PARSHVANATH CHARITABLE TRUSTS

A.P. Shah Institute of Technology

Thane, 401107

Academic Year: 2022-23
Department of Computer Engineering

CSL605: SKILL BASED LAB COURSE: CLOUD COMPUTING

Mini Project Report

- **Title of Project** - BaseToPower Calculator

- **Year and Semester** - T.E. (Sem VI)

- **Group Members Name and Roll No.** -

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Problem Definition:

The goal is to develop a calculator application that can calculate the power of a given base number raised to a given exponent. The calculator should be deployed on the Amazon Web Services (AWS) cloud platform to ensure it can be accessed by users from anywhere with an internet connection.

The calculator should be able to take two input values - a base number and an exponent. The application should then calculate the result by raising the base number to the power of the exponent. For example, if the base number is 2 and the exponent is 3, the calculator should output 8.

The calculator should be developed using Javascript. The application should be scalable and able to handle high volumes of requests without downtime.

The calculator should also be secure, with appropriate authentication and authorization mechanisms in place to ensure only authorized users can access it. It should also be designed with user experience in mind, with a user-friendly interface and clear instructions on how to use the calculator.

Introduction:

Building an end-to-end web application using five AWS services: Amplify, Lambda, API Gateway, DynamoDB, and IAM. The application we're going to build is a simple calculator that calculates the power of one number raised to the other.

We'll start by creating a web page using Amplify to host it. Then we'll use Lambda to implement the math functionality and API Gateway to handle requests from the web page. We'll also use DynamoDB to store the results and IAM to handle permissions.

Throughout this project, we'll explore how to use these AWS services together to build a seamless, efficient, and scalable web application. So, let's dive in and start building our calculator application!

Description:

An overview of the five AWS services used in building the end-to-end web application:

Amplify: A development platform that allows developers to quickly create and deploy web and mobile applications. It provides a set of pre-built UI components and a command-line interface to simplify the deployment process.

Lambda: A serverless compute service that allows developers to run code without having to manage servers. In this project, Lambda is used to implement the math functionality for the calculator.

API Gateway: A fully managed service that makes it easy for developers to create, publish, and manage APIs. It is used in this project to handle requests from the web page.

DynamoDB: A fast and flexible NoSQL database service that provides high performance and scalability. It is used in this project to store the results of the calculations.

Identity and Access Management (IAM): A web service that helps you securely control access to AWS resources. It is used in this project to manage permissions and access control for the various AWS services used in the application.

Implementation details:

Learning Outcomes:

Learning outcomes that can be drawn from building a web application using the AWS services mentioned in this project:

1. Understanding of AWS services: By building a web application using Amplify, Lambda, API Gateway, DynamoDB, and IAM, you gain an understanding of the functionalities and use cases of these AWS services.
2. Serverless architecture: The use of Lambda allows for a serverless architecture, which means that you do not need to manage and maintain servers yourself. This is a more costeffective and efficient way to build and deploy web applications.
3. Integration of services: Building a web application using multiple AWS services allows for seamless integration between them. For example, API Gateway can be used to handle requests from the web page, and Lambda can be used to implement the math functionality.
4. Data storage: Using DynamoDB allows for easy and efficient storage of data in a scalable and reliable manner. This can be useful for a variety of web applications that require data storage.
5. Permission management: IAM is used for permission management in AWS, allowing you to control who has access to different resources and services. This is an important aspect of building secure web applications.
6. Increased development speed: Using AWS services can help to speed up the development process by providing pre-built functionalities and infrastructure. This can allow you to focus more on building the core features of your application.

Overall, building a web application using these AWS services can provide a valuable learning experience and can help you to develop the skills necessary for building scalable and reliable applications in the cloud.