Deployment Guide for Calculator Application

Part 1: Run the Python Backend with `virtualenv` (one virtual environment per service)

The project includes separate services, for example, the graphing service: `server/graphing`.

Step 1: Create a Virtual Environment for Each Service

1. Navigate to the service directory

```
cd server/graphing
```

2. Create a virtual environment using `virtualenv`

```
virtualenv venv
```

> This command creates a `venv/` directory in the current folder.

3. Activate the virtual environment

- **On Windows**:

  ```
  venv\Scripts\activate
  ```

- **On macOS/Linux**:

  ```
  source venv/bin/activate
  ```

> After activation, you will see `(venv)` appear at the beginning of your terminal prompt.

4. Install required libraries

- If there's a `requirements.txt` file:

```
pip install -r requirements.txt
```

5. Repeat the above steps for other services under `server/`

Other services include `currency-converter` and `scientific-calculator`.

For Windows:

```
cd server/currency-converter
virtualenv venv
venv\Scripts\activate
```

```
cd server/scientific-calculator
virtualenv venv
venv\Scripts\activate
```

Step 2: Run the Backend

The main file for each service is `app.py`:

```
cd server/name-of-service
```

```
python app.py
```

> 📡 By default, the server runs at `http://0.0.0.0:5001` or `http://127.0.0.1:5001`.

Step 3: Deactivate the Virtual Environment

```
deactivate
```

Part 2: Run the React Frontend (Node.js)

The frontend is located in the `client/calculator` directory.

Step 1: Install Node.js (if not already installed)

- Download from: https://nodejs.org

Step 2: Install frontend dependencies

```
cd client/calculator
npm install
```

Step 3: Run the React application

```
npm start
```

> The app will automatically open at `http://localhost:3000`

Quick Command Summary Table

Action	Example Command
Create virtual environment	`virtualenv venv`
Activate virtual env (Windows)	`venv\Scripts\activate`
Activate virtual env (macOS/Linux)	`source venv/bin/activate`
Install Python dependencies	`pip install -r requirements.txt`
Run backend	`python app.py`
Deactivate virtual environment	`deactivate`
Install React frontend libraries	`npm install`
Run React frontend	`npm start`

Testing Guide for Calculator Application

Part 1: Standard Calculator Testing

Basic Operations

Test the standard arithmetic operations:

- Addition: 5 + 3 = 8

- Multiplication: 6 × 7 = 42

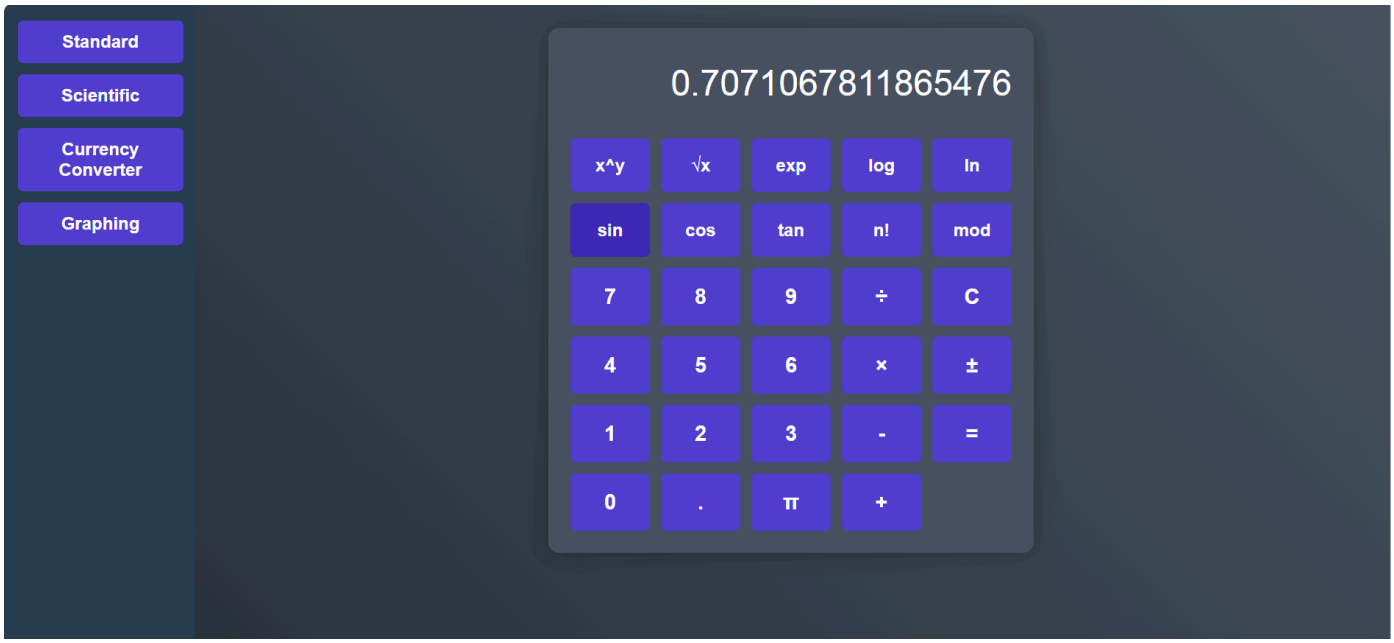
Part 2: Scientific Calculator Testing

Mathematical Functions

Test advanced operations:

