

Task 2.1P Documentation

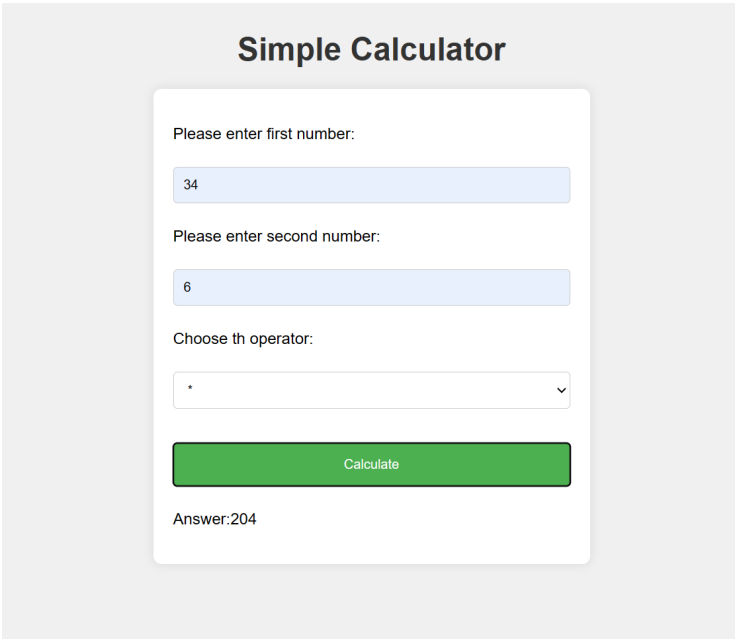
Overview

This task creates a simple calculator with front-end and back-end separation. This calculator supports the four arithmetic operations of addition, subtraction, multiplication and division. The front-end is written in HTML, CSS and JavaScript, and the back-end is written in Node.js based on the Express framework.

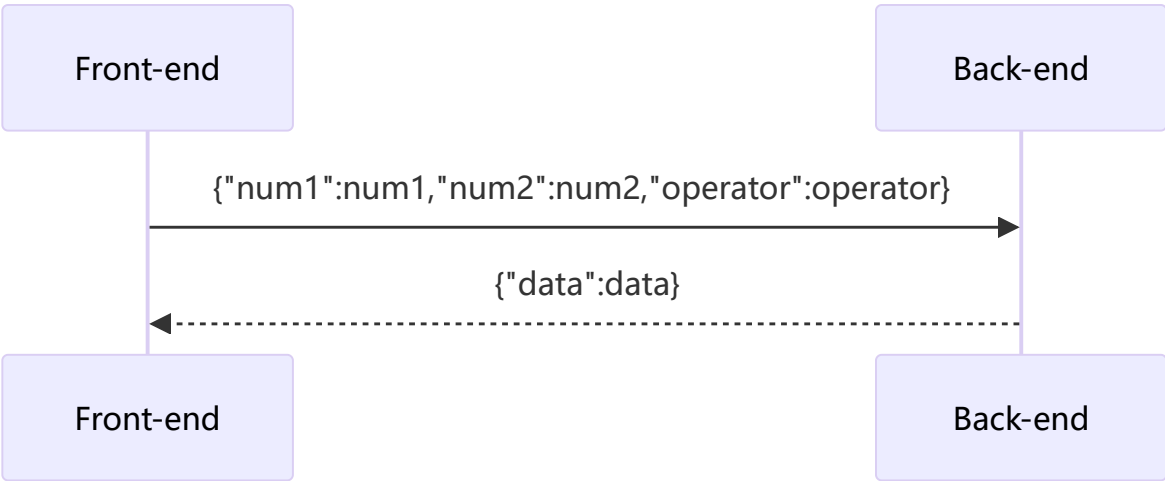
GitHub Link

[userstarwind/sit323_737-2024-t1-prac2p \(github.com\)](https://github.com/userstarwind/sit323_737-2024-t1-prac2p)

Web Interface



Interaction process



The front end accepts three inputs from the user, namely num1, num2, and operator, and packages them as JSON and sends them to the back end and waits for a reply. The back end unpacks the operation result and sends it to the front end, and the front end displays the result after receiving it.

