📝 Project Documentation: Basic Calculator (Full Stack)

🔷 Project Title: Basic Calculator

A web-based calculator that allows users to perform basic arithmetic operations (Addition, Subtraction, Multiplication, Division) using a beautiful frontend (HTML, CSS, JavaScript) and a backend powered by **Java Spring Boot**.

📁 Project Structure

```
D:\
└── Codveda\
    └── level_1\
        └── Task_1\
            ├── BasicCalculator_frontend\   ← Frontend folder
            │   ├── index.html
            │
            └── BasicCalculator_backend\        ← Backend Spring Boot project
                ├── src\
                ├── pom.xml
                └── application.properties
```

⚙️ Technologies Used

🔸 **Frontend:**

- HTML5
- CSS3
- JavaScript
- live-server

🔸 **Backend:**

- Java 21
- Spring Boot 3.5.3

- Maven for build tool
- Embedded Tomcat Server

🏁 Steps to Start the Project

✅ 1. Start Backend (Spring Boot)

📁 **Navigate to the Backend Folder:**

```
cd D:\Codveda\level_1\Task_1\BasicCalculator
```

▶️ **Run with Maven:**

```
mvn spring-boot:run
```

OR use VS Code's Java debug/run feature.

📌 **Default Backend Port:**

- Initially 8080
- If already in use, change it in:

```
# application.properties
server.port=8081
```

✅ 2. Start Frontend (Live Server)

📁 **Navigate to Frontend Folder:**

```
cd D:\Codveda\level_1\Task_1\BasicCalculator_frontend
```

📦 **Initialize npm (only once):**

```
npm init -y
```

📦 **Install Live Server:**

```
npm install live-server --save-dev
```

▶️ **Start Frontend:**

```
npm start
```

📌 **Default Frontend URL:**

http://localhost:8080/ ← if live-server uses this

or

http://localhost:5500/ ← if you're using VS Code Live Server

🔄 How It Works

1. User enters two numbers and selects an operation.
2. JavaScript sends the input to the Spring Boot backend via fetch (or you can configure it).
3. Backend performs the calculation and returns the result.
4. Result is displayed on the frontend.

🔧 Note: You can enhance it with REST API, Fetch request, and JSON body later if needed.

💡 Project Features

- ✅ Beautiful responsive design
- ✅ Basic operations: +, −, ×, ÷
- ✅ Division by zero handling
- ✅ Full frontend-backend interaction setup
- ✅ Runs fully on local machine

📌 Requirements

Requirement	Version/Details
Java	21 (Eclipse Adoptium or Oracle)
Node.js + npm	Latest stable version
Spring Boot	3.5.3 (via Maven)
Maven	Installed and configured
VS Code	With Java + Spring extensions installed
Live Server	npm install live-server --save-dev

🚀 To Deploy or Package Later (Optional)

- You can package the Spring Boot app with:

