GH-100: GitHub Fundamentals – Administration

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

After completing this course, students will be able to:

- Identify and escalate issues appropriately by creating and sharing support bundles with GitHub Support for faster resolution.
- Leverage Enterprise Teams and Enterprise Apps to improve collaboration, management, and governance within GitHub Enterprise.
- Design secure and scalable developer workflows using best practices for branching strategies, code reviews, automation, and release management.
- Implement CI/CD pipelines to streamline the software delivery lifecycle with consistent build, test, and deployment processes.
- Configure, secure, scale, and monitor runners (GitHub-hosted and self-hosted) to keep builds fast, available, and compliant.
- Safeguard credentials by scoping, rotating, and auditing encrypted secrets and integrating external vaults for centralized management.
- Extend and automate GitHub using rate-efficient API scripts, Marketplace Apps, and custom Actions to connect third-party tools and streamline administration.

Audience profile

The 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

GitHub fundamentals - Administration basics and product features Part 1

Module 1: Introduction to GitHub

- Introduction
- What is GitHub?
- Components of the GitHub flow
- GitHub is a collaborative platform
- GitHub platform management
- Exercise - A guided tour of GitHub
- Module assessment
- Summary

Module 2: Introduction to GitHub administration

- Introduction
- What is GitHub administration?
- How does GitHub authentication work?
- How does GitHub organization and permissions work?
- Managing enterprise access, permissions, and governance
- Module assessment
- Summary

Module 3: Introduction to GitHub's products

- Introduction
- GitHub accounts and plans
- GitHub Mobile and GitHub Desktop

- GitHub billing
- License Usage Stats
- License Usage Stats in Machine and Peripheral Devices
- Metered Usage Reports
- Module assessment
- Summary

Module 4: Maintain a secure repository by using GitHub best practices

- Introduction
- How to maintain a secure GitHub repository
- Automated security
- Exercise – Add a .gitignore file
- Module assessment
- Summary

GitHub fundamentals - Administration basics and product features Part 2

Module 5: Manage sensitive data and security policies within GitHub

- Introduction
- Setting security policies
- Create and manage repository rulesets
- Reporting and logging
- Exercise – Remove commit history
- Module assessment
- Summary

Module 6: Authenticate and authorize user identities on GitHub

- Introduction
- User identity and access management
- User authentication
- User authorization
- Team synchronization
- Module assessment
- Summary

Module 7: GitHub administration for enterprise support and adoption

- Introduction
- GitHub Enterprise features
- Support for GitHub Enterprise
- Scale your enterprise deployment

- GitHub Enterprise Managed Users
- Module assessment
- Summary

Module 8: 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

Module 9: 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
- GitHub Packages for code packages
- Module assessment
- Summary

Exercises and Demos (5 exercises, 1.5 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: Introduction to GitHub

- Exercise – A guided tour of GitHub

Module 4: Maintain a secure repository by using GitHub best practices

- Exercise – Add a .gitignore file

Module 5: Manage sensitive data and security policies within GitHub

- Exercise – Remove commit history

Module 8: Manage GitHub Actions in the enterprise

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

Module 9: Leverage GitHub Actions to publish to GitHub Packages

- Exercise – Publish to a GitHub Packages registry