Calculator Microservice with Node.js & Express

Introduction

This project is a RESTful API microservice that performs basic arithmetic operations, including Addition, Subtraction, Multiplication, and Division. It is built using Node.js and Express.js, with Winston for logging.
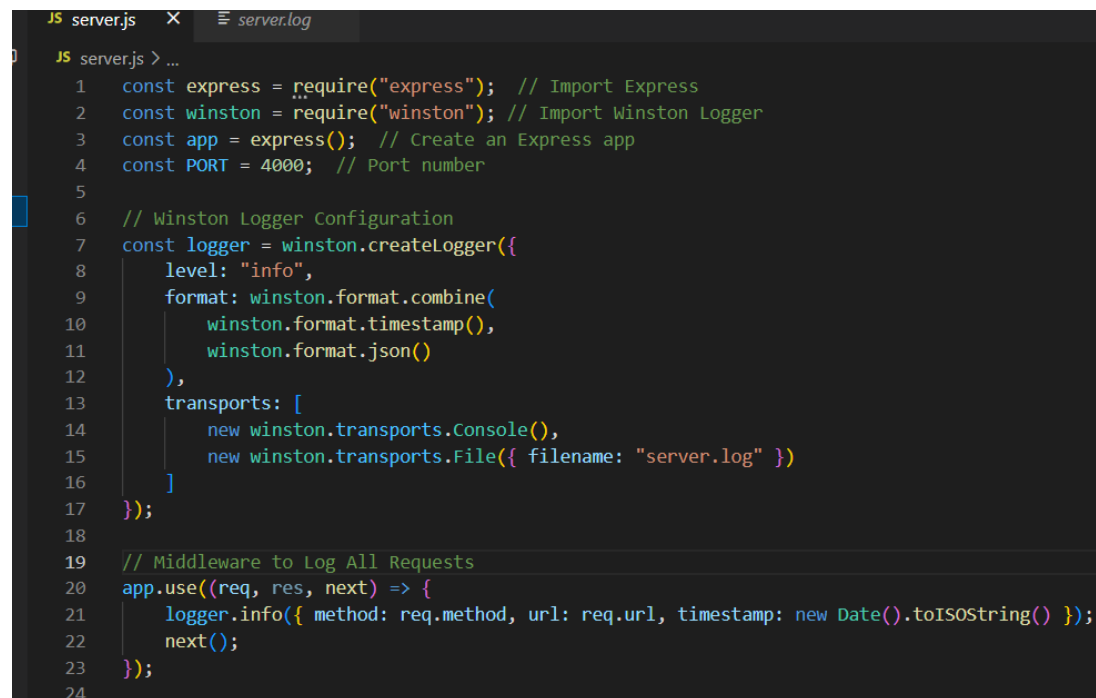

Project Setup

1. Create a Project Folder

2. Initialize a Node.js Project

npm init -y

### 3. Install Required Dependencies

npm install express winston

Winston Logger Setup

```js
JS server.js ✕    ≡ server.log

JS server.js > ...
   1    const express = require("express");  // Import Express
   2    const winston = require("winston"); // Import Winston Logger
   3    const app = express();  // Create an Express app
   4    const PORT = 4000;  // Port number
   5
   6    // Winston Logger Configuration
   7    const logger = winston.createLogger({
   8        level: "info",
   9        format: winston.format.combine(
  10            winston.format.timestamp(),
  11            winston.format.json()
  12        ),
  13        transports: [
  14            new winston.transports.Console(),
  15            new winston.transports.File({ filename: "server.log" })
  16        ]
  17    });
  18
  19    // Middleware to Log All Requests
  20    app.use((req, res, next) => {
  21        logger.info({ method: req.method, url: req.url, timestamp: new Date().toISOString() });
  22        next();
  23    });
  24
```

