Simplified File-Sharing Web Application on AWS

Project Overview:

This project involves creating a simple web application where users can upload and download files. The application will be hosted on **AWS EC2** and use **Amazon S3** for file storage. Students will work in teams to learn how to deploy a basic web app on the cloud, handle file uploads and downloads, and manage access to resources using **IAM**.

Services to Use:

- **Amazon EC2** – hosts the web application.
- **Amazon S3** – stores uploaded files.
- **IAM** – securely allows EC2 to access S3.
- **Amazon VPC** – secures and isolates your network.

The web application will be a **simple file sharing tool** that allows users to:

1. **Upload a file** from their computer using a web browser.
2. **Store the uploaded file** in a secure **Amazon S3 bucket**.
3. **Get a download link** to retrieve the file from the S3 bucket.

Key Features:

- **Web Interface:** A simple webpage where users can upload a file.
- **AWS S3 Integration:** Files are automatically uploaded and stored in an Amazon S3 bucket.
- **Download Link:** After upload, users get a clickable link to download their file.
- **Supported File Types:** The app will only allow common file types like `.pdf`, `.jpg`, `.png`, `.txt`, etc.

Team Structure (5- 6 Members)

Team Role	Responsibility
AWS Account Setup	Create and configure the AWS account.
EC2 & IAM Setup	Launch an EC2 instance using the free tier. Create and attach an IAM role that allows EC2 to upload files to S3. Use user data to deploy the web app on launch.
S3 & File Handling	Create and configure an Amazon S3 bucket. Set the right permissions for uploads. Ensure the web app stores and retrieves files from S3.
Web App development	Build the basic web interface with an upload form. Handle file upload logic in the backend. Ensure download links are shown after uploads.
VPC & Testing	Create a custom VPC and deploy the EC2 instance into a public subnet. Set up security groups (open port 80).
Test and Documentation	Test the app, make sure everything is working, and compile the project report with screenshots and team member tasks

Grading Breakdown (Out of 10)

Section	Mark
S3 bucket created and configured correctly	**1**
EC2 instance launched with working web app	**2**
IAM role created and securely attached	**1**
Uploads successfully stored in S3	**2**
Basic web interface for uploads works	**2**
VPC and Security Group configuration	**1**
Documentation	**1**

Bonus Tasks Examples (Choose any 2 tasks to get 2 bonus marks)

- Display a list of uploaded files in the web app.
- Apply HTML/CSS styling to improve the UI.
- Host the frontend on S3 static website.
- Set up AWS CloudWatch monitoring for your EC2 instances or Lambda functions. Track logs and metrics to gain insights into app performance.
- Replace the web application server's file upload logic with AWS Lambda functions. The Lambda function will process the file upload request and store the file in S3, reducing the need for a running EC2 instance.

AWS Free Tier

Students can use the **AWS Free Tier** for this project, which provides limited access to EC2 and S3 services for free (with usage limits). Students can create an AWS Free Tier account at AWS Free Tier. Keep in mind that exceeding Free Tier limits may incur charges, so students should monitor their usage closely.

Submission & Report Guidelines

Each team must submit:

1. **Project Report (PDF or DOCX)** – Include:
    - Team member names and roles.
    - Screenshots of AWS setup: EC2 instance, S3 bucket, IAM role, VPC/subnet.
    - Description of how each component was set up.
    - How the web app works: upload demo + download link test.
    - Problems faced and how they were resolved.

The deadline for submission will be on 22/4/2025

There will be a discussion in college be ready for it