Code

index.html

```
<!DOCTYPE html>
<html lang="en">

<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Simple Calculator</title>
  <link rel="stylesheet" href="index.css">
</head>

<body>
  <script src="index.js" defer></script>
  <h1>Simple Calculator</h1>
  <form action="/" method="post">
    <p>Please enter first number:</p>
    <input name="num1">
    <p>Please enter second number:</p>
    <input name="num2">
    <br>
    <p>Choose th operator:</p>
    <select name="operator">
      <option value="addition">+</option>
      <option value="subtraction">-</option>
      <option value="multiplication">*</option>
      <option value="division">/</option>
    </select>
    <br>
    <br>
    <button type="submit" name="calculate"
id="calculateButton">Calculate</button>
    <br>
    <p>Answer:<span id="result">--</span></p>
  </form>
</body>

</html>
```

index.css

```
body {
  font-family: Arial, sans-serif;
  margin: 0;
  padding: 20px;
  background-color: #f0f0f0;
}
```

```

h1 {
  color: #333;
  text-align: center;
}

form {
  background-color: #fff;
  padding: 20px;
  border-radius: 8px;
  box-shadow: 0 0 10px rgba(0, 0, 0, 0.1);
  max-width: 400px;
  margin: 20px auto;
}

input[name="num1"],
input[name="num2"],
select {
  width: 100%;
  padding: 10px;
  margin: 8px 0;
  display: inline-block;
  border: 1px solid #ccc;
  border-radius: 4px;
  box-sizing: border-box;
}

button[type="submit"] {
  width: 100%;
  background-color: #4CAF50;
  color: white;
  padding: 14px 20px;
  margin: 8px 0;
  border: none;
  border-radius: 4px;
  cursor: pointer;
}

button[type="submit"]:hover {
  background-color: #45a049;
}

```

index.js

```

document.querySelector('#calculateButton').addEventListener('click', (event) => {
  event.preventDefault();
  const num1Input = document.querySelector('input[name="num1"]').value;
  const num2Input = document.querySelector('input[name="num2"]').value;
  const operator = document.querySelector('select[name="operator"]').value;

  const num1 = parseFloat(num1Input);
  const num2 = parseFloat(num2Input);

  if (isNaN(num1) || isNaN(num2)) {
    alert('Please enter valid numbers!');
  }
});

```

```

        return;
    }

    const data = {
        "num1": num1,
        "num2": num2,
        "operator": operator
    };

    fetch('http://localhost:8080/calculate', {
        method: 'POST',
        headers: {
            'Content-Type': 'application/json',
        },
        body: JSON.stringify(data),
    })
    .then(response => {
        if (!response.ok) {
            return response.json().then(err => {throw new Error(err.error)});
        }
        return response.json();
    })
    .then(data => {
        document.querySelector('#result').textContent = data.result;
    })
    .catch((error) => {
        console.error('Error:', error);
        alert('Error: ' + error.message);
    });
});

```

server.js

```

const express = require('express');
const cors = require('cors');
const app = express();
const PORT = 8080;

app.use(express.json());
app.use(cors());
app.post('/calculate', (req, res) => {
    const { num1, num2, operator } = req.body;
    let result;

    switch (operator) {
        case 'addition':
            result = num1 + num2;
            break;
        case 'subtraction':
            result = num1 - num2;
            break;
        case 'multiplication':
            result = num1 * num2;
            break;
        case 'division':

```

```
        if (num2 === 0) {
            return res.status(400).json({ error: 'Cannot divide by zero' });
        }
        result = num1 / num2;
        break;
    default:
        return res.status(400).json({ error: 'Invalid operator' });
    }

    res.json({ result });
});

app.listen(PORT, () => {
    console.log(`Server is running on http://localhost:${PORT}`);
});
```