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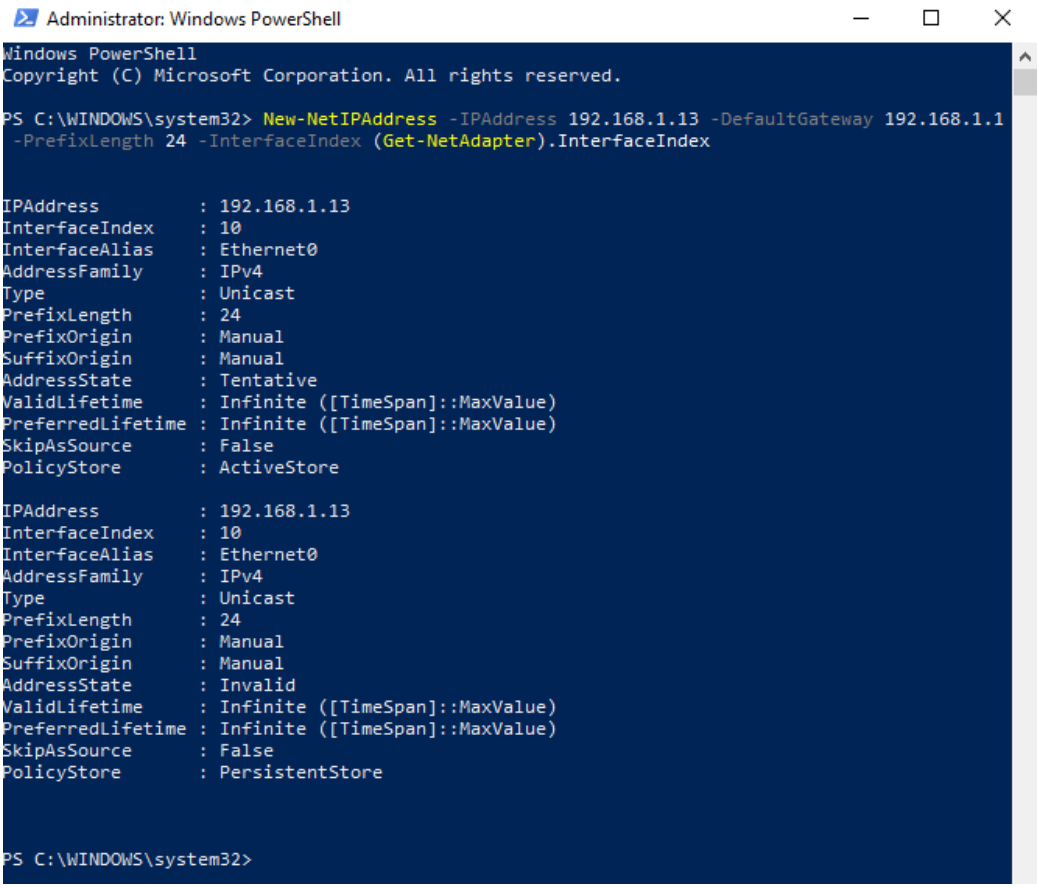

Python

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Python Core, Advanced & DJango

Course Outline:

Core Python

1. Getting Started

- History
- A Python Q&A Session
- How Python Runs Programs
- How You Run Programs

2. Introduction to Python:

- What is Python?
- Why Python?
- Python Applications in real life
- Brief history of Python
- Versions of Python
- Installing Python
- Using IDLE
- First Python Program
- Getting help from Python Docs

3. Types and Operations

- Introducing Python Object Types
- Numeric Types
- The Dynamic Typing Interlude
- Strings
- Lists and Dictionaries

