

# Flask Greet and Calc

Download exercise starter code <../flask-greet-calc.zip>

## Step Zero: Setup Your Environment

It will be more convenient if you always have an “environmental variable” that sets **FLASK\_ENV** to “development”, so you don’t have to do that every time you open a new terminal window.

You can configure this in your `~/.bash_profile`. To confirm, open up this file in VSCode:

```
code ~/.bash_profile
```

Add the following line to it, if you don’t have this line already included:

```
export FLASK_ENV=development
```

**Close this terminal window and open a new one.**

Test that this works like this:

```
$ echo $FLASK_ENV
development
```

## Set Up Your Project

Download the starter code. You’ll get a directory with two directories in it:

```
flask-greet-calc/
  greet/
  calc/
```

At the top level of this (inside **flask-greet-calc**), create a virtual environment:

```
$ python3 -m venv venv
```

Start using your venv:

```
$ source venv/bin/activate
(env) $
```

Install Flask:

```
(env) $ pip3 install flask
...
```

Make a “requirements.txt” file in this directory with a listing of all the software needed for this project:

```
(env) $ pip3 freeze > requirements.txt
```

(you can look at that file with `cat requirements.txt`)

## Set Up Git

We want you to add this project to Git, so let’s make our project a Git repository:

```
(env) $ git init
```

Then, since we **don’t** want the **venv/** folder put into Git (or send to GitHub), put it in a file called **.gitignore** (notice the leading dot!). Inside that file should be this line:

*.gitignore*

```
venv/
```

(which means “ignore all folders named **venv/** anywhere here and below, as far as git is concerned”)

You should test that Git is ignoring this file by making sure it doesn’t appear as an untracked file in **git status**:

```
(env) $ git status
```

## Greet

In the **greet** folder, Make a simple Flask app that responds to these routes with simple text messages:

**/welcome**

Returns “welcome”

**/welcome/home**

Returns “welcome home”

**/welcome/back**

Return “welcome back”

Once you’ve finished this, run the tests for it:

```
$ python3 -m unittest test.py
```

## Calc

Build a simple calculator with Flask, which uses URL query parameters to get the numbers to calculate with.

Make a Flask app that responds to 4 different routes. Each route does a math operation with two numbers, **a** and **b**, which will be passed in as URL GET-style query parameters.

### **/add**

Adds **a** and **b** and returns result as the body.

### **/sub**

Same, subtracting **b** from **a**.

### **/mult**

Same, multiplying **a** and **b**.

### **/div**

Same, dividing **a** by **b**.

For example, a URL like **http://localhost:5000/add?a=10&b=20** should return a string response of exactly **30**.

Write the routes for this but **don't hardcode the math operation in your route function** directly. Instead, we've provided helper functions for this in the file **operations.py**:

calc/operations.py

```
"""Basic math operations."""

def add(a, b):
    """Add a and b."""
    return a + b

def sub(a, b):
    """Subtract b from a."""
    return a - b

def mult(a, b):
    """Multiply a and b."""
    return a * b

def div(a, b):
    """Divide a by b."""
    return a / b
```

Import and use these in your routes.

After you've tried out your app, run the unit tests:

```
$ python3 -m unittest test.py
```

## Further Study

You probably have a lot of code duplication in your **calc** routes, given that you're doing such similar things in each.

Make a single route/view function that can deal with 4 different kinds of URLs:

- ***/math/add***
- ***/math/sub***
- ***/math/mult***
- ***/math/div***

You can write this in one function with one route by using a route parameter for the actual operation ("add", "sub", etc).

As an extra-bonus, see if you can find a way to do this in the route without a whole series of if/elif statements. One good way is to use a dictionary to map operation names to the functions that do the underlying math.

## Solution

[View Our Solution <solution/>](#)