

Python in Industry: Testing & Development

1. Python in Software Development (Industry Use)

Why Python?

- Fast development cycle
- Readable and maintainable code
- Huge library ecosystem
- Easy integration with web, data, cloud, and APIs

Key Areas of Development:

a. Web Development

- Frameworks: Django, Flask, FastAPI
- Use: Websites, REST APIs, dashboards

b. AI/ML & Data Science

- Libraries: TensorFlow, scikit-learn, pandas, NumPy, matplotlib
- Use: Predictive models, data analysis, automation

c. Automation & Scripting

- Automating file operations, emails, reports
- Tools: os, shutil, schedule, Selenium

d. Desktop Applications

- GUI libraries: Tkinter, PyQt, Kivy

e. Cloud & DevOps

- Scripting infrastructure

- Interacting with cloud APIs (AWS, GCP)
- Tools: Boto3 (AWS), Ansible, Docker SDK

f. API Development

- Build APIs using FastAPI or Flask
- Interact with services and microservices

2. Python in Software Testing (Industry Use)

Why Python for Testing?

- Easy syntax for writing test scripts
- Large test framework ecosystem
- Good for both manual and automated testing

Types of Testing with Python:

Unit Testing - unittest, pytest

Integration Testing - pytest, nose

Automation Testing (UI/Web) - Selenium, Playwright, PyAutoGUI

API Testing - requests + pytest

Regression Testing - CI/CD tools like Jenkins, GitHub Actions

Performance Testing - Locust

3. Industry Tools & Libraries in Python

Area - Tool - Purpose

Web Dev - Flask, Django, FastAPI - Web apps, APIs

Automation - Selenium, pyautogui - Web/GUI automation

Testing - unittest, pytest - Writing and running tests

API Testing - requests, HTTPX - HTTP requests & responses

CI/CD - GitHub Actions, Jenkins - Auto testing & deployment

Data - pandas, NumPy - Data processing

ML - scikit-learn, TensorFlow - AI/ML models

4. Career Roles Using Python

Software Developer - Building applications

QA Automation Engineer - Writing test cases, scripts

DevOps Engineer - Writing deployment scripts

Data Analyst/Data Scientist - Data work and ML

Backend API Developer - Creating REST APIs

SDET (Software Dev in Test) - Dev + test automation

5. Summary

Python is used in the industry to speed up development and automate testing.

It fits in every phase: from coding, testing, CI/CD, deployment, to monitoring.