their AWS resources, ensuring reliable and secure operation of their applications.

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LIST OF ABBREVIATIONS

AWS	**Amazon Web Service**
S3	**Storage**
API	**Application Programming Language**
EC2	**Elastic Compute Cloud**
IAM	**Identity and Access Management**
RDS	**Relational Database Service**
IaaS	**Infrastructure as a Service**
PaaS	**Platform as a Service**
SaaS	**Software as a Service**
CLI	**Command-line interface**

CHAPTER – 1

INTRODUCTION

1.1 Objective of the Internship Project

The primary objective of this internship project was to design and implement a cloud-based file storage system using Flask and AWS S3. This system aimed to provide a user-friendly interface for file upload, storage, and retrieval with scalability, security, and efficiency. The project intended to develop a web-based solution that allows users to upload and download files through a responsive and intuitive interface.

Integrate AWS S3 to leverage its reliable and scalable cloud storage capabilities.

Demonstrate knowledge of full-stack development, including frontend design, backend API development, and cloud integration.

1.2 Problem statement and research objectives of this Internship

With the increasing reliance on cloud computing, there is a growing need for secure and scalable file storage solutions that are accessible from anywhere. Many existing solutions are either overly complex, expensive, or lack customization options for specific use cases. This project aimed to address the following issues:

Simplifying the process of uploading and retrieving files from cloud storage for end-users.

Providing a cost-effective solution within the AWS Free Tier, suitable for small-scale users or organizations**.**

Ensuring data security and ease of use for non-technical users.

Research Objectives: To explore the integration of Flask, a lightweight web framework, with AWS S3 for seamless file management.

To investigate best practices for creating user-friendly interfaces for drag-and-drop file upload and secure file downloads.

1.3 Description of Internship Domain and brief introduction about an internship organization

Internship Domain: Cloud Computing and Storage Solutions

The internship domain focuses on Cloud Computing, particularly on developing and managing cloud-based file storage systems. This area involves understanding cloud architecture, virtualized storage solutions, and data management practices. Key technologies and services such as AWS S3 (Simple Storage Service), EC2 (Elastic Compute Cloud), IAM (Identity and Access Management), and data security protocols are integral to the domain. The primary goal is to build scalable, secure, and efficient storage solutions that leverage the cloud's capabilities for flexibility, accessibility, and cost-effectiveness.

Internship Organization: EduSkills in Collaboration with AWS Academy

The internship was conducted under the EduSkills initiative, in partnership with AWS Academy, as part of the National Internship Portal program. EduSkills is a non-profit organization aimed at bridging the gap between academia and industry by offering skill development and employability enhancement programs. Through strategic collaborations with leading industry players like AWS Academy, EduSkills provides learners with access to world-class curriculum and practical training on cutting-edge technologies. AWS Academy, a recognized leader in cloud services, offers comprehensive educational resources to help students develop expertise in cloud technologies, aligning with current industry standards and practices.

CHAPTER 2

INTERNSHIP ACTIVITIES

2.1 Detailed description of tasks and responsibilities.

1. Cloud Infrastructure Setup:

Configured and managed cloud resources using AWS services, including setting up S3 buckets for data storage .

2. Data Management:

Developed scripts to automate data upload, retrieval, and organization within the cloud storage system.

Implemented data lifecycle policies for automated archiving and deletion of obsolete files.

3.Security Implementation:

Configured IAM roles and policies to enforce secure access controls.

