Python Programming with Red Hat (AD141) Training

Duration: **5 Day**

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Python is a powerful and flexible programming language widely used by system administrators, DevOps teams, software developers, data scientists, and AI/ML professionals. Its applications range from developing web applications and automating system administration tasks to creating custom Red Hat Ansible Automation modules, analyzing data, and building machine learning solutions.

Python Programming with Red Hat (AD141) is designed to provide beginners with a practical introduction to Python and its fundamental programming concepts. Throughout the course, participants explore essential topics including control flow, loops, data structures, functions, file operations, regular expressions, JSON processing, and debugging.

The course is based on **Python 3 and Red Hat Enterprise Linux (RHEL) 9.0**.

Organizational Impact

Python is one of the preferred programming languages for engineering and operations teams working in areas such as AI/ML, data science, scientific computing, system administration, and modern cloud-native microservices development.

Its clear and readable syntax, extensive standard library, and broad ecosystem of third-party packages enable organizations to experiment with ideas, develop prototypes, and bring solutions into production efficiently.

AD141 provides participants with a structured introduction to Python's syntax, programming concepts, tools, and libraries, establishing the foundation required to develop practical Python-based solutions.

Skills Gained Through This Training

After completing this course, participants will have the foundational knowledge and practical skills required to develop programs using Python.

Participants will be able to:

- Rapidly prototype solutions using Python's readable syntax, dynamic typing, and powerful data types,
- Read data from and write data to files,
- Read, process, and create JSON data,
- Structure larger applications using modules and object-oriented programming,
- Handle application errors using exceptions,
- Troubleshoot Python applications with the Python Debugger,
- Process and manipulate textual data using regular expressions and Python's standard string functions.

Recommended Next Courses

AD141 is part of the **Red Hat Training Presents** program. Courses within this program provide

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introductory content designed to help participants get started with specific technologies while complementing other Red Hat Training offerings.

After completing this introductory Python course, participants may continue with:

- **Ansible Basics: Automation Technical Overview (DO007)**
- **Red Hat Enterprise Linux Automation with Ansible (RH294)**

Prerequisites

There are no prerequisites for attending this course.

Who Should Attend

This course is particularly suitable for:

- System administrators and DevOps professionals who want to automate operating system tasks using Python
- Developers with experience in other programming languages who want to start building applications with Python
- AI/ML professionals, data scientists, and engineers who want to use Python for data analysis and machine learning
- Anyone looking to establish a solid foundation in Python programming

What You Will Learn

The course covers the following key areas:

- Python syntax, functions, and fundamental data types
- Debugging Python applications with the Python Debugger (pdb)
- Working with Python data structures including lists, dictionaries, sets, and tuples
- Object-oriented programming (OOP), classes, and objects
- Managing runtime errors through exception handling
- Reading data from and writing data to files
- Reading, processing, and creating JSON data
- Using regular expressions to work with textual data
- Structuring larger Python applications with modules and namespaces
- Working with third-party Python libraries using the pip command-line tool

Training Outline

An Overview of Python 3

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Get introduced to Python and learn how to prepare a development environment.

Basic Python Syntax

Explore Python's fundamental syntax and understand the basic semantics of the language.

Language Components

Learn how to work with Python's core control-flow structures and operators.

Collections

Develop programs that work with compound data using lists, sets, tuples, and dictionaries.

Functions

Learn how to break programs into reusable and composable functions for better organization and maintainability.

Modules

Organize Python code into modules to improve flexibility and code reuse.

Classes in Python

Explore the fundamentals of object-oriented programming (OOP) using Python classes and objects.

Exceptions

Learn how to identify and manage runtime errors using Python's exception-handling mechanisms.

Input and Output

Develop Python programs that can read data from files and write data to files.

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Data Structures

Use advanced Python features such as generators and comprehensions to reduce repetitive code and create more efficient programs.

Regular Expressions

Use regular expressions to search, match, and manipulate textual data.

Parsing JSON

Learn how to read and write data in JSON format with Python.

Debugging

Use the Python Debugger (pdb) to identify, analyze, and troubleshoot problems in Python programs.