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College	RV COLLEGE OF ENGINEERING®			
Department	COMPUTER SCIENCE AND ENGINEERING			
PROGRAM: BE- CSE		Cloud Computing-Elective Project Based Learning	Course Code	IS355TBD
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Project Title	Real-Time Collaborative Code Editor using Amazon AppSync, S3, Lambda, Cognito, and DynamoDB			
Date of Submission	29TH Oct 2025			
Under taken at	RV College of Engineering			

Introduction:

This project aims to develop a cloud-based real-time code editor that allows multiple users to edit, run, and save code simultaneously through a web interface. It uses Amazon Web Services (AWS) for scalability, security, and performance. The system enables seamless collaboration using AppSync, Lambda, S3, Cognito, and DynamoDB.

Objectives:

- **Build a web-based code editor supporting multiple users.**
- **Use AWS cloud services for storage, compute, and authentication.**
- **Provide secure login and session management using Cognito.**
- **Enable real-time collaboration through AppSync.**
- **Store user data and code files in DynamoDB and S3.**

Methodology:

1) Frontend: React.js and Monaco Editor for code editing.

2) Backend:

- **AppSync: Real-time data synchronization (GraphQL).**
- **Lambda: Serverless code execution.**
- **S3: Cloud file storage.**
- **Cognito: User authentication.**
- **DynamoDB: Store user and project data.**

3) Workflow:

Users log in → collaborate on code → AppSync syncs changes → Lambda executes code → data stored in S3/DynamoDB.

Cloud Working Platform

The project is hosted entirely on AWS Cloud, leveraging:

- **Amazon AppSync – real-time collaboration**
- **Amazon Lambda – serverless execution**
- **Amazon S3 – file storage**
- **Amazon Cognito – authentication**
- **Amazon DynamoDB – NoSQL database**

Software and Hardware Requirements:

- **Frontend: React.js, AWS Amplify**
- **Backend: Spring Boot, AWS SDK**
- **Tools: VS Code, AWS Console**
- **Hardware: Laptop/PC with Internet (8GB RAM recommended)**

Contribution to the field:

The project demonstrates a practical cloud-based collaboration system that embodies the core principles of cloud computing — scalability, elasticity, and cost efficiency.
It showcases how serverless computing and real-time synchronization can be combined to create a seamless developer experience.

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