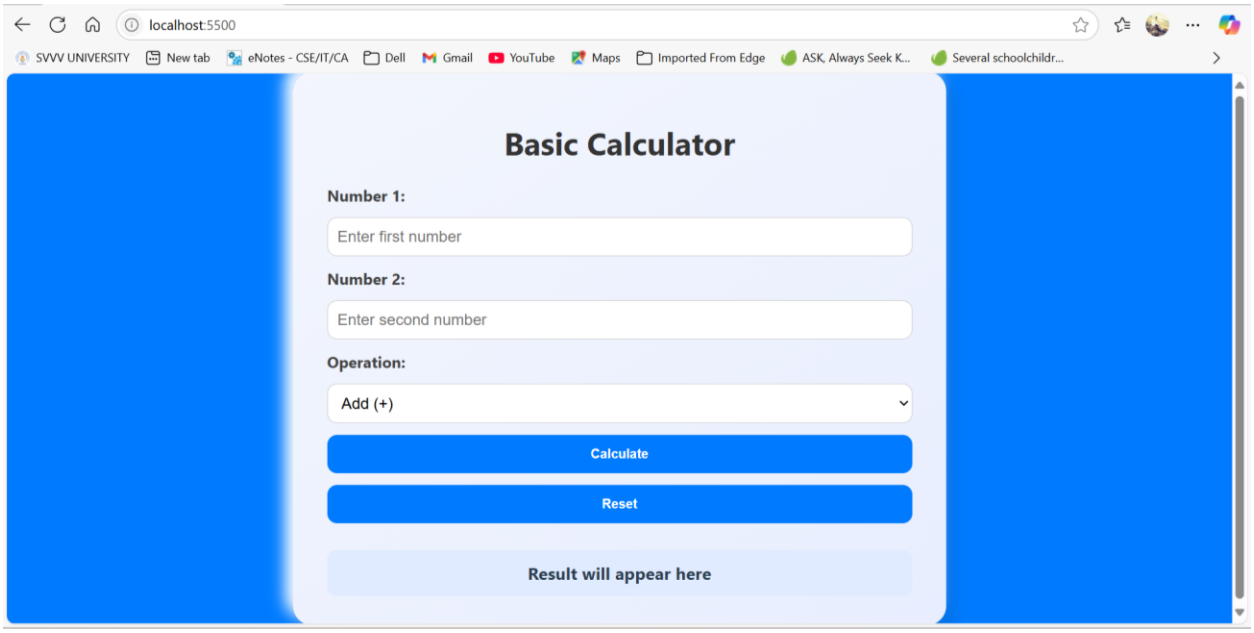
mvn clean package

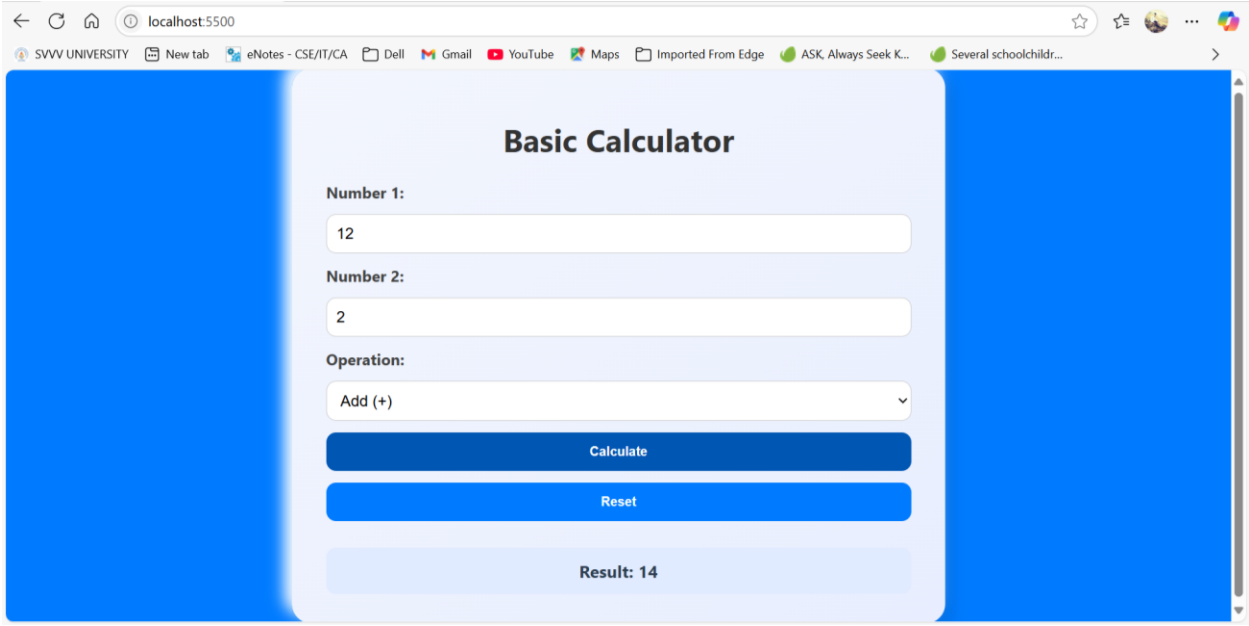
- Serve frontend via NGINX or React for production.
- Use Postman to test backend endpoints.