- Factorial: 5! = 120

- Trigonometric: sin(./test-with-screenshots/assets/45°) = 0.707

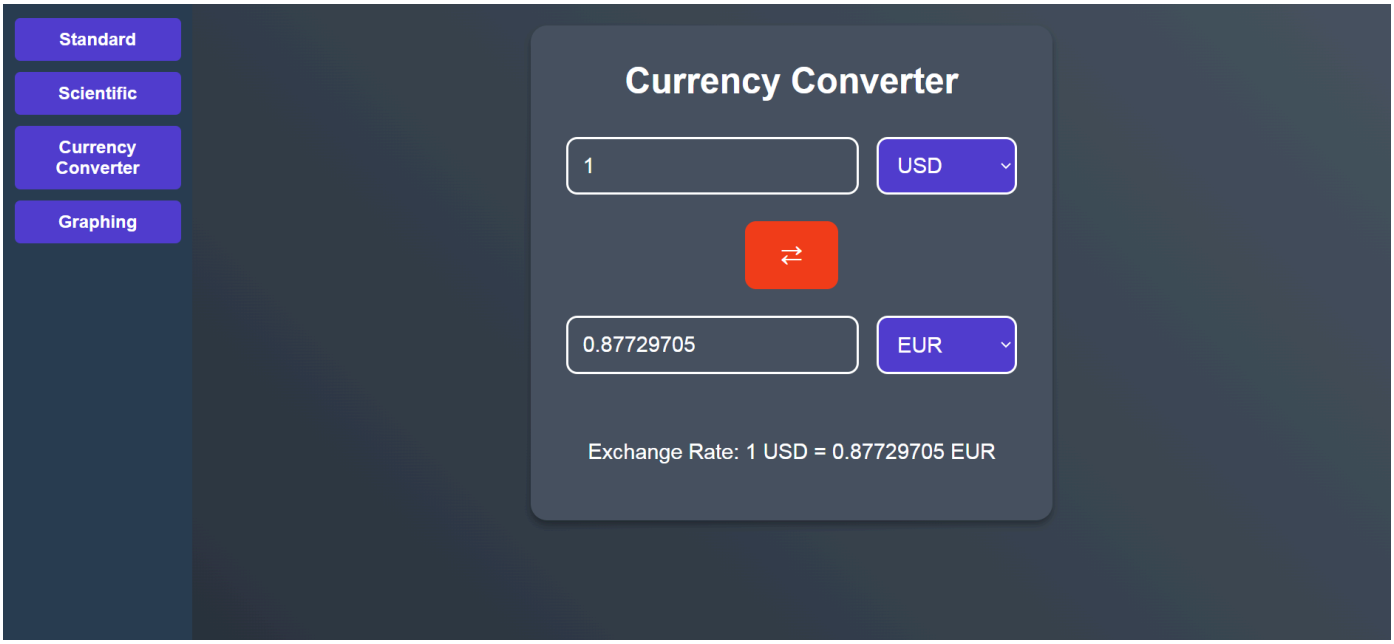


Part 3: Currency Converter Testing

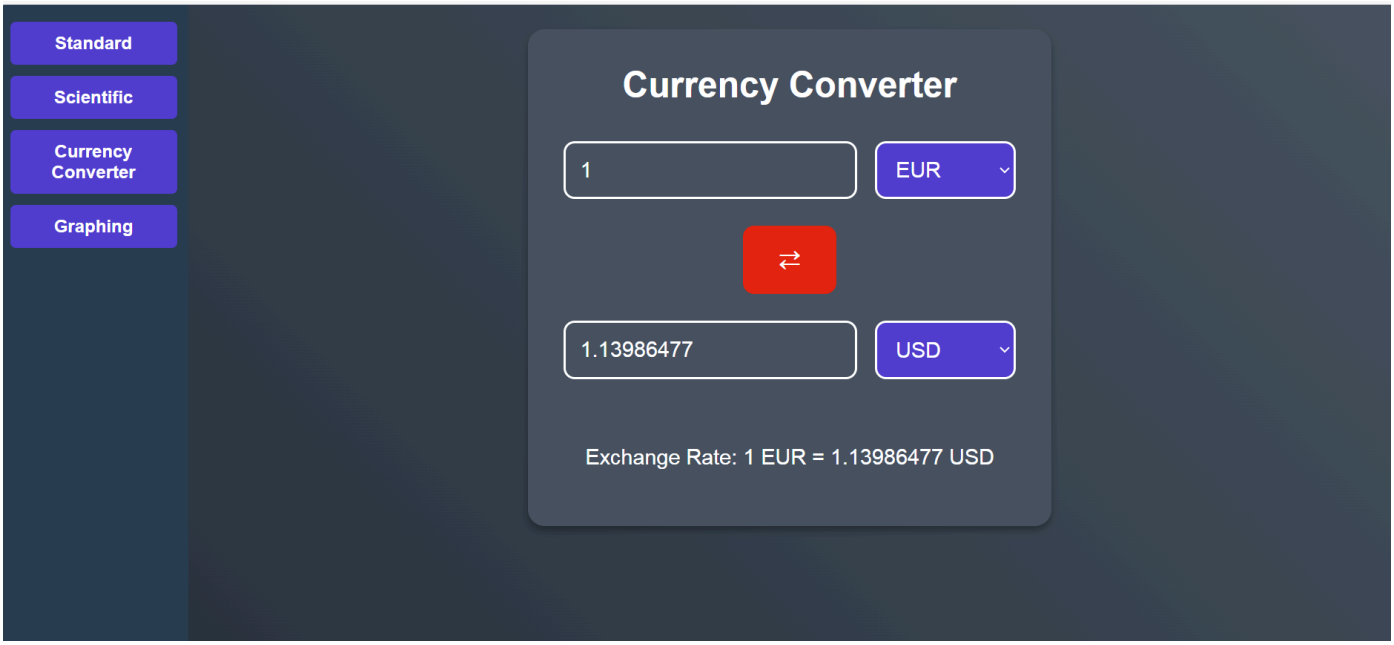
Basic Conversion

Test currency conversion:

