Python for DevOps Engineer | DevOps Yatri

1. Python Fundamentals (Core)

- Variables, Data Types
- Loops and Conditions
- Functions   Exception
- Handling
- File I/O

Start by writing simple scripts to automate system tasks.

2. DevOps-Focused Data Structures

- Lists * Managing servers, logs
- Sets * Handling unique IPs
- Dictionaries * Working with configs and JSON
- Collections module → defaultdict, Counter

Commonly used in automation and log parsing.

3. Shell & System Automation

- Modules: os, subprocess, shutil, pathlib
- Run shell commands (ls, git, docker)
- Automate file cleanup, restarts, port scans
  Python can replace repetitive bash scripts.

4. Working with JSON & YAML

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- Parse and generate JSON using the json module

- Read and write YAML files using pyyaml

Essential for handling config files, Ansible, and Kubernetes.

5. REST API Automation

- Use the requests library

- Call APIs for Jenkins, GitHub, Slack, AWS

- Automate tasks and parse API responses

  APIs let Python interact with your DevOps tools.

6. Log Parsing & Monitoring

- Use string methods, regex

- Filter logs by time, error keywords

- Create alerts or reports

Helps build lightweight monitoring tools.

7. Python in CI/CD Pipelines

- Use Python scripts in GitHub Actions, Jenkins

- Build custom CLI utilities

- Automate build validation, cleanup

Python integrates smoothly into CI/CD workflows.

8. Python with Docker & Ansible

- Control Docker containers with Docker SDK

- Generate dynamic inventories for Ansible

- Create custom Ansible modules

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Boost your Infra-as-Code skills using Python.

9. Cloud Automation using Python

- Automate AWS using boto3

- Automate Azure, GCP using their SDKs

- Create EC2 instances, S3 buckets, etc. programmatically

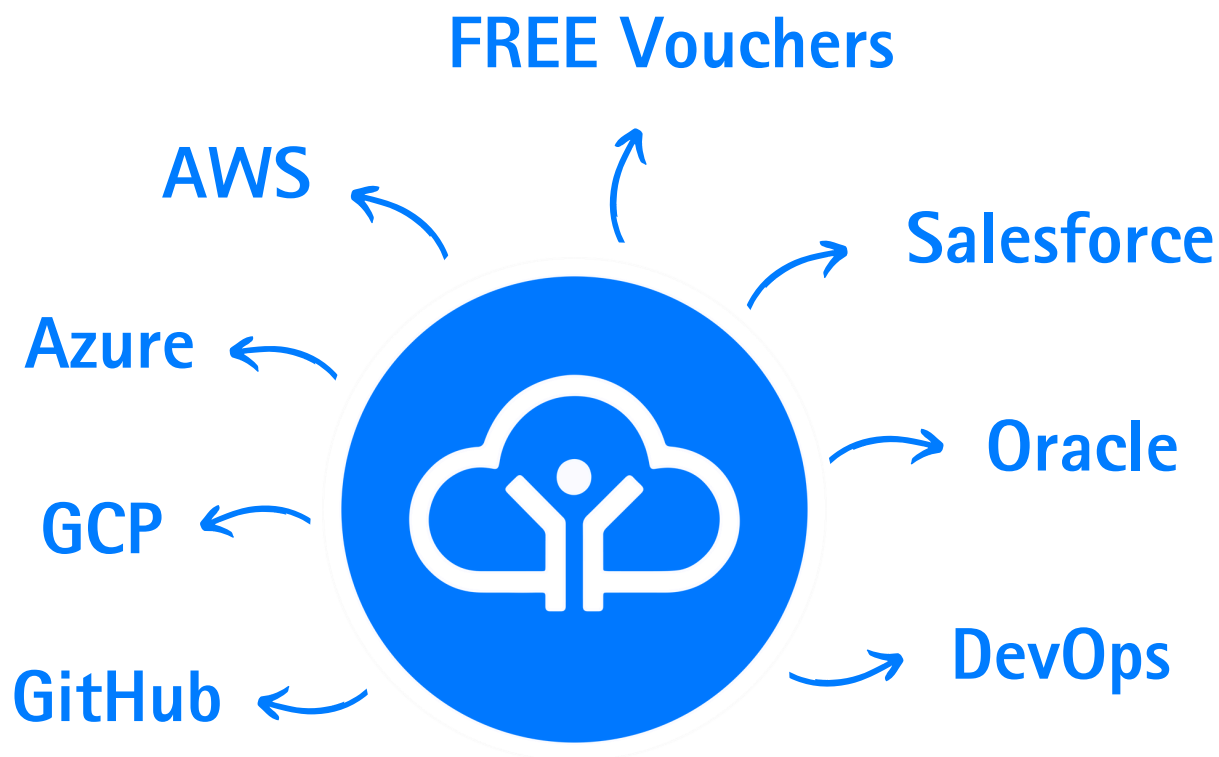No more manual clicks on the cloud dashboard.

10. Python Scripting Best Practices

- Use virtual environments

- Write clean, modular code

- Add proper logging and error handling

- Use linters like flake8, formatters like black

Good practices lead to maintainable and reliable scripts.

Projects to Practice

- EC2 instance cleaner tool

- Server log parser

- Slack/Discord notification bot

- Docker container health monitor

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