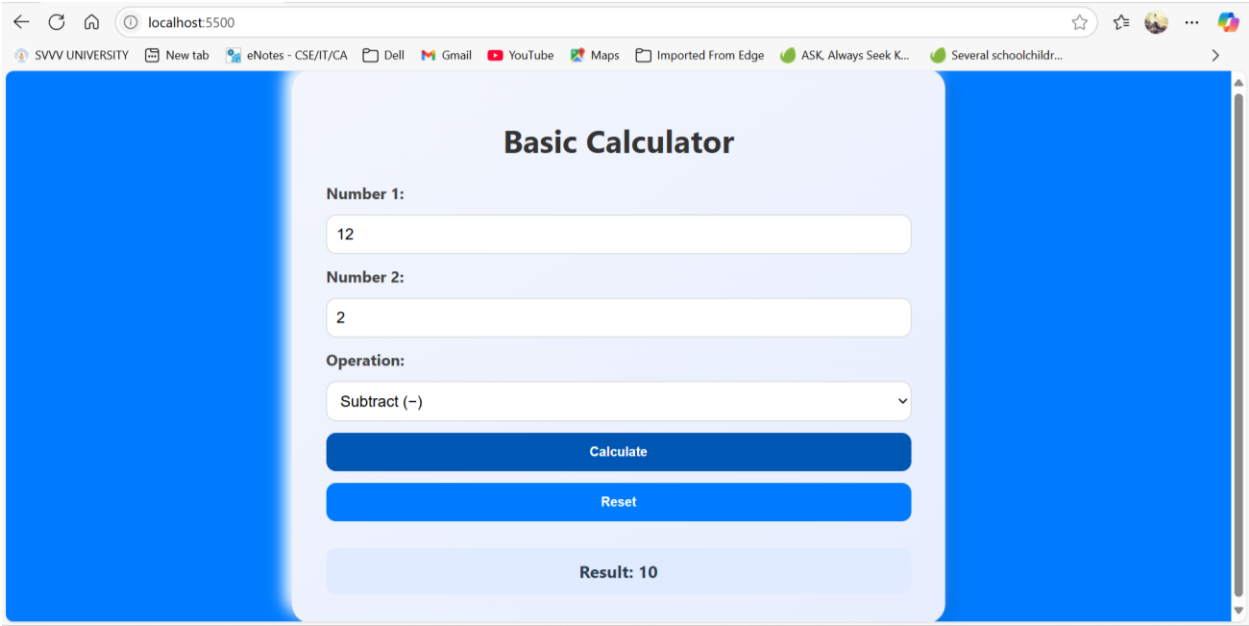
🧠 Future Enhancements (Optional Ideas)

