

Python Programming with Ansible

Day 1: Introduction to Ansible and Python Basics

1. Introduction to Ansible

- Overview of automation, configuration management, and Ansible.
- Ansible architecture and components.

2. Setting Up the Environment

- Installing Ansible on the control node.
- Configuring SSH for passwordless communication.
- Basic Ansible configuration files.

3. Introduction to Python Basics

- Variables, data types, and basic operations.
- Control flow (if statements, loops).
- Functions and modules.

4. Working with Ansible Ad-hoc Commands

- Using Ansible on the command line for simple tasks.
- Managing remote servers with Ansible ad-hoc commands.

Day 2: Ansible Playbooks and Modules

1. Ansible Playbooks Basics

- Understanding YAML syntax for playbooks.
- Writing basic playbooks.

2. Task Control and Handlers

- Managing task execution order.
- Implementing handlers for specific events.

3. Ansible Modules in Depth

- Exploring built-in Ansible modules.
- Writing custom Ansible modules in Python.

4. Variables and Facts

- Using variables in playbooks.

- Understanding facts and how to use them.

Day 3: Advanced Playbook Features

1. Roles in Ansible

- Organizing playbooks using roles.
- Parameterizing roles for reusability.

2. Advanced Variable Management

- Using group variables.
- Variable precedence and scope.

3. Working with Templates

- Templating with Jinja2.
- Using templates in playbooks.

4. Conditionals and Loops in Playbooks

- Implementing conditional statements.
- Using loops for repetitive tasks.

Day 4: Ansible and Python Integration

1. Executing Python Scripts with Ansible

- Incorporating Python scripts into playbooks.
- Passing variables between Ansible and Python.

2. Integrating Python Libraries

- Leveraging Python libraries within Ansible.
- Example: Using requests library for API interactions.

3. Best Practices and Troubleshooting

- Ansible best practices.
- Troubleshooting common issues.

4. Ansible Vault

- Encrypting sensitive data with Ansible Vault.
- Managing secrets and passwords.

Day 5: Real-world Scenarios and Final Project

1. Real-world Ansible Scenarios

- Deploying applications.
- Configuring servers and services.
- Managing multiple environments.

2. Final Project: Building an Ansible Playbook

- Participants work on a practical project to reinforce concepts.
- Incorporating various Ansible features learned during the training.