- Tuples, Files and Everything Else

4. **Variables Data types**
   - Intro to dynamic typing
   - Variables in Python
   - Naming conventions
   - Basic Data types (representation of strings, integer, floats)
5. **Basic Syntax**
   - Basic syntax
   - Commenting
   - Indentation
   - Python keywords
   - Strings
   - String values
   - String Operations
   - String slicing
   - Built in string methods
   - Formatted printing
   - Simple Input and Output handling
6. **Language Building blocks**
   - Control statements, the if, elif, else
   - True and False
   - Arithmetic Operators
   - Relational Operators
   - Logical Operators
   - Bitwise Operators
   - While loop
   - Usage of pass, break and continue

- For each loop

7. **Collections**
   - Lists
   - Tuples
   - Sets
   - Dictionaries
   - Sorting collections
   - Operations on collections
   - Discussion on real life application of above collections

8. **Functions**
   - Introduction to functions
   - Built in functions
   - User defined functions
   - Function parameters
   - Variable arguments ,args and kwargs
   - Positional and named arguments
   - Discussion scope of variables with respect to functions and namespace
   - Passing function to another function

9. **Project**

10. **File Handling**

11. **Modules**
    - Introduction to modules
    - Introduction to standard modules
    - OS module
    - path module
    - Sys module

- sub process module
- Argument parsing using argparse module
- .csv file parsing using csv module
- .jason file paring using Jason module
- Xml file parsing using xml module
- Introduction to logging module

12. Project 2: Building log parser and reporting the results

13. Object Oriented Programming

- Introduction to Classes and Objects
- Principles of OOP
- Instance methods
- Special methods
- Encapsulation
- Inheritance
- Polymorphism

14. Regular Expressions

- Introduction to regular exceptions
- Introduction to re module
- Simple character matches
- Match function
- Searching function
- Regular expression patterns
- Patterns in Regex
- Search And Replace

15. Optional I(for testers)

- Introduction to testing using Python
- Introduction to test automation
- Introduction to Selenium web deriver
- Web testing using selenium

16. Option II (developers)

Advance topics:

- Generators
- Decorators
- Iterators and iterator protocol
- Debugging using PDB

17. Options III(Web programming)

- Introduction to web programming using Python
- Introduction to Django/Flask
- Introduction to Restful API's using Python

18. Option IV(Data science)

- Introduction to data science using python
- Introduction to pandas module
- Introduction to data visualization using matplotlib
- Introduction to numpy
- Introduction to scipy

Advanced Python

1. Functional Programming

- Lambdas
- List Comprehensions

- Set and Dictionary Comprehensions
- Closures and Decorators
- Generators and Coroutines
- Generator Expressions
- Declarative Programming

2. Systems Programming

- File Descriptors
- Reading and Writing Files
- Files and Directories
- File Locking
- Memory Mapped I/O
- Creating Processes
- Process Management
- Pipes and Signals

3. Classes and Objects

- New Style Classes
- Inheritance and Mixins
- Properties and Slots
- Static and Class Methods
- Abstract Base Classes
- Method Overriding
- Attributes and Functors
- Decorators and Factories
- Descriptors and MetaClasses

4. Persistence and Databases

- Shelve and Pickle
- SQL Relational Databases
- Connection, Cursor, Row Objects
- Create, Read, Update, Delete
- Error Handing
- Query Results and Metadata
- Create and Aggregate Functions
- Exporting and Importing
- Transactions and Rollbacks

- Database Objects

5. Network Programming

- Sockets and Addresses
- Establishing Connections
- TCP Clients and Servers
- UDP Clients and Servers
- UDS Clients and Servers
- Network Objects
- SocketServers
- Secure Sockets Layer

6. Web Programming

- JSON and XML
- Using XML-RPC
- Rest Interfaces
- WSGI and HTML
- Flask Framework
- Controller Functions
- Templates and Forms
- Database ORMs

7. Threads and Concurrency

- Creating and Joining Threads
- Daemon Threads
- Thread Objects
- Timer Threads
- Locks and Semaphores
- Events and Conditions
- Thread Locals
- Thread Queues
- Process Queues and Tasks
- Process Pools

