Intro to Flask

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Sample code available at flask.bornais.ca

Flask
web development,
one drop at a time

A Little About Me

- Software Developer at RIIS, Publicis Sapient, Assent and GreenShield
- Co-Founder of WinHacks and BorderHacks
- Research & Teaching assistant at UWindsor
- Former President of the UWindsor Computer Science Society
- Former Project Lead at Google Developer Student Club
- 10+ Hackathon participant

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Agenda

1. About Flask
   - Overview of the framework, what it is, why you should use it
2. Installation
   - Simple step by step installation instructions
3. Your First App
   - The structure of a Flask app, and getting it up and running
4. Routes and Templates
   - Adding new routes to the app, rendering templates, inheriting from templates
5. Next Steps
   - SQLAlchemy, User Authentication, and other ways to extend your app
6. Interactive Demo
   - We'll be making our own Flask app from scratch!

About Flask

What it is and why you should use it

What is Flask?

- A micro web framework written in Python
- Used for coding the back end of websites
- Very light by design
- Has many additional addons that can be used in addition to it (WTForms, SQLAlchemy, Flask-Login. etc.)

Why use it?

- Very simple to get started
- Many great addons
- Hackathon-friendly
- Scales well
- More customizable, let's you decide how you want to solve certain problems

Installation

Just a "pip install" away!

"pip install flask"

- **Python 3.5+** is required to install Flask
- Pip must also be installed to be able to install it
- **Venv** is recommended to make handling libraries easier
- Simply run `pip install flask` to install it!
- You may need to use `pip3` instead of `pip` if you're on a Linux or Unix system
- Link to download Python and pip: python.org

Your First App

Boilerplate code to get you started

The Bare Minimum

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

@app.route('/')
def hello_world():
    return 'Hello, World!'

if __name__ == "__main__":
    app.run(debug=True)
```

1. Save this file to **app.py**
2. Run `python app.py` (You may need to run `python3 app.py` instead)
3. Go to http://127.0.0.1:5000/

Common structure of a Flask app

- app.py
- config.json
- static/
    - style.css
    - script.js
    - ...
- templates/
    - layout.html
    - home.html
    - ...

Routes and Templates

Add pages, use real HTML files

Common Functions

render_template()

Used to render an HTML template file in the "templates" folder

url_for()

Used to find the URL of a particular route, often used for links and specifying file sources (ex. css files)

redirect()

Used to redirect the user to a different URL or route. Often used with `url_for()` to redirect to different routes on the website

Your Own Routes

```python
@app.route('/about')
def about():
    return render_template('about.html')

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

Passing Data to Routes

```
@app.route('/posts/<post_id>')
def posts(post_id):
    # do something with post_id
    return render_template('about.html')
```

Linking this route with url_for():

```
<a href="{{ url_for('posts', post_id=4) }}">View Post</a>
```

Templates & Inheritance

In layout.html:

```
<!DOCTYPE html>
<html>
 <head>
   <title>Title</title>
 </head>
  <body>
   {% block content %}{% endblock %}
 </body>
</html>
```

In home.html:

```
{% extends 'layout.html' %}
{% block content %}
<h1>Hello World!</h1>
{% endblock %}
```

More on Templates

Using a for loop:

```
{% for contact in contacts %}
    <h3>{{ contact }}</h3>
{% endfor %}
```

Using an if statement:

```
{% if current_user.is_authenticated %}
    <h3>Welcome User!</h3>
{% else %}
    <h3>You Must Login!</h3>
{% endif %}
```

Next Steps

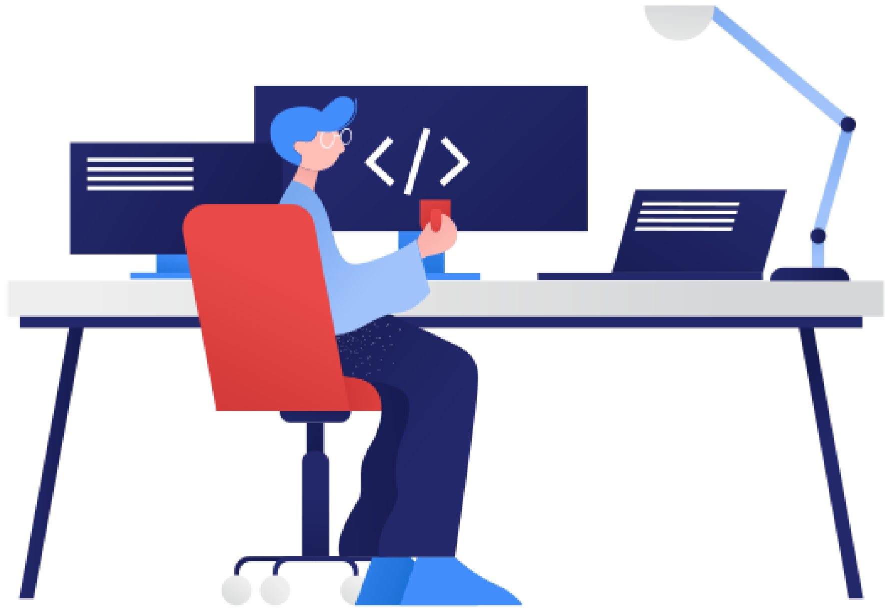
Extending your app's functionality

Common packages used with Flask

- Flask-SQLAlchemy
  - Simple extension that allows you to connect to a variety of SQL databases
- Flask-Login
  - Handles user sessions, makes authentication a breeze.
- Gunicorn
  - When used in conjunction with a reverse proxy (like caddy), allows for the easy deployment of the app.
- Flask-Uploads
  - Makes handling user file uploads simple and secure.
- bcrypt
  - Used for hashing and checking passwords, makes authentication more secure.

Interactive Demo

Let's make something!



Questions?

Ask away!

THANK YOU FOR JOINING!

I hope you learned something new 😃

Remember, the source code and these slides can be found here:
github.com/jere-mie/flask-workshop

You can also find a fully-featured Flask template with database support and user authentication here:
github.com/jere-mie/flask-template