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APIS AND API DESIGN WITH PYTHON

Course Code: 100417

Learn to design, build, and interact with APIs using Python.

Application Programming Interfaces (APIs) have become increasingly important as they provide developers with connectivity to everything from rich datasets in an array of formats (such as JSON) to exposing the configurability of software applications and network appliances. Lessons and labs focus on using Python to interact, design, and build APIs for the purposes of scripting automated solutions to complex tasks. Class is a combination of live demonstrations and hands-on labs.

What You'll Learn

- Client-side Python Scripting to RESTful (and non-RESTful) APIs
- Design RESTful API interfaces with Flask Web Framework
- Overview of Django
- Deploy your Python web apps as Docker containers
- Open SSH sessions and pass commands to remote servers
- Move files via SFTP
- Parse and manipulate popular data structures (JSON, CSV, Excel, and YAML) as pandas dataframes
- Best practice techniques

Who Needs to Attend

- System Administrators
- Network Engineers
- Software Developers
- Python Enthusiasts

Prerequisites

Before attending this course, you should have:

- Basic familiarity with any programming or scripting language
- Coding experience in another language serves as an adequate prerequisite

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VIRTUAL CLASSROOM LIVE	$3,255 CAD	5 Day

Virtual Classroom Live Outline

- **Python Review**
  - Version Control with Git
  - Lists
  - Dictionaries
  - Conditionals (if, elif, else)
  - Loops (for and when)
  - Functions
  - Classes and Methods
  - Using pip
- **Working with Data - JSON, YAML, CSV and Excel**
  - JSON RFC 7159
  - JSON Formatting
  - YAML intro
  - YAML Formatting
  - Python Libraries for decoding JSON, YAML and CSV
  - Reading and Writing to Excel
  - Dataframes and pandas
- **SSH Communication and SFTP**
  - Python and SSH
  - Building an SFTP Client & Server
  - Python and SFTP limitations
  - Paramiko for SSH
  - Netmiko and Major Network Vendors (Cisco, Juniper, Arista)
- **Web and RESTful APIs**
  - Creating an HTTP Client & Server with Python
  - Introduction to REST
  - RESTful API on Etcd keystore (Kubernetes distributed DB)
  - Creating a Python client to interact with API endpoints

- API dev keys
- Secure password retrieval
- Tokens and APIs
- OAuth v2.0

- **API Design Practices**
  - RESTful Architecture
  - Stubbing code with Swagger
  - Describing Resource functionality (GET, POST, PUT, DELETE, etc.)
  - Collections, resources, and URLs
  - Using nouns, not verbs
  - Understanding HTTP status codes
  - Returning data
- **Building APIs with Flask**
  - Flask Overview
  - Decorators
  - Building APIs with Python and Flask
  - APIs returning Jinja2 templating
  - Returning a ‘cookie’
  - Building Sessions
  - Redirecting from URIs
  - Build an API to accept a file upload
  - Overview of Django
- **Deploying APIs**
  - Docker containers
  - Docker build
  - Constructing Docker images
  - Dockerfile
  - Deploying a Flask App on Docker
  - Automating build processes
- **Database Integration**
  - Overview
  - Connecting to Python
  - Read / Write operations
  - Other useful instructions
  - Connecting APIs and SQLite
  - Python and PostgreSQL
  - Python and MongoDB
  - Reading and Writing to Databases with APIs
- **Processes and Threads**
  - Threading
  - Context change
  - Deadlock errors
  - Thread starvation
  - Racing conditions and racing specifics
  - Working with Locks

Virtual Classroom Live Labs

- Lab 1 - Using vim
- Lab 2 - Making a GitHub account
- Lab 3 - Getting dir(obj) help() and pydoc
- Lab 4 - Lists
- Lab 5 - Dictionaries
- Lab 6 - List and Dict Modeling
- Lab 7 - try and except
- Lab 8 - Python Data to JSON file
- Lab 9 - Python Data to YAML file
- Lab 10 - pandas dataframes - MS Excel, csv, json, HTML and beyond
- Lab 11 - CSV data - Standard Library and pandas dataframes
- Lab 12 - Introducing Paramiko
- Lab 13 - Paramiko SFTP with UN and PW
- Lab 14 - Paramiko SSH with RSA
- Lab 15 - Scripting Commands over SSH
- Lab 16 - RESTful Open APIs
- Lab 17 - RESTful Open APIs with requests
- Lab 18 - requests library - Open APIs
- Lab 19 - APIs and Dev Keys
- Lab 20 - RESTful APIs and Dev Keys
- Lab 21 - Logging API Behavior
- Lab 22 - requests library - GET vs POST to REST APIs
- Lab 23 - requests library - RESTful GET and JSON parsing
- Lab 24 - etcd and RESTful Client-side Design
- Lab 25 - Construct a SimpleHTTPServer and HTTP Client
- Lab 26 - Python to Cisco NX-OS API
- Lab 27 - Swagger for API Design
- Lab 28 - Building APIs with Python
- Lab 29 - Flask APIs and Jinja2
- Lab 30 - Flask APIs and Cookies
- Lab 31 - Flask Sessions
- Lab 32 - Flask Redirection, Errors, and API Limiting
- Lab 33 - Flask Uploading and Downloading Files
- Lab 34 - Learning sqlite3
- Lab 35 - Tracking API Data with sqlite3
- Lab 36 - Tracking Inventory with sqlite
- Lab 37 - Running Flask in a Docker Container
- Lab 38 - OAuth
- Lab 39 - Started with Django
- Lab 40 - Working With Threads
- Lab 41 - The Multiprocessing Module
- Lab 42 - Queues and Pipes

- Lab 43 - Introduction to Async IO
- Glossary

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PRIVATE GROUP TRAINING	5 Day

Visit us at www.globalknowledge.com or call us at 1-866-716-6688.

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