8. Inheritance

- The DRY Principle Revisited
- Single Inheritance

- Sub-Classing Classes from Python Packages
- Overriding Methods
- Calling the Parent Method with super()
- Multiple Inheritance
- Method Resolution Order

9. Extending and Embedding Python

- Calling C/C++ from Python
- Using ctypes
- Extension Modules in C/C++
- Raising Python Exceptions
- Calling Python from C/C++
- Embedding Python Interpreter
- Importing Python Modules from C/C++
- Converting Python Objects to C/C++
- Invoking Python Functions from C/C++

10. Data analysis using Numpy

- Introduction to Numpy arrays
- Creating and applying functions
- Numpy Indexing and selection Numpy Operations
- Exercise and assignment challenge

11. Pandas and advanced analysis

- Panda's series
- Introduction to Data Frames
- Missing data
- Group by
- Merging, joining and concatenating
- Operations
- Data Input and Output

12. Data visualization with Python

- Plotting using Mat plot lib
- Sea born visualization
- Pandas built-in data visualization

13. Seaborn visualization

- Categorial Plot using Seaborn

- Distributional plots using Seaborn
- Matrix plots
- Grids
- Seaborn exercises

Django

1. Introduction to Django

- Introduction
- Why Django?
- Batteries Included
- Django Principles
- What you Should Already Know
- Course Overview

2. Instalpng Django

- Intro
- Choosing your Versions
- Instalpng Pip and Python on Windows
- Demo: Windows Installation
- Instalpng Pip and Python on Mac OS X
- Demo: OS X Installation
- Instalpng Pip and Python on Linux
- Demo: Linux Installation
- Virtualenv
- Demo: Virtualenv
- Instalpng Django
- Summary

3. Starting a Django Project

- Introduction
- Creating a Django Project
- Demo: Creating a Django Project
- The Model-Template-View Pattern
- Demo: Hello, World!

- Mapping URLs
- Demo: URL Mapping
- Django Views
- Demo: Templates
- Summary

4. Models

- Introduction
- Demo: Adding Models
- Django Model Classes
- Manage.py Database Commands
- Demo: The Admin Interface
- The Django Admin Interface
- Demo: The Model API
- Save and Delete
- The Model API
- Database Relations
- Summary

5. Adding a User Home Page

- Introduction
- Demo: Adding Login and Logout Views
- More about URL Mappings
- Demo: A Template for the Home Page
- Authorization with Django
- More about Django Templates
- Demo: Adding the Home View
- URL Mappings for Apps
- Demo: Template Inheritance
- Template Inheritance
- Demo: Login Required
- Demo: Showing Game Data on the Home Page
- Demo: A Custom Manager Class
- The Template Context
- Templates: For and Include Tags
- Summary

6. Forms

- Introduction
- Demo: Adding a HTML Form
- Using Django Forms
- Demo: Adding Stypng to the Form with Crispy-Forms
- Demo: Field Options
- Field Options
- Demo: Showing Invitations in a List
- Demo: Accepting Invitations
- Demo: Named Groups
- Named Groups in URLs
- Summary

7. Odds and Ends

- Introduction
- Class-based Views
- Demo: Class-based Views
- Demo: Adding User Signup
- Generic Views
- Debugging Django
- Demo: The Django Debug Toolbar
- Resources
- Summary

Prerequisites:

- Knowledge of basic mathematics is required
- Basic Programming knowledge
- Understanding the basics of statistics

Who Can attend:

- Business analysts who want to understand data science techniques
- Information architects who want to gain expertise in machine learning algorithms
- Analytics professionals who want to work in machine learning or artificial intelligence

- Graduates looking to build a career in data science and machine learning
- Experienced professionals who would like to harness machine learning in their fields to get more insights

Number of Hours: 50hrs

Certification: PCAP (Certified Associate in Python Programming)

Key Features:

- One to One Training
- Online Training
- Fastrack & Normal Track
- Resume Modification
- Mock Interviews
- Video Tutorials
- Materials
- Real Time Projects
- Virtual Live Experience
- Preparing for Certification