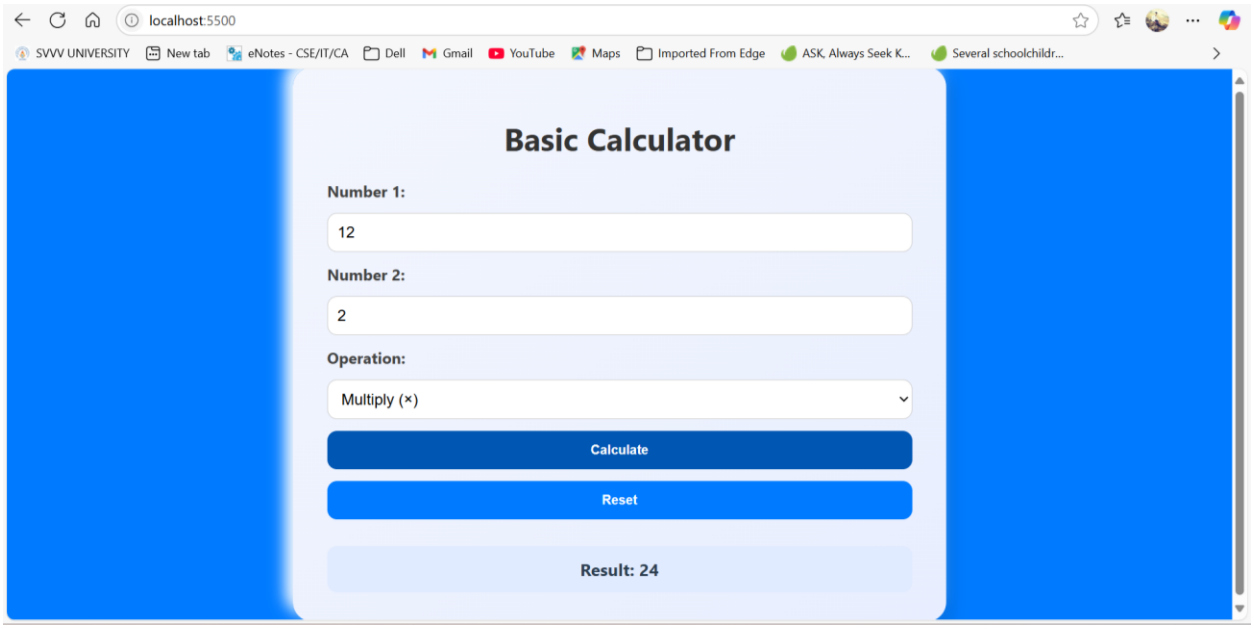
- Add history of calculations
- Add more operations (modulus, square root)
- Convert to React or Angular frontend
- Convert to RESTful API with JSON body
- Add user authentication

