GH-300: GitHub Copilot Fundamentals

IMPORTANT: This course is designed to be delivered in one full day. The activities are approximately 70% instructional led and 30% student interactive exercises and/or instructor demos.

Learning objectives

After completing this course, students will be able to:

- Understand and apply the principles of responsible AI usage.
- Configure and troubleshoot GitHub Copilot in various development environments.
- Utilize GitHub Copilot's features for code suggestions and completions.
- Craft effective prompts to optimize GitHub Copilot's performance.
- Integrate GitHub Copilot into different programming languages and workflows.
- Enhance coding efficiency and productivity with advanced GitHub Copilot techniques.

Audience profile

Audience profile for this course is the following:

- Developers looking to enhance their coding efficiency with AI-powered tools.
- Programmers interested in learning about responsible AI usage and ethical standards.
- Software engineers seeking to integrate GitHub Copilot into their development workflows.
- Coders wanting to improve their prompt engineering skills for better AI-generated code suggestions.

Audience prerequisites

The audience for this 1-day course consists of developers, programmers, software engineers, and coders who want to enhance their coding efficiency, learn about responsible AI usage, and integrate GitHub Copilot into their development workflows.

NOTE: The exercise activities in this 1-day class are Advanced and require intermediate knowledge of Git and GitHub functions and features.

Candidates should have the following:

- Basic understanding of programming concepts and experience with at least one programming language.
- Familiarity with integrated development environments (IDEs) and version control systems like GitHub.

- Foundational knowledge of AI and machine learning principles.

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 Paths and modules

Learning Path: GitHub Copilot Fundamentals Part 1 of 2

Module 1: Responsible AI with GitHub Copilot

- Introduction
- Mitigate AI risks
- Microsoft and GitHub's six principles of responsible AI
- Knowledge check
- Summary

Module 2: Introduction to GitHub Copilot

- Introduction
- GitHub Copilot, your AI pair programmer
- Interact with Copilot
- Set up, configure, and troubleshoot GitHub Copilot
- Exercise - Develop with AI-powered code suggestions by using GitHub Copilot and VS Code
- Knowledge check
- Summary

Module 3: Introduction to prompt engineering with GitHub Copilot

- Introduction
- Prompt engineering foundations and best practices
- GitHub Copilot user prompt process flow
- GitHub Copilot data
- GitHub Copilot Large Language Models (LLMs)
- Knowledge check
- Summary

Module 4: Using advanced GitHub Copilot features

- Introduction
- Advanced GitHub Copilot features
- Exercise - Set up GitHub Copilot to work with Visual Studio Code

- Applied GitHub Copilot techniques
- Exercise - Update a web API with GitHub Copilot
- Knowledge check
- Summary

Module 5: GitHub Copilot Across Environments: IDE, Chat, and Command Line Techniques

- Introduction
- Code completion with GitHub Copilot
- GitHub Copilot Chat
- GitHub Copilot for the Command Line
- Knowledge check
- Summary

Module 6: Management and customization considerations with GitHub Copilot

- Introduction
- Explore GitHub Copilot plans and their associated management and customization features
- Explore contractual protections in GitHub Copilot and disabling matching public code
- Manage content exclusions
- Troubleshoot common problems with GitHub Copilot
- Knowledge check
- Summary

Learning Path: GitHub Copilot Fundamentals Part 2 of 2

Module 7: Developer use cases for AI with GitHub Copilot

- Introduction
- Boost developer productivity with AI
- Align with developer preferences
- AI in the Software Development Lifecycle (SDLC)
- Understand limitations and measure impact
- Knowledge check
- Summary

Module 8: Develop unit tests using GitHub Copilot tools

- Introduction
- Examine the unit testing tools and environment
- Exercise - Create unit tests by using GitHub Copilot Chat
- Exercise - Create unit tests for specific conditions by using GitHub Copilot
- Exercise - Complete the "create unit tests" challenge

- Review the "create unit tests" solution
- Knowledge check
- Summary

Module 9: Introduction to GitHub Copilot Business

- Introduction
- About GitHub Copilot for Business
- GitHub Copilot for Business use cases and customer stories
- How to get started with GitHub Copilot for Business
- Knowledge check
- Summary

Module 10: Introduction to GitHub Copilot Enterprise

- Introduction
- About GitHub Copilot Enterprise
- How to get started
- Knowledge check
- Summary

Module 11: Using GitHub Copilot with JavaScript

- Introduction
- What is GitHub Copilot
- Exercise - Set up GitHub Copilot to work with Visual Studio Code
- Use GitHub Copilot with JavaScript
- Exercise - Update a JavaScript portfolio with GitHub Copilot
- Knowledge check
- Summary

Module 12: Using GitHub Copilot with Python

- Introduction
- What is GitHub Copilot?
- Exercise - Set up GitHub Copilot to work with Visual Studio Code
- Use GitHub Copilot with Python
- Exercise - Update a Python web API with GitHub Copilot
- Knowledge check
- Summary

Exercises and Demos (10 exercises, 2 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 2: Introduction to GitHub Copilot

- Exercise - Develop with AI-powered code suggestions by using GitHub Copilot and VS Code

Module 4: Using advanced GitHub Copilot features

- Exercise - Set up GitHub Copilot to work with Visual Studio Code
- Exercise - Update a web API with GitHub Copilot

Module 8: Develop unit tests using GitHub Copilot tools

- Exercise - Create unit tests by using GitHub Copilot Chat
- Exercise - Create unit tests for specific conditions by using GitHub Copilot
- Exercise - Complete the "create unit tests" challenge

Module 11: Using GitHub Copilot with JavaScript

- Exercise - Set up GitHub Copilot to work with Visual Studio Code
- Exercise - Update a JavaScript portfolio with GitHub Copilot

Module 12: Using GitHub Copilot with Python

- Exercise - Set up GitHub Copilot to work with Visual Studio Code
- Exercise - Update a Python web API with GitHub Copilot