

# Python Programming For Cloud & DevOps-SRE Professionals

## Installing And Configuring Python & Dependencies

- Why Python & How is it different from Shell Scripting?
- Which Python Version & How to install it?
- Install Python Package Manager (PIP) & Explore PYPY.ORG.
- Configure Visual Studio Code for Python Usage.
- Installing & Using IPython for Practice.
- Running your first python code.
- Understanding print and pretty print modules.
- What is Python Virtual Environment?
- Install & Use Python Virtual Environment for multiple projects.
- Install boto3 & requests module and understand to use in subsequent topics.
- Accessing Pokemon API for testing requests module.
- Accessing AWS Resources with Boto3 Module.

## Declaring Variables & Working With Python Strings

- Possible ways of declaring variables in Python & accessing them.
- Understanding Python Data Types.
- Declaring Strings and access string methods.
- Working with String Methods with AWS Boto3 Examples.

|              |              |                |               |                |                |              |             |
|--------------|--------------|----------------|---------------|----------------|----------------|--------------|-------------|
| capitalize() | expandtabs() | isalpha()      | isnumeric()   | ljust()        | removesuffix() | rsplit()     | swapcase()  |
| casefold()   | find()       | isascii()      | isprintable() | lower()        | replace()      | rstrip()     | title()     |
| center()     | format()     | isdecimal()    | isspace()     | lstrip()       | rfind()        | split()      | translate() |
| count()      | format_map() | isdigit()      | istitle()     | maketrans()    | rindex()       | splitlines() | upper()     |
| encode()     | index()      | isidentifier() | isupper()     | partition()    | rjust()        | startswith() | zfill()     |
| endswith()   | isalnum()    | islower()      | join()        | removeprefix() | rpartition()   | strip()      |             |

## Working With Python Lists & Tuples

- Declaring Lists and Manipulating them with list methods.

```
append()  count()  insert()  reverse()  
clear()   extend()  pop()     sort()  
copy()    index()    remove()
```

- Understand For Loop & Iterating Lists with For Loops.
- Working with list comprehensions.
- Difference between Lists & Tuples.
- Tuple use cases and advantages.
- Working with Tuple Methods and converting to list and vice-versa.
- Using Lists & Tuples with AWS Boto3.

## Python Dictionaries & JSON Module & Sets

- Understanding Data In Key-Value Pair Format.
- Creating Python Dict and accessing the elements.
- Access AWS VPC Information with Boto3 in Dict Format.
- Finding Keys and Values of a Dict & Iterating a Dictionary.
- Python Dict to JSON with dumps() and JSON File with dump().
- JSON To Python Dict with loads() and load() methods.
- Removing Duplicates with Python Sets and Frozen Sets.

## Python File Handling

- Open vs With
- Modes of Python File Handling.
- Access Python Dict and Converting to JSON Files.
- Read JSON files and convert to Python Dict.

- API Management with Requests Module.

## Python Operators & Conditions & Loops

- Overview of Python Operators.
- Arithmetic operators in Python
- Comparison operators
- Logical operators
- Assignment operators
- if & if..else & break & continue conditions.
- For & While Loops.

## Python Modules

- What are modules in Python & how do they work?
- Using default python modules
  - Json
  - os & sys
  - Date & Math & Time
- Installing 3rd Party Modules
  - Boto3,Faker,dotenv
  - fastapi
  - mysql-connector

## Python Functions

- How functions work and how to use return.
- Types of Functions in Python?
  - Default arguments
  - Keyword arguments
  - Positional arguments
  - Arbitrary positional arguments
  - Arbitrary keyword arguments

- Using Functions to retrieve data from AWS using Boto3.

## Exceptions Handling In Python

- Understanding Why Exception Handling Is Needed?
- Working with Try, Except, Else & Finally.
- Working with Custom Boto3 Exceptions.
- Python Debugger

## Working With Regular Expressions(Reg)

- Importing re modules and understanding re methods.
- Creating Custom RegEx Patterns.
- Creating Pattern For Valid IP Address Checking.
- Creating Pattern For Valid URL Checking.
- Log Parsing with Python & Regular Expressions.

## Python OOP Concepts

- What are Python Classes & Methods
- Understanding Python Magic Methods
- How does Python inheritance work
- Polymorphism In Python
- Static & Private Methods

## Python & MySQL Integration

- Deploying MySQL Database On Docker
- Installing and Accessing MySQL With PyMySQL Library.
- Generating sample data with Faker Module.
- Understanding Connection Pooling In Databases.

## Exposing API With Python FastAPI

- Install & Configure FastAPI Library.
- Create A Sample API and expose.
- Working With Templates & Routers.
- Using Jinja2 Templates With FastAPI.

## Creating AWS Lambda Functions Python Boto3

- Installing Custom Modules In AWS Lambda.
- AWS AMI Automation with Boto3.
- AWS EBS Automation With AWS Event Bridge.

## Learning Data Science Modules

- Manipulate data with Pandas.
- Using Streamlit for visualization.
- Understand Numpy better than using Lists for large data.