**Simple Calculator Microservice Documentation**

**GitHub Link:** <https://github.com/HaydenDuong/SIT323_Cloud_Native_Application_Development/tree/main/task_4.1P>

**1. What It Does**

This is a an upgraded version of 4.1P calculator API built with Node.js and Express. It can do:

* Addition (/add)
* Subtraction (/subtract)
* Multiplication (/multiply)
* Division (/divide)
* Exponentiation(/exponent)
* Square Root(/sqrt)
* Modulation(/modulus)

**2. How to Run**

1. Make sure you have **Node.js** installed.
2. Download the code and run:

npm install

node server.js

1. The server will start at <http://localhost:3040>.

**3. How to Use**

Send a **GET** request with two numbers (num1 and num2) in the URL.

**Examples:**

* **Add two numbers:**

GET /add?a=5&num2=3

Response: {"status":"success","statusCode":200,"message":"Addition successful","data":{"result":8}}

* **Subtract two numbers**:

GET /subtract?a=3&b=5

Response: {"status":"success","statusCode":200,"message":"Subtraction successful","data":{"result":-2}}

* **Multiply two numbers**:

GET /multiply?a=3&b=3

Response: {"status":"success","statusCode":200,"message":"Multiplication successful","data":{"result":9}}

* **Divide two numbers:**
  + **Success:**

GET /divide?a=3&b=5

Response: {"status":"success","statusCode":200,"message":"Division successful","data":{"result":0.6}}

* **Error:**

GET /divide?a=10&b=0

Response: {"status":"error","statusCode":400,"message":"Division by zero is not allowed."}

* **Error if input is invalid:**

GET /add?a=abc&b=3

Response: {"error":"Invalid input. Please provide two numbers."

* **Exponentiation**:

GET /exponent?a=3&b=4

Response: {"status":"success","statusCode":200,"message":"Exponentiation successful","data":{"result":81}}

* **Square Root**:
  + **Success**:

GET /sqrt?a=100

Response: {"status":"success","statusCode":200,"message":"Square root successful","data":{"result":10}}

* **Error:**

GET /sqrt?a=-100

Response: {"status":"error","statusCode":400,"message":"Square root of negative numbers is not allowed."}

* **Modulation**:
  + **Success**:

GET /modulus?a=10&b=3

Response: {"status":"success","statusCode":200,"message":"Modulus successful","data":{"result":1}}

* + **Error**:

GET /modulus?a=5&b=0

Response: {"status":"error","statusCode":400,"message":"Division by zero is not allowed."}

**4. Code Structure**

* **server.js** – Main file with all the API routes.
* **package.json** – Lists required dependencies (only express).

**5. Testing**

You can test it with:

* **Browser:** Just open the URL (e.g., http://localhost:3000/add?a=2&b=3).