2.2 Weekly progress

1. Week 1-2: Introduction to AWS and Cloud Computing

2. Week 3-4: Core AWS Services (EC2, S3, RDS)

3. Week 5-6: Security and Identity (IAM, Cloud Watch)

4. Week 7-8: Networking and Deployment

5. Week 9-10: Capstone Project and Assessment

2.3 Skills or tools used (e.g., programming languages, frameworks, software, etc.).

1. AWS IAM:-

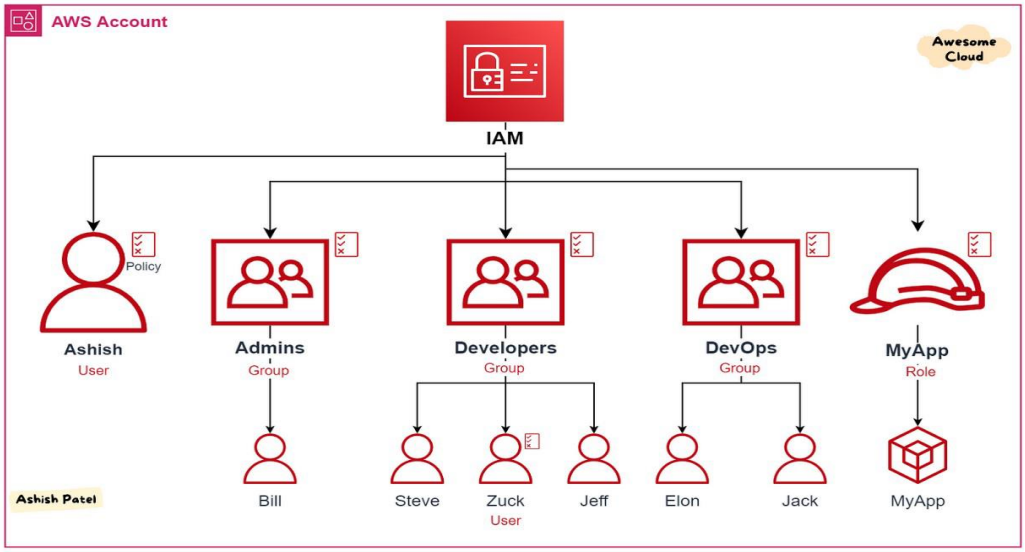

Fig – 1.1

AWS Identity and Access Management (IAM) is a powerful service offered by Amazon Web Services (AWS) that provides centralized control and management of user access to AWS resources. IAM allows businesses to create and manage user accounts, assign permissions, and control access to various AWS services and resources.

o With IAM, businesses can create individual user accounts for their employees, granting them unique access credentials to securely interact with AWS resources.

2. S3(Storage)

Fig 1.2

Amazon Simple Storage Service (S3) is a highly scalable and durable object storage service provided by AWS. S3 allows businesses to store and retrieve vast amounts of data in a secure and cost-effective manner. With S3, organizations can store any type

of data, such as documents, images, videos, and application backups.

CHAPTER – 3

LEARNING OUTCOMES

3.1 Skills acquired (technical and soft skills).

Technical Skills:

1. **Cloud Computing Fundamentals:**
    - Understanding of cloud infrastructure and architecture.
    - Familiarity with cloud service models (IaaS, PaaS, SaaS).
2. **AWS Services:**
    - Hands-on experience with AWS S3 for scalable storage solutions.
    - Implementation of IAM for managing user access and permissions.
3. **Security and Compliance:**
    - Implementation of security best practices using AWS security tools.
    - Understanding of encryption methods and secure data transfer

Soft Skills:

1. **Problem-Solving:**
    - Ability to analyze and resolve technical issues related to cloud storage.
2. **Team Collaboration:**
    - Experience working collaboratively in a team environment, both remotely and on collaborative platforms.
3. **Communication Skills:**
    - Effective communication of technical concepts to team members and stakeholders**.**
4. **Time Management:**
    - Managing project timelines and meeting deadlines efficiently.

3.2 Knowledge gained about the industry/domain.

1. **Cloud Computing Landscape:**

- Understanding of cloud service models (IaaS, PaaS, SaaS) and key industry players.

2. Cloud Storage Solutions:

- Knowledge of various storage types (object, block, file) and their use cases.

3. **AWS Ecosystem:**

- Familiarity with AWS services like S3, EC2, IAM

3.3 Problem-solving or challenges faced during the internship and how they were addressed.

Throughout the internship, I faced several challenges, especially when working are as follows:

1. **Data Security:**

- Challenge: Ensuring secure data storage.
- Solution: Implemented IAM for access control, data encryption, and regular security audits.

2. **Cost Optimization:**

- Challenge: Managing storage costs.
- Solution: Used S3 Intelligent-Tiering and lifecycle policies for cost-effective data management.

3. **Learning New Tools:**

- **Challenge:** Adapting to new cloud tools.
- **Solution:** Leveraged AWS Academy resources, webinars, and team

CHAPTER - 4

PROJECT/WORK DELIVERABLES

4.1 Details of the main project(s) or tasks completed.

1. Project Overview:

- The "Cloud Based File Storage System" project was developed locally on a personal system. The primary objective was to design a prototype for a scalable file storage system, simulating cloud storage functionalities such as file upload, retrieval, and basic management.

2. Key Features Implemented:

- **File Upload and Retrieval:** Developed core functionality for users to upload and retrieve files using a local file system as a simulated cloud environment.
- **Basic User Interface:** Created a simple interface for interacting with the storage system, allowing easy file management.
- **Local Data Storage:** Implemented local directories to organize and store files, simulating cloud storage behaviour

3. Tasks Completed:

- **Local Environment Setup:**
    - Configured a development environment on the laptop, including necessary software tools and libraries.
    - Used Python for scripting and building the core functionalities of the project.
- **File Management System**
    - Developed scripts for handling file uploads, retrievals, and deletions within the local file system.
- **User Interaction Interface:**

- Created a simple command-line interface (CLI) for users to interact with the file storage system.
- Included options for uploading, retrieving, and listing files.

