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Learning Style: Virtual Classroom

Technology: Cisco

Difficulty: Intermediate

Course Duration: 4 Days

The Programming for Network Engineers (PRNE) v2.0



About this Course:

The Programming for Network Engineers (PRNE) v2.0 is a 4-day course designed to equip you with fundamental skills in Python programming. Through a combination of lectures and lab experience in simulated network environments, you will learn to use Python basics to create useful and practical scripts with Netmiko to retrieve data and configure network devices. Upon completion of this course, you should

have a basic understanding of Python, including the knowledge to create, apply, and troubleshoot simple network automation scripts.

Course Objectives:

- Create a Python script
- Describe data types commonly used in Python coding
- Describe Python strings and their use cases
- Describe Python loops, conditionals, operators, and their purposes and use cases
- Describe Python classes, methods, functions, namespaces, and scopes
- Describe the options for Python data manipulation and storage
- Describe Python modules and packages, their uses, and their benefits
- Explain how to manipulate user input in Python
- Describe error and exception management in Python
- Describe Python code debugging methods

Audience:

The primary audience for this course is as follows:

- Network administrators
- Network engineers with little or no programming or Python experience
- Network managers
- Systems engineers

Prerequisites:

The knowledge and skills that the learner should have before attending this course are as follows:

- Familiarity with Cisco IOS-XE software or other Cisco network device configuration and operation skills
- Basic network management knowledge
- Cisco CCNA® certification or equivalent knowledge

The following Cisco courses can help you gain the knowledge you need to prepare for this course:

- Implementing and Administering Cisco Solutions

Course Outline:

- Introducing Programmability and Python for Network Engineers
- Scripting with Python
- Examining Python Data Types
- Manipulating Strings
- Describing Conditionals, Loops, and Operators
- Exploring Classes, Methods, Functions, Namespaces, and Scopes

- Exploring Data Storage Options
- Exploring Python Modules and Packages
- Gathering and Validating User Input
- Analyzing Exceptions and Error Management
- Examining Debugging Methods
- Course Summary

Lab Outline:

Labs are designed to assure learners a whole practical experience, through the following practical activities:

- Execute Your First Python Program
- Use the Python Interactive Shell
- Explore Foundation Python Data Types
- Explore Complex Python Data Types
- Use Standard String Operations
- Use Basic Pattern Matching
- Reformat MAC Addresses
- Use the if-else Construct
- Use for Loops
- Use while Loops
- Create and Use Functions
- Create and Use Classes
- Use the Python main() Construct
- Traverse the File Structure
- Read Data in Comma-Separated Values (CSV) Format
- Read, Store, and Retrieve Data in XML Format
- Read, Store, and Retrieve Date in JavaScript Object Notation (JSON) Format
- Read, Store, and Retrieve Data in a Raw or Unstructured Format
- Import Modules from the Python Standard Library
- Import External Libraries
- Create a Python Module
- Prompt the User for Input
- Use Command-Line Arguments
- Manage Exceptions with the try-except Structure
- Manage Exceptions with the try-except-finally Structure
- Use Assertions
- Use Simple Debugging Methods
- Use the Python Debugger
- Code a Practical Debugging Script

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