

## **GH-200: Automate your workflow with GitHub Actions**

**IMPORTANT:** This course is designed to be delivered in one full day. The activities are approximately 90% instructional-led and 10% student-interactive knowledge checks.

### **Learning objectives**

- Enable and configure GitHub Actions in enterprise settings by applying repository and environment policies, branch protection rules, workflow permissions, and usage monitoring.
- Troubleshoot workflow failures and escalate issues appropriately by generating logs, support bundles, and leveraging GitHub Support resources.
- Design secure and scalable CI/CD workflows using best practices for YAML workflows that build, test, lint, and deploy applications.
- Integrate automated security checks and code scanning into pipelines to shift security left and enforce quality gates.
- Manage secrets and environment variables securely by scoping, rotating, auditing encrypted secrets, and integrating external vaults where needed.
- Configure, secure, scale, and monitor runners (GitHub-hosted and self-hosted) to support diverse workloads with high availability and compliance.
- Automate publishing of packages and container images via GitHub Packages and Container Registry, including versioning and release processes.
- Extend and optimize GitHub Actions through custom Actions development, GitHub Script and REST API scripting, matrix strategies, caching, and artifact management.
- Orchestrate self-hosted runner fleets and enforce policy-controlled action usage while integrating external services via Marketplace Apps and webhooks.
- Monitor workflow performance, control costs, and maintain governance to ensure enterprise-grade reliability and efficiency.

### **Audience profile**

Audience profile for this course is the following:

- DevOps Engineers looking to streamline support escalation, automate administrative tasks with GitHub APIs, and optimize CI/CD pipelines across enterprise environments.
- Developers seeking to build secure, consistent workflows, extend GitHub's capabilities with Marketplace integrations, and enhance team productivity.
- Solution Architects interested in scaling collaboration through Enterprise Teams and Apps, improving governance, and designing resilient, automated development infrastructures.

### **Audience prerequisites**

The audience for this 1-day course includes DevOps Engineers, Developers, and Solution Architects who want to strengthen their expertise in managing GitHub Enterprise environments.

Candidates should have the following:

- A basic understanding of software development concepts and experience using at least one programming or scripting language.
- Familiarity with GitHub, including version control workflows (e.g., branching, pull requests) and working within repositories.
- General knowledge of enterprise environments or development at scale, including CI/CD practices, access controls, and automation tools.
- Experience with integrated development environments (IDEs) and a working knowledge of collaborative development tools or platforms.

## **Student training content**

The student training content for this course is in Microsoft Learn and the exercises (hands-on or demonstrations) are included within the Learn modules.

## **Learning Path and modules**

### **Automate your workflow with GitHub Actions Part 1 of 2**

#### **Module 1: Automate development tasks by using GitHub Actions**

- Introduction
- How does GitHub Actions automate development tasks?
- Identify the components of GitHub Actions
- Configure a GitHub Actions workflow
- Exercise - Create and run a basic GitHub Actions workflow
- Module assessment
- Summary

#### **Module 2: Build continuous integration (CI) workflows by using GitHub Actions**

- Introduction
- How do I use GitHub Actions to create workflows for CI? Customize your workflow with environment variables and artifact data
- Exercise - Create the CI workflow on GitHub
- Module assessment
- Summary

#### **Module 3: Build and deploy applications to Azure by using GitHub Actions**

- Introduction

- How do I use GitHub Actions to deploy to Azure?
- Remove artifacts, create status badges, and configure environment protections
- Exercise - Create a workflow that deploys a web app to Azure
- Module assessment
- Summary

#### **Module 4: Automate GitHub by using GitHub Script**

- Introduction
- What is GitHub Script?
- Exercise - Using GitHub Script in GitHub Actions
- Module assessment
- Summary

### **Automate your workflow with GitHub Actions Part 2 of 2**

#### **Module 5: Leverage GitHub Actions to publish to GitHub Packages**

- Introduction
- What is GitHub Packages?
- Publish to GitHub Packages and GitHub Container Registry
- Knowledge check
- Exercise - Publish to a GitHub Packages registry [learn.microsoft.com](https://learn.microsoft.com/en-us/actions/packages/publishing-to-github-packages)

#### **Module 6: Create and publish custom GitHub actions**

- Introduction
- Create a custom GitHub action
- Publish a newly created action to the GitHub Marketplace
- Module assessment
- Summary

#### **Module 7: Manage GitHub Actions in the enterprise**

- Introduction
- Understanding GitHub Enterprise models
- Manage actions and workflows
- Control access and usage of actions in your enterprise
- Managing and leveraging reusable components in GitHub Actions
- Manage runners
- Configure self-hosted runners for enterprise use Manage encrypted secrets
- Exercise – Use a repository secret in a GitHub Actions workflow
- Module assessment

- Summary

## **Exercises and Demos (7 exercises, 3.5 hours)**

Exercises are to be used as hands-on activities for individual students which are led by the instructor, or demonstrations led by the instructor. The decision to lead hands-on activities or perform demonstrations is the instructor's responsibility.

### **Module 1: Automate development tasks by using GitHub Actions**

- Exercise: Create and run a basic GitHub Actions workflow

### **Module 2: Build continuous integration (CI) workflows by using GitHub Actions**

- Exercise: Create the CI workflow on GitHub

### **Module 3: Build and deploy applications to Azure by using GitHub Actions**

- Exercise: Create a workflow that deploys a web app to Azure

### **Module 4: Automate GitHub by using GitHub Script**

- Exercise: Using GitHub Script in GitHub Actions

### **Module 5: Leverage GitHub Actions to publish to GitHub Packages**

- Exercise: Publish to a GitHub Packages registry

### **Module 6: Create and publish custom GitHub actions**

- Exercise: Create and publish a custom GitHub Action & Publish to the GitHub Marketplace

### **Module 7: Manage GitHub Actions in the enterprise**

- Exercise: Use a repository secret in a GitHub Actions workflow