Flask Tutorial for Beginners

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Overview

- CS50 Project Demo
- What is Flask?
- Installation
  - Python 3
  - Setup Virtual Environment
  - Flask
- Code Stuff

What is Flask?

- Micro web framework
- Has a lot of extensions
- Use templates
- Allows you to deploy Python projects efficiently

Install Python

Installation: virtual environment

- Open command prompt or terminal
- Open forked folder from github

> mkdir *folder_name* # to make a new folder

> cd *folder_name* # to go into the folder

> python3 -m venv env

- Use a virtual environment to make a copy of the Python interpreter to prevent version conflicts and Python packages from cluttering
- Activate it using

> source env/bin/activate # for Linux or Mac

> env\Scripts\activate # for Windows

> pip install flask

Code Simple App

```python
from flask import Flask
app  =  Flask (__name__)


@app.route('/')
def index():
    return '<h1>Hello World!</h1>'
```

> flask run

Might have to run these commands first:

> export FLASK_APP=*name_of_app.py* # Mac or Linux

> set FLASK_APP=*name_of_app.py* # Windows

Code Dynamic App

```python
from flask import Flask
app  =  Flask (__name__)

@app.route('/')
def index():
    return '<h1>Hello, World!</h1>'

@app.route('/user/<name>')
def user(name):
    return '<h1>Hello, {}</h1>'.format(name)
```

Code w/ Template

```python
from flask import Flask, render_template
app  =  Flask (__name__)


@app.route('/')
def index():
    return render_template('index.html')


@app.route('/user/<name>')
def user(name):
    return render_template('user.html', name=name)
```

Code w/ Template

```
layout.html:
<!DOCTYPE html>
<html lang="en">
    <head>
        <title>Awesome Website: {% block title %}{% endblock %}</title>
    </head>
    <body>
        <nav>
            <a href="/">Home</a>
        </nav>
        <main>
            {% block main %}{% endblock %}
        </main>
        <footer>
            Website made by serena
        </footer>
    </body>
</html>
```

Code w/ Template

index.html:
```
{% extends "layout.html" %}

{% block title %}
Home
{% endblock %}

{% block main %}
<h1>Hello, World!</h1>
{% endblock %}
```

Code w/ Template

user.html:

```
{% extends "layout.html" %}

{% block title %}
User
{% endblock %}

{% block main %}
<h1>Hello, {{ name }}!</h1>
{% endblock %}
```
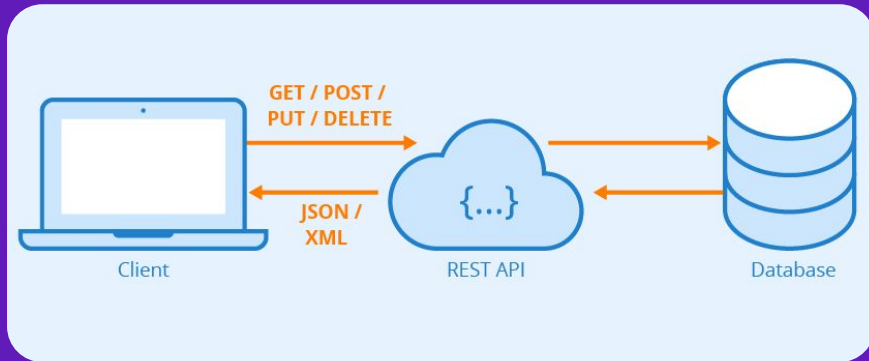
What is an API?

Client — GET / POST / PUT / DELETE → REST API {...} → Database

Database → REST API → JSON / XML → Client

API = application programming interface

- Connects client to database
- Allows you to make website dynamic
- **REST API:** Get, Post, Put, Delete

Code w/ REST API

index.html:
```
{% extends "layout.html" %}

{% block title %}
Home
{% endblock %}

{% block main %}
<h1>Hello, World!</h1>
<form action="/" method="post">
    <div>
        <input autofocus autocomplete="off" name="thisname" placeholder="Enter name here"
type="text">
    </div>
    <button type="submit">Submit</button>
</form>
{% endblock %}
```

Code w/ REST API

```python
from flask import Flask, render_template, request
app  =  Flask (__name__)

@app.route('/', methods=["GET", "POST"])
def index():
    if request.method == "POST":
        entered_name = request.form.get("thisname")
        return render_template('user.html', name=entered_name)
    return render_template('index.html')
```

Code Quiz

```
index.html
{% extends "layout.html" %}

{% block title %}
Home
{% endblock %}

{% block main %}
<h1>Hello, World!</h1>
<form action="/" method="post">
    <div>
        <input autofocus name="thisname" placeholder="Enter name here" type="text">
    </div>
    <div>
        <p>How old is Elon Musk?</p>
        <input name="age" type="number">
    </div>
    <button type="submit">Submit</button>
</form>
{% endblock %}
```

Code Quiz

```python
from flask import Flask, render_template, request
app = Flask (__name__)

@app.route('/', methods=["GET", "POST"])
def index():
    if request.method == "POST":
        entered_name = request.form.get( "thisname")
        entered_age = request.form.get( 'age')
        if entered_age == '50':
            return render_template('user.html', name=entered_name)
        return render_template('fail.html')
    return render_template('index.html')
```

Code Quiz

user.html

```
{% extends "layout.html" %}

{% block title %}
Good job
{% endblock %}

{% block main %}
<h1>👍 {{ name }}! Elon Musk is 50</h1>
{% endblock %}
```

Code Quiz

user.html

```
{% extends "layout.html" %}

{% block head %}
Wrong
{% endblock %}

{% block main %}
<h1>👎 You were wrong, Elon Musk is 50 years old</h1>
{% endblock %}
```

Now we can add some css to make it look pretty!