

# API DESIGN WITH PYTHON

## 1. Python Review

- Lists
- Dictionaries
- Tuples
- Conditionals (if, elif, else)
- Loops (for and when)
- Functions
- Variable Scope - Review
- Converting boiler plate code to functional code
- Writing Functions (reusable code)
- Using pip
- Useful 3rd party modules
- Publishing a module
- Documenting modules

## 2. OS Interfacing

- OS module - listdir(), getcwd(), mkdir ()
- Common sys Module Attributes & Methods
- Working With the os Module & Files/Directories
- Walking File Trees with os.walk ()
- File, Path and Directory Examples
- Working with os.path
- os & os.path Module Examples
- Environmental Variables
- Running Shell Commands
- Compressing and archiving (gzip, tar, zip)

## 3. Web and RESTful APIs

- REST

- REST APIS and HTTP CRUD
- REST and OpenStack
- URI analysis and formation
- Wireshark capturing
- cURL
- Etcd keystore
- Creating a Python client to interact with API endpoints
- API dev keys
- SSH and Python
- Secure password retrieval
- Tokens and APIs

#### **4. Python Protocol Clients**

- Scripting the browser
- Scripting with HTTP
- Creating an HTTP Client & Server
- Python and SSH
- Building an SFTP Client & Server
- Python and SFTP limitations
- Paramiko for SSH
- Netmiko and Major Network Vendors (Cisco, Juniper, Arista)

#### **5. JSON, YAML, XML, CSV and Excel**

- JSON RFC 7159
- JSON Formatting
- YAML intro
- YAML lists
- YAML dictionaries
- YAML line spanning
- Reading YAML is easy
- XML

- CSV
- Import json
- Import yaml
- Decoding json and yaml to use
- Using python to decode data structures like YAML, XML, CSV, and JSON
- Reading from Excel
- Writing to Excel

## **6. Generating and Sending Emails**

- Overview of email modules
- Creating simple emails
- Interfacing with your email account

## **7. Dates and Times**

- Python and Cron
- Import time and time.time()
- Suspending with sleep()
- Dealing with time
- Time formatting
- Time tuples
- Creating Calendars

## **8. Python Regular Expression (Regex)**

- Metacharacter review
- Re modules
- search () and match ()
- findall ()
- Compiling regex search patterns
- Creating highly efficient searches
- Sorting data sets
- Complex sorts

- `sort ()` vs `sorted()`
- Sorting with functions
- Applying Regex to file searches
- Applying Regex to API results

## **9. Code Review**

- Best practice
- Using pylint
- Conventions
- Underscore
- Double underscore
- Monkey Patching

## **10. Web API Design 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

## **11. SQLite**

- Overview
- Connecting to Python
- Read / Write operations
- Other useful instructions
- Connecting APIs and SQLite
- Reading and Writing to Databases with APIs

## **12. Processes and Threads**

- Threading
- Context change
- Deadlock errors
- Thread starvation
- Racing conditions and racing specifics
- Working with Locks