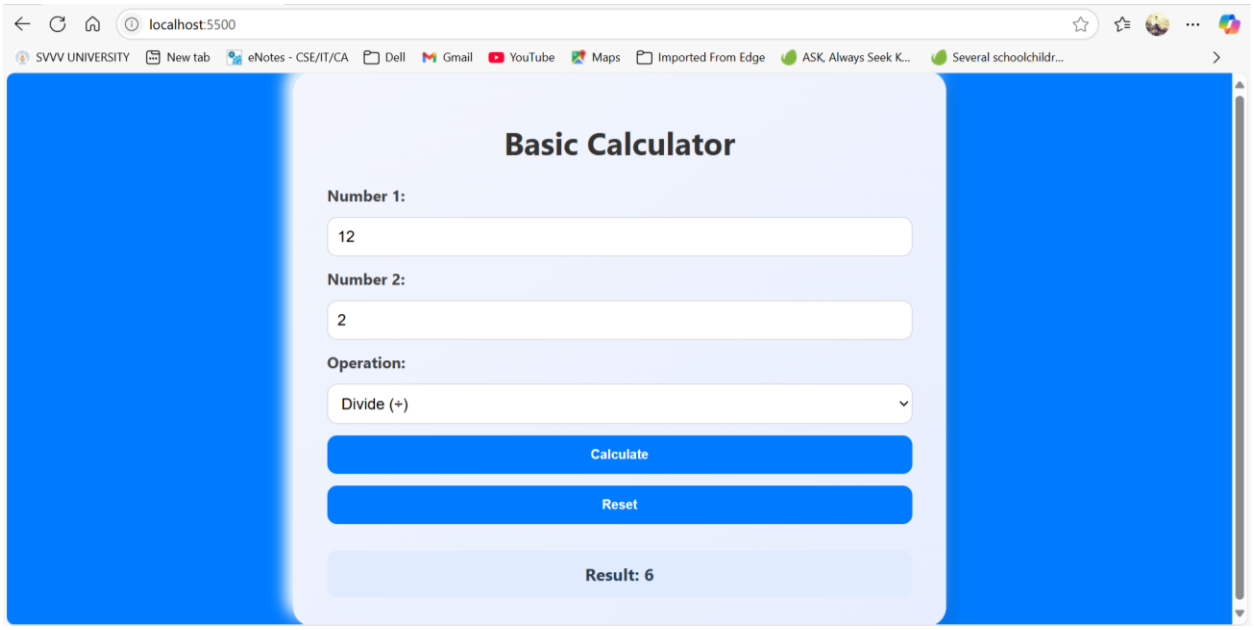
Screenshots

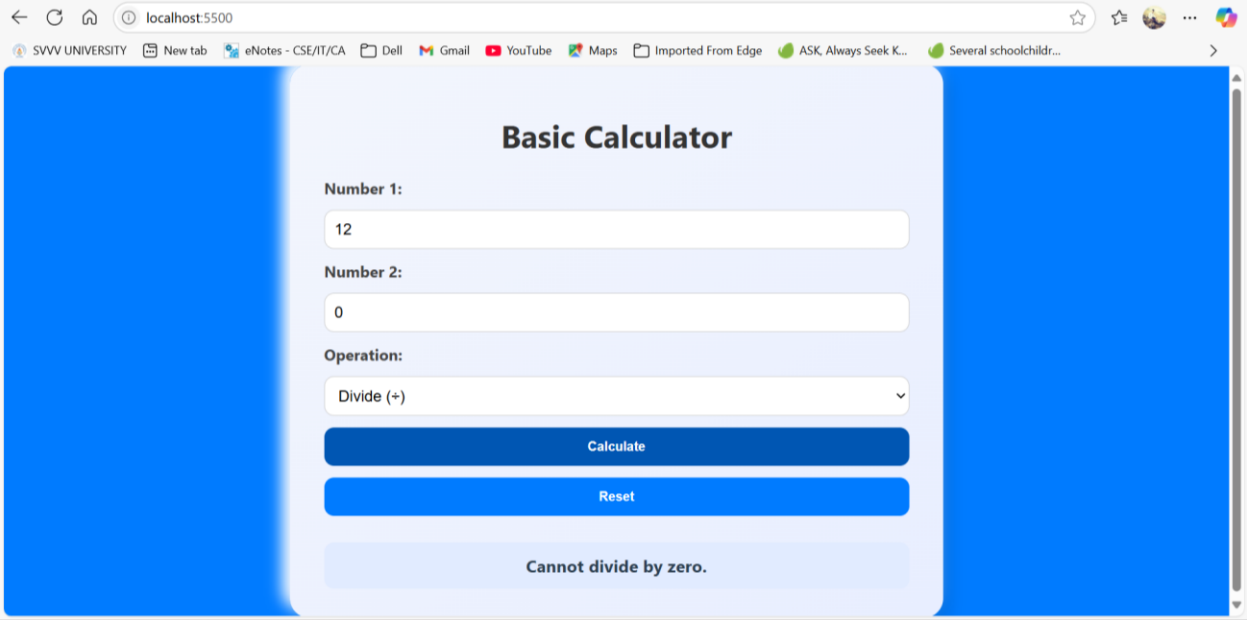



localhost:5500
SVVV UNIVERSITY
New tab
eNotes - CSE/IT/CA
Dell
Gmail
YouTube
Maps
Imported From Edge
ASK, Always Seek K...
Several schoolchildr...
Basic Calculator
Number 1:
12
Number 2:
2
Operation:
Add (+)
Calculate
Reset
Result: 14