- USD to EUR conversion



- Use swap currency button

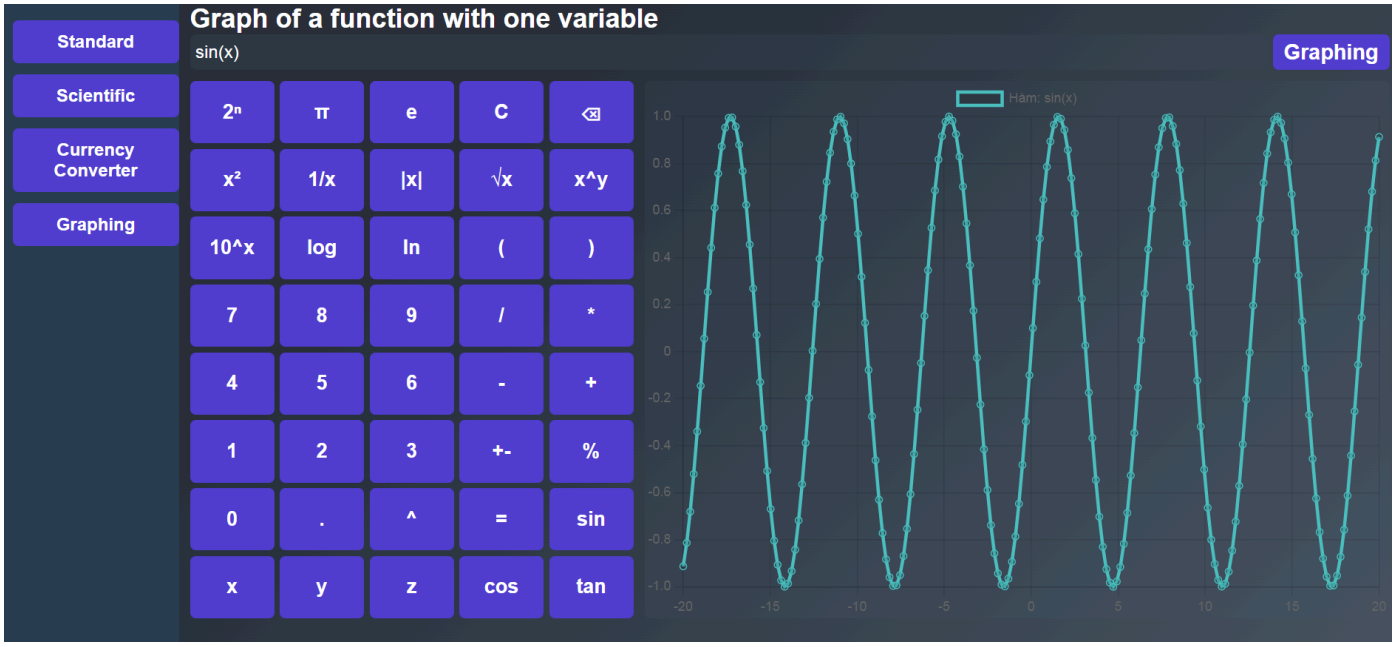


Part 4: Graphing Calculator Testing

Function Plotting

Test various functions:

- Trigonometric: sin(./test-with-screenshots/assets/x)



- Complex: x^2 + 2x + 1