

Course Description: Course Description: This comprehensive course provides an in-depth understanding of backend web development using Python Flask and the SQLite3 database. Participants will learn how to build dynamic web applications with Flask and integrate a lightweight and portable database using SQLite3. Through a combination of lectures, hands-on exercises, and projects, students will gain the skills necessary to develop robust and scalable web backends with Flask and SQLite3.

Python Flask Web Backend Development

1. Introduction to Python Fundamentals

- Introduction to Python programming language
- Variables, data types, and basic operations in Python
- Control flow statements (if-else, loops) in Python
- Functions and modules in Python
- File handling and error handling in Python

2. Introduction to Web Development

- Overview of web development technologies and concepts
- Introduction to HTML, CSS, and JavaScript
- Setting up a development environment

3. Introduction to Flask

- Overview of Flask framework and its features
- Setting up a Flask application
- Routing and handling HTTP requests in Flask
- Understanding Flask's request response cycle

4. Flask Templates

- Introduction to Flask templates and Jinja2 templating engine
- Templating syntax and basic template inheritance
- Using template variables and filters in Flask

- Building dynamic web pages with Flask templates

5. Flask Forms

- Creating and processing HTML forms in Flask
- Form validation and error handling in Flask
- Handling file uploads with Flask-WTF
- Integrating form data with backend functionality

6. Database Integration with SQLite3

- Introduction to SQLite3 database and its integration with Flask
- Creating and managing SQLite3 databases
- Performing CRUD (Create, Read, Update, Delete) operations with SQLite3 in Flask
- Querying and filtering data with SQLite3 in Flask

7. User Authentication and Authorization

- Implementing user authentication using Flask-Login
- User registration and login functionality
- Role-based access control using Flask-Principal
- Securing Flask applications with password hashing

8. RESTful APIs with Flask

- Introduction to RESTful architecture and principles
- Building RESTful APIs with Flask-RESTful
- Handling HTTP methods and request/response formats
- Testing and documenting APIs

9. Advanced Flask Topics

- Flask extensions for additional functionality
- Caching and performance optimization techniques
- Error handling and logging in Flask
- Deploying Flask applications to production servers