



Implementing CI/CD with GitHub Actions

- Four half day training sessions (5 hours each day)
- Lecture and Hands-on Labs
- Practical Course: Real-world application

Course Overview

This hands-on DevOps training course, students will build and manage CI/CD pipelines using GitHub Actions on a headless Ubuntu 24.04 VM. Through practical labs, they'll configure Git repositories, define automated workflows, run tests, deploy sample applications (microservices and monolithic), and handle failures—all while mastering speed, stability, and visibility. By the end, they'll push code, test it, deploy to mock environments, and recover from issues with confidence.

Review this course online at <https://www.alta3.com/courses/github-actions>

Who Should Attend

- DevOps Engineers
- Software Developers
- Quality Assurance & Site Reliability Professionals

What You'll Learn

- Build custom CI/CD workflows with GitHub Actions
- Manage Python, Java, and Go projects using Git
- Automate builds, tests, and deployments to platforms like Azure and Kubernetes
- Use AI tools like GitHub Copilot for config snippets and code suggestions

Outline

Introduction




- 🗣️ Lecture: Introduction to DevOps Concepts
- 🗣️ Lecture: Overview of GitHub
- 🖥️ Lecture + Lab: GitHub for Organizations
- 🗣️ Lecture: Collaborating on GitHub

GitHub Essentials

- 🖥️ Lecture + Lab: Introduction to Git
- 🖥️ Lecture + Lab: Branches and Pull Requests
- 🖥️ Lecture + Lab: Searching GitHub Projects
- 🖥️ Lecture + Lab: GitHub Codespaces and Visual Studio Code

Intro to GitHub Actions










- 🗣️ Lecture: Importance of Pipelines and Testing
- 🗣️ Lecture: Overview of GitHub Actions

-  Lecture: GitHub Actions for CI CD Workflows
-  Lecture: Getting Started with GitHub Actions Workflow
-  Lecture + Lab: Create a Simple GitHub Action









Core CI/CD Pipeline Setup

-  Lecture: Keywords for GitHub Action Workflows
-  Lecture + Lab: Troubleshooting Workflow Failures




GitHub WorkFlows

-  Lecture + Lab: GitHub Actions and Conditional if
-  Lecture + Lab: Workflows that Fail, Recover, and use Contexts
-  Lecture: GitHub Action Runner Images
-  Lecture + Lab: Windows and Linux Runners
-  Lecture: Environmental Variables
-  Lecture + Lab: GitHub Actions, Ansible and REST APIs
-  Lecture + Lab: GitHub Actions, Java, and Artifacts
-  Lecture: Converting Bamboo Pipelines to GitHub Actions
-  Lecture + Lab: CHALLENGE - Conditionals

Testing

-  Lecture + Lab: Containerize and Test
-  Lecture: Inputs and Matrix Strategy
-  Lecture + Lab: Selenium Testing with JavaScript
-  Lecture + Lab: Testing with Playwright
-  Lecture: Workflows that Test
-  Lecture + Lab: GitHub Actions, Java, Maven, and Unit Tests
-  Lecture: UFT One Tests Using GitHub Actions
-  Lecture + Lab: GitHub Workflow to Build and Test a GoLang App






Secrets

-  Lecture: Securing Secrets with GitHub
-  Lecture + Lab: Secure Secrets in Workflows
-  Lecture + Lab: CHALLENGE - Create a Workflow with Secrets



Security

-  Lecture: Intro to DevSecOps
-  Lecture + Lab: GitHub Actions - GitLeaks
-  Lecture: GitHub Credential Types
-  Lecture + Lab: GitHub OAuth


Environmental

-  Lecture + Lab: GitHub Environments
-  Lecture + Lab: Docker Build and Publish to GitHub Container Registry
-  Lecture + Lab: Branch Protection
-  Lecture + Lab: Template Repository
-  Lecture + Lab: RepoA trigger RepoB and download-artifact

AWS

-  Lecture + Lab: GitHub Actions and AWS
-  Lecture + Lab: GitHub Actions - Terraform

Handling Failures

-  Lecture: Failure Handling Overview

Metrics

-  Lecture + Lab: GitHub Repository and Action Metrics

Next Courses

- Jenkins Automation Server Essentials (2 days) (<https://alta3.com/courses/jenkins>)
- Kubernetes Bootcamp (5 days) (<https://alta3.com/courses/kubernetes>)
- Python 201 - API and API Design (5 days) (<https://alta3.com/courses/api>)
- Go 101 - Go Programming (5 days) (<https://alta3.com/courses/golang>)