Date: 22/03/2023

AWS PROJECT-1

**Objective:**

The objective of this project is to build an end-to-end Web Application using AWS (Amazon Web Services). The work of that application would be to compute the power for a given base and an exponent.

**Services used:**

* Amplify
* Lambda
* Amazon API Gateway
* Amazon DynamoDB
* IAM

AWS Amplify:

AWS Amplify is a set of purpose-built tools and features that enables frontend web and mobile developers to quickly and easily build full-stack applications on AWS.

AWS Lambda:

AWS Lambda is a compute service that lets you run code without provisioning or managing servers. Lambda runs your code on a high-availability compute infrastructure and performs all of the administration of the compute resources, including server and operating system maintenance, capacity provisioning and automatic scaling, and logging.

Amazon API Gateway:

Amazon API Gateway is an AWS service for creating, publishing, maintaining, monitoring, and securing REST, HTTP, and WebSocket APIs at any scale. API developers can create APIs that access AWS or other web services, as well as data stored in the [AWS Cloud](https://aws.amazon.com/what-is-cloud-computing/). As an API Gateway API developer, you can create APIs for use in your own client applications. Or you can make your APIs available to third-party app developers.

Amazon DynamoDB:

Amazon DynamoDB is a fully managed NoSQL database service that provides fast and predictable performance with seamless scalability. DynamoDB lets you offload the administrative burdens of operating and scaling a distributed database so that you don't have to worry about hardware provisioning, setup and configuration, replication, software patching, or cluster scaling.

Identity and Access Management (IAM):

AWS Identity and Access Management (IAM) is a web service that helps you securely control access to AWS resources. With IAM, you can centrally manage permissions that control which AWS resources users can access. You use IAM to control who is authenticated (signed in) and authorized (has permissions) to use resources.

Working:

* A web application is hosted using AWS Amplify service. This web page contains two text areas to take inputs from the user, and also consists of a “Calculate” button.
* After hosting web application in Amplify console, it shall provide us with a link, to access the web application. This link can be used by the end user.
* The end user shall provide inputs and click on “Calculate” button. Upon clicking that button, the values entered will be given to Lambda function, through POST method, through REST protocol that has been used in the API.
* This is all managed by the API Gateway service.
* The Lambda function, which is just a small piece of code written in Python will then calculate the result and return the response to the front-end.
* The front-end will then pop up a dialog box, displaying the result.
* The results are stored in a table using the DynamoDB service. The permissions to write into DynamoDB table can be managed using the IAM service.
* The permissions or the policies are written in JSON format.