



SDEV 1001

Programming Fundamentals

Packages and virtual environments - 4

A LEADING POLYTECHNIC COMMITTED TO YOUR SUCCESS

Expectations - What I expect from you

- No Late Assignments
- No Cheating
- Be a good classmate
- Don't waste your time
- Show up to class

Agenda

On the right is what we will cover today.

- What is Flask?
- Setting Up Flask
- Your First Flask App
- Running the Flask App
- Adding a Data Route
- Reading Data from a CSV
- Next Steps
- Summary

What is Flask?

- Flask is a lightweight Python web framework.
- Lets you quickly build web applications and APIs.
- Great for learning web development and building backend services.

Setting Up Flask

1. Create a virtual environment:

```
python -m venv ./venv  
.\venv\Scripts\activate
```

2. Install Flask:

```
pip install flask
```

3. Save dependencies:

```
pip freeze > requirements.txt
```

Your First Flask App

- Create a file called `library_app.py`:

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

- Add a home route:

```
@app.route('/')
def home():
    return "<h1>Welcome to the Book Library API</h1>"
```

Running the Flask App

- Set the app and run:

```
set FLASK_APP=library_app.py  
flask run
```

- Visit <http://127.0.0.1:5000> in your browser.

Adding a Data Route

- Add sample data and a new route:

```
from flask import jsonify

books = [
    {"title": "1984", "author": "George Orwell"},
    {"title": "To Kill a Mockingbird", "author": "Harper Lee"}
]

@app.route('/books', methods=['GET'])
def get_books():
    return jsonify(books)
```

Reading Data from a CSV

- Import the `csv` module and load data:

```
import csv

def load_books(filepath):
    books = []
    with open(filepath, mode='r', encoding='utf-8') as file:
        csv_reader = csv.DictReader(file)
        for row in csv_reader:
            books.append(row)
    return books
```

- Update the route to use CSV data:

```
@app.route('/books', methods=['GET'])
def get_books():
    books = load_books('data/books.csv')
    return jsonify(books)
```

Next Steps

- Try adding a new route to serve data from a different CSV file (e.g., authors).
- Explore filtering, pagination, and error handling for your API.

Summary

- You learned how to:
 - Set up Flask
 - Create routes
 - Return JSON data
 - Read and serve data from a CSV file