Viewing Logs in Real-Time

Get-Content logs/combined.log -Wait
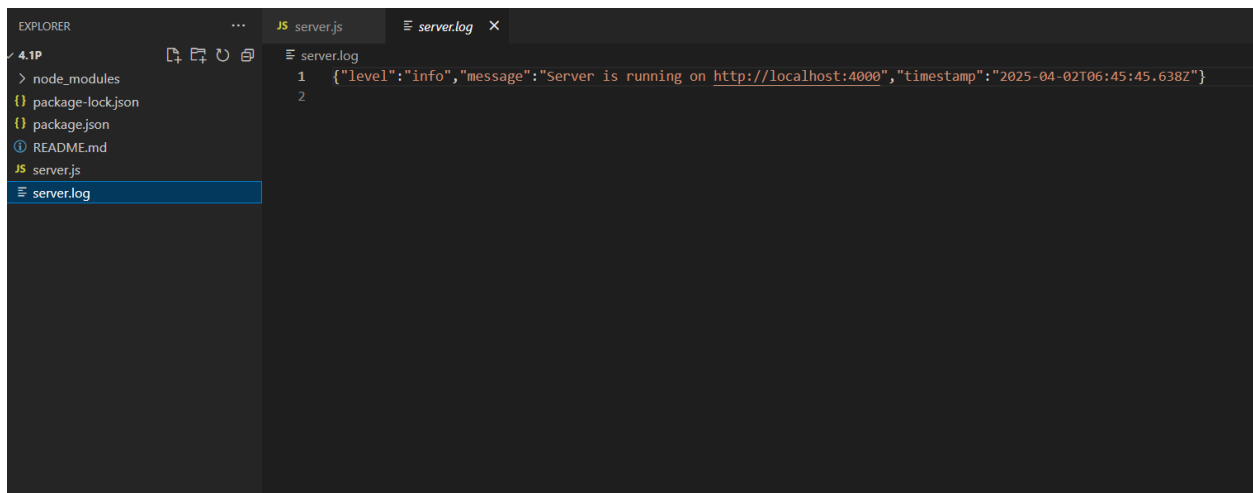
Setting Up Git and Pushing to GitHub

git init

git add .

git commit -m "Initial commit"

git remote add origin https://github.com/AkankshaNunakani/sit737-2025-prac4p

git branch -M main

git push -u origin main

https://github.com/AkankshaNunakani/sit737-2025-prac4p

Running the Server

node server.js

API Endpoints

- **Addition:** http://localhost:4000/add?num1=5&num2=3

Result: 8

- **Subtraction:** http://localhost:4000/subtract?num1=10&num2=4
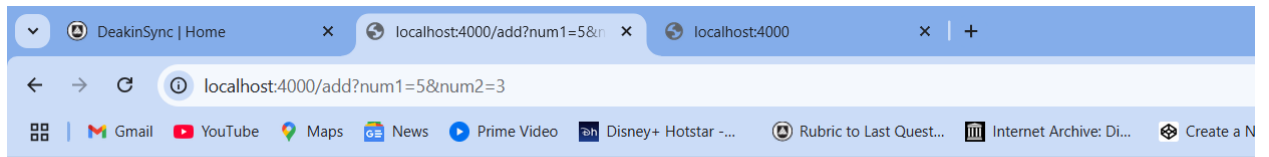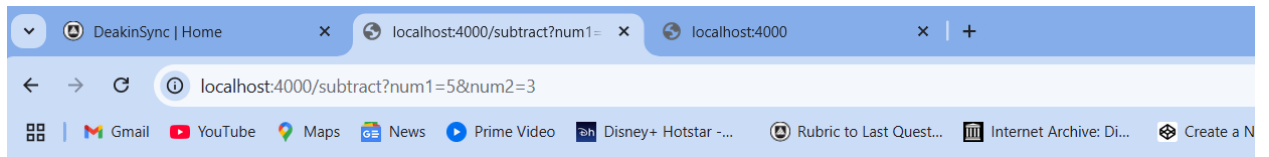
Result: 2

- **Multiplication:** http://localhost:4000/multiply?num1=7&num2=2

Result: 15

- **Division:** http://localhost:4000/divide?num1=20&num2=5
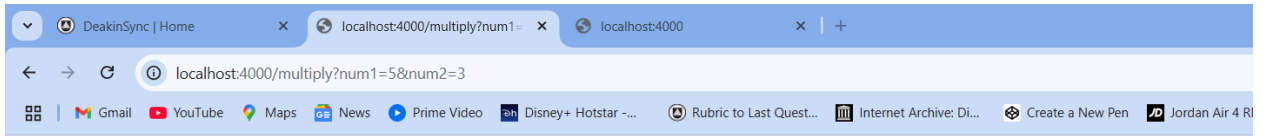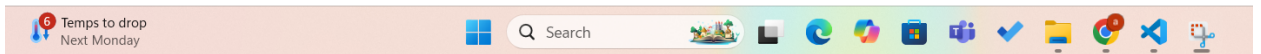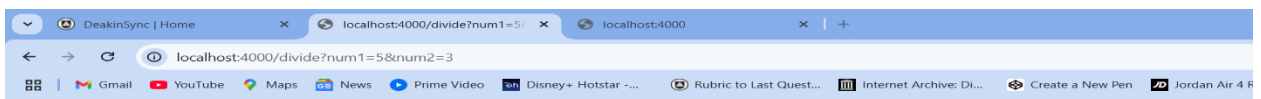
Result: 1.6666666666666667

Conclusion

This project demonstrates a simple arithmetic microservice using Node.js, Express, and Winston for logging. Logs provide a clear history of requests and errors, making debugging easier.