- **Project Documentation:**
  - Documented the project structure, codebase, and instructions for using the file storage system locally.
  - Provided an overview of the system design and potential future enhancements.

4.2 Outcomes or results of the work done.

Outcomes

- Completed the development of a functional prototype for a cloud-based file storage system on a local environment.
- Gained practical experience in file management, Python scripting, and project development workflow.

Results of the work done.

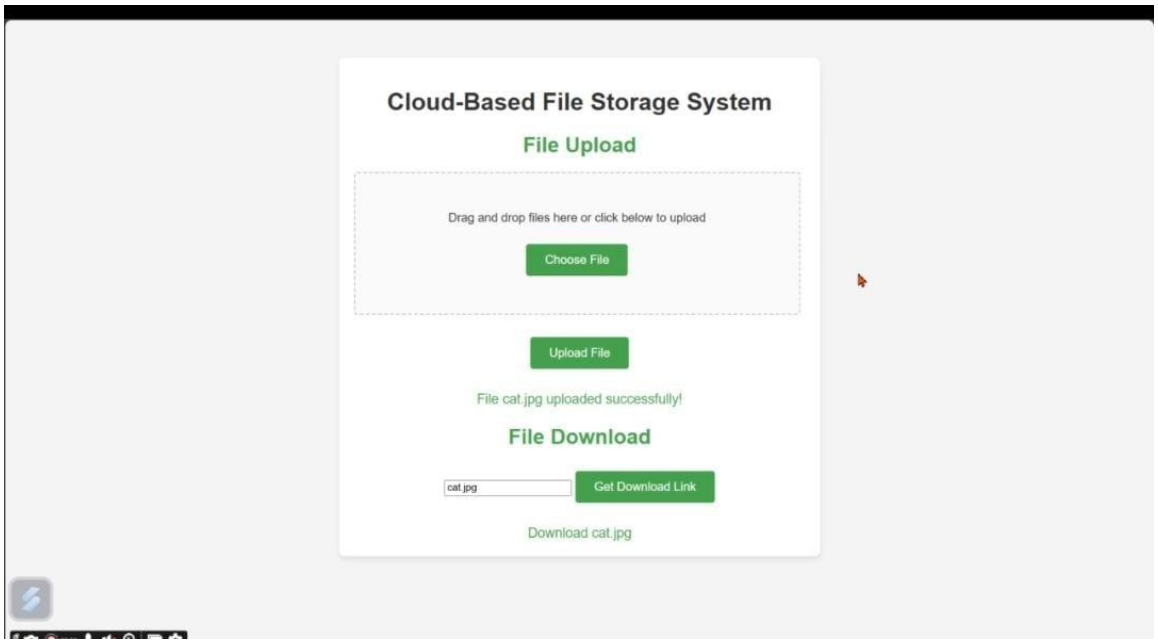

FIG NO - 2

1. **Functional File Upload and Download System:**

- Successfully implemented a user-friendly interface for file upload and download.
- Users can easily upload files by either dragging and dropping or selecting files through a "Choose File" button.
- Uploaded files are stored locally, and a confirmation message is displayed upon successful upload.

2. **File Download Feature:**

- A simple download interface allows users to retrieve files by entering the file name.
- Users receive a download link to access their files, ensuring seamless file retrieval.

3. **User Interface Design:**

- Designed a clean and straightforward user interface focusing on ease of use.
- Clear separation of file upload and download sections for intuitive navigation.

4. **Proof of Concept for Cloud-Based Storage:**

- The project serves as a proof of concept for a basic cloud-based file storage system, showcasing essential functionalities such as file handling and user interaction.

4.3 Links or attachments to work products (if applicable, e.g., reports, presentations, or code).

https://github.com/MonkeyDLuffy16Eren/Cloud_based_file_storage_system

CHAPTER -5

CONCLUSION

5.1 Reflections on the overall internship experience.

1. Learning and Growth:

- The internship provided a valuable learning experience, enhancing both technical and practical skills, particularly in cloud computing and project development.
- It was an opportunity to apply theoretical knowledge in a real-world setting, bridging the gap between academic learning and professional practice.

2. Skill Development:

- Gained hands-on experience with cloud-related tools and technologies.
- Improved problem-solving skills by tackling challenges encountered during project development.

3. Personal Growth:

- Learned the importance of time management, teamwork, and effective communication.
- The experience boosted confidence in working independently and taking ownership of tasks.

4. Challenges and Resilience:

- Faced and overcame several challenges, which taught resilience and adaptability.
- Each obstacle was an opportunity to learn and grow, making the overall experience rewarding.

5. Career Direction:

- The internship reaffirmed interest in cloud computing and inspired a clearer career path in the tech industry.
- The experience has been instrumental in shaping future professional goals and aspirations.

5.2 Internship certificate