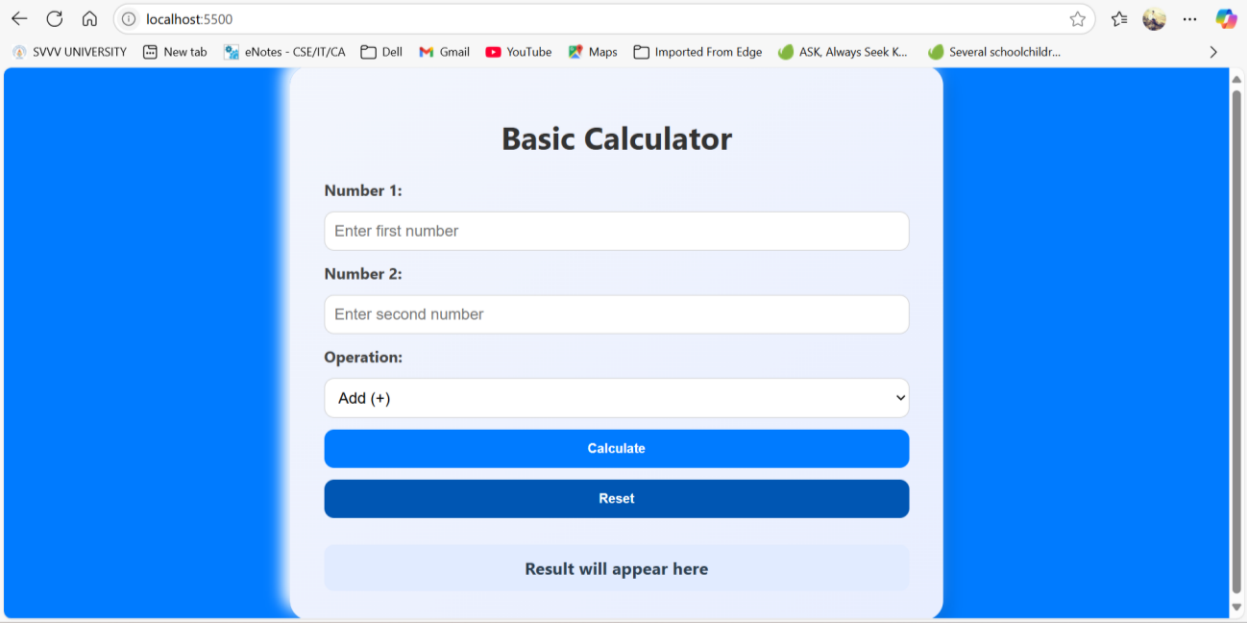

localhost:5500
SVVV UNIVERSITY
New tab
eNotes - CSE/IT/CA
Dell
Gmail
YouTube
Maps
Imported From Edge
ASK, Always Seek K...
Several schoolchildr...
Basic Calculator
Number 1:
12
Number 2:
2
Operation:
Subtract (−)
Calculate
Reset
Result: 10


localhost:5500
SVVV UNIVERSITY
New tab
eNotes - CSE/IT/CA
Dell
Gmail
YouTube
Maps
Imported From Edge
ASK, Always Seek K...
Several schoolchildr...
Basic Calculator
Number 1:
12
Number 2:
2
Operation:
Multiply (×)
Calculate
Reset
Result: 24


localhost:5500
SVVV UNIVERSITY
New tab
eNotes - CSE/IT/CA
Dell
Gmail
YouTube
Maps
Imported From Edge
ASK, Always Seek K...
Several schoolchildr...
Basic Calculator
Number 1:
12
Number 2:
2
Operation:
Divide (÷)
Calculate
Reset
Result: 6


localhost:5500
SVVV UNIVERSITY
New tab
eNotes - CSE/IT/CA
Dell
Gmail
YouTube
Maps
Imported From Edge
ASK, Always Seek K...
Several schoolchildr...
Basic Calculator
Number 1:
12
Number 2:
0
Operation:
Divide (÷)
Calculate
Reset
Cannot divide by zero.

After Reset -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SVVV UNIVERSITY
New tab
eNotes - CSE/IT/CA
Dell
Gmail
YouTube
Maps
Imported From Edge
ASK, Always Seek K...
Several schoolchildr...
Basic Calculator
Number 1:
Enter first number
Number 2:
Enter second number
Operation:
Add (+)
Calculate
Reset
Result will appear here