

Flask Curriculum

1st Week:

1. Installation
 - a. Using Virtual Environments
 - b. Installing Python Packages with PIP
2. Basic Application Structure
 - a. Initialization
 - b. Routes and View Functions
 - c. Server Start-up
 - d. A Complete Application
 - e. The Request-Response Cycle
 - f. Application and Request Contexts
 - g. Request Dispatching
 - h. Request Hooks
 - i. Responses
 - j. Flask Extensions
 - k. Command-Line Options with Flask-Script
3. Templates
 - a. The Jinja Template Engine
 - b. Rendering Templates
 - c. Variables
 - d. Control Structures
 - e. Twitter Bootstrap Integration with Flask-Bootstrap
 - f. Custom Error Pages
 - g. Links
 - h. Static Files
 - i. Localization of Dates and Times with Flask-Moment
4. Web Forms
 - a. Cross-Site Request Forgery (CSRF) Protection
 - b. Form Classes
 - c. HTML Rendering of Forms
 - d. Form Handling in View Functions
 - e. Redirects and User Sessions
 - f. Message Flashing

2nd Week:

5. Databases

- a. SQL Databases
- b. NoSQL Databases
- c. SQL or NoSQL?
- d. Python Database Frameworks
- e. Database Management with Flask-SQLAlchemy
- f. Model Definition
- g. Relationships
- h. Database Operations
- i. Creating the Tables
- j. Inserting Rows
- k. Modifying Rows
- l. Deleting Rows
- m. Querying Rows
- n. Database Use in View Functions
- o. Integration with the Python Shell
- p. Database Migrations with Flask-Migrate
- q. Creating a Migration Repository
- r. Creating a Migration Script
- s. Upgrading the Database

6. Email

- a. Email Support with Flask-Mail
- b. Sending Email from the Python Shell
- c. Integrating Emails with the Application
- d. Sending Asynchronous Email

7. User Authentication

- a. Authentication Extensions for Flask
- b. Password Security
- c. Hashing Passwords with Werkzeug
- d. Creating an Authentication Blueprint
- e. User Authentication with Flask-Login
- f. Preparing the User Model for Logins
- g. Protecting Routes
- h. Adding a Login Form
- i. Signing Users In
- j. Signing Users Out

- k. Testing Logins
 - l. New User Registration
 - m. Adding a User Registration Form
 - n. Registering New Users
 - o. Account Confirmation
 - p. Generating Confirmation Tokens with itsdangerous
 - q. Sending Confirmation Emails
 - r. Account Management
8. User Roles
- a. Database Representation of Roles
 - b. Role Assignment
 - c. Role Verification
9. User Profiles
- a. Profile Information
 - b. User Profile Page
 - c. Profile Editor
 - d. User-Level Profile Editor
 - e. Administrator-Level Profile Editor
 - f. User Avatars

3rd Week:

10. Application Programming Interfaces
- a. Introduction to REST
 - b. Resources Are Everything
 - c. Request Methods
 - d. Request and Response Bodies
 - e. Versioning
 - f. RESTful Web Services with Flask
 - g. Creating an API Blueprint
 - h. Error Handling
 - i. User Authentication with Flask-HTTPAuth
 - j. Token-Based Authentication
 - k. Serializing Resources to and from JSON
 - l. Implementing Resource Endpoints
 - m. Pagination of Large Resource Collections
 - n. Testing Web Services with HTTPie
11. Testing.
- a. Obtaining Code Coverage Reports

- b. The Flask Test Client
 - c. Testing Web Applications
 - d. Testing Web Services
 - e. End-to-End Testing with Selenium
- 12. Performance.
 - a. Logging Slow Database Performance
 - b. Source Code Profiling
- 13. Deployment
 - a. Deployment Workflow
 - b. Logging of Errors During Production
 - c. Cloud Deployment
 - d. The Heroku Platform
 - e. Preparing the Application
 - f. Testing with Foreman
 - g. Enabling Secure HTTP with Flask-SSLify
 - h. Deploying with git push
 - i. Reviewing Logs
 - j. Deploying an Upgrade
 - k. Traditional Hosting
 - l. Server Setup
 - m. Importing Environment Variables
 - n. Setting Up Logging
- 14. Additional Resources
 - a. Using an Integrated Development Environment (IDE)
 - b. Finding Flask Extensions
 - c. Getting Involved with Flask

Useful Links

1. <https://www.tutorialspoint.com/flask/index.htm>
2. <https://www.javatpoint.com/flask-tutorial>
3. <https://flask.palletsprojects.com/en/2.1.x/tutorial/>
4. <https://www.digitalocean.com/community/tutorials/how-to-make-a-web-application-using-flask-in-python-3>
- 5.