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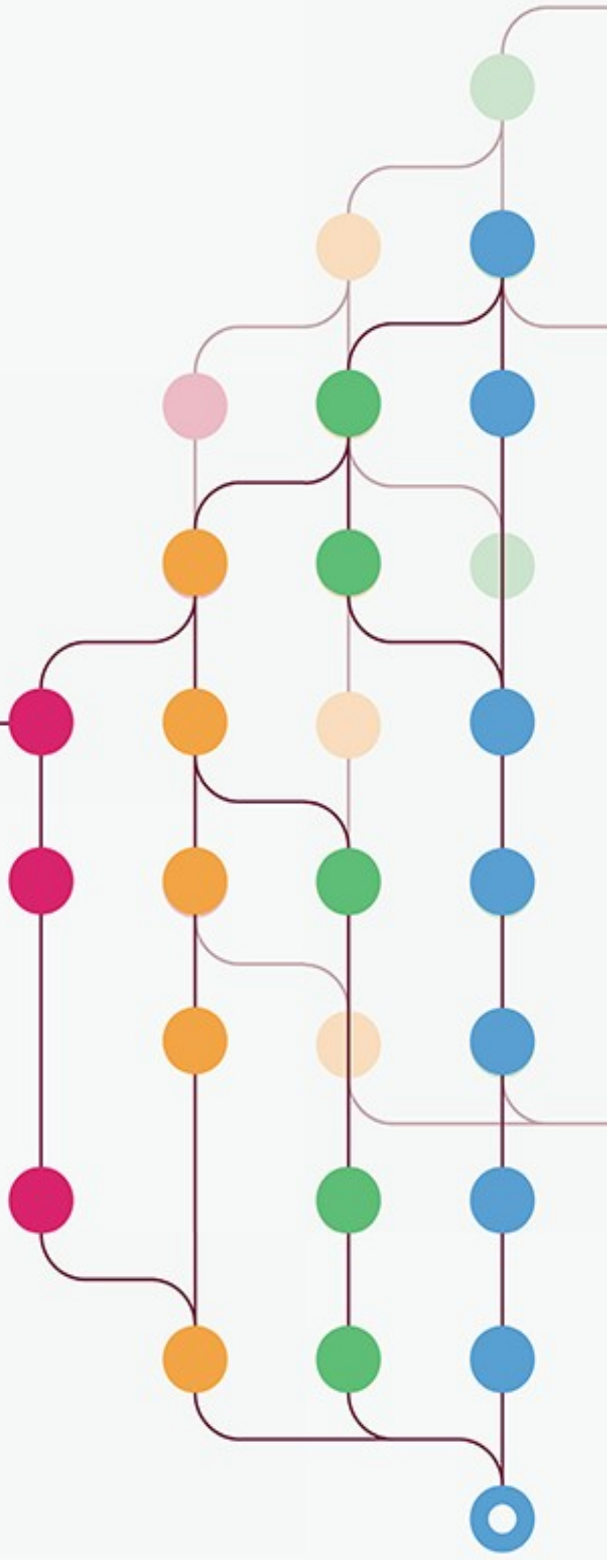
GitHub Foundations Certification Guide



Essential skills, real-world labs, and exam strategies for GitHub beginners

Ayodeji Ayodele

Forewords by:

Irshad Burtally
Senior Director,
Customer Success Architecture, GitHub

Ali Condah
Senior Director,
Certification & Enablement, GitHub

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To my family, Adeola, Luke, and Jude. You are my rock!

– Ayodeji Ayodele

Forewords

In today's technology landscape, where innovation cycles are accelerating and software is at the heart of every industry, the ability to collaborate effectively and deliver secure, scalable code has never been more essential. Platforms such as GitHub do more than merely enabling this evolution; they lead it. As the world's leading platform for developer collaboration, GitHub has become synonymous with modern software development, DevOps maturity, and open source excellence.

It is within this context that Ayodeji's work on the GitHub Foundations Certification emerges as both timely and valuable. This book is not just a study guide; it is a gateway into the core practices that define today's high-performing engineering teams. For developers, team leads, and IT professionals at any stage of their career, the GitHub Foundations Certification, and by extension this book, provides a structured pathway to mastering the core capabilities of GitHub. The chapters are well structured, with hands-on labs, and build incrementally on the knowledge required to learn the version control, collaboration, automation, and security capabilities of the platform.

What sets this work apart is Ayodeji's unique ability to distill complex concepts into accessible insights while grounding them in real-world relevance. His experience in the field, combined with a deep understanding of developer workflows, gives this book an authority that extends beyond exam preparation. You will gain the skills needed to pass the certification and also come away with a deeper appreciation of how GitHub can transform the way individuals and teams build software.

As someone who works closely with enterprise leaders and software practitioners alike, I have seen firsthand how foundational knowledge of GitHub can unlock efficiencies across the entire software life cycle. It fosters collaboration, enables faster innovation, and embeds security and compliance by design. In short, it turns good teams into great ones.

Ayodeji's contribution here will help nurture that transformation across countless careers and organizations. Whether you're a student just starting out, an educator shaping future engineers, or a professional looking to formalize your skills, this book will serve as a reliable companion on your journey. It mirrors the advice and enablement we provide to our developer communities and enterprise customers.

I commend Ayodeji for this important work and encourage you, the reader, to approach it not just as a manual for certification but as a step toward mastering the tools and practices that will define the future of software.

Irshad Burtally

Senior Director, Customer Success Architecture,

GitHub

The GitHub Foundations Certification marks an important milestone not just for individuals looking to validate their skills but for anyone seeking to build a deeper understanding of the tools that power modern software development and collaboration. As GitHub becomes increasingly central to how the world builds software, this certification offers a clear, accessible path for learners at all levels to demonstrate foundational knowledge and confidence in using GitHub effectively.

This book was created to help you prepare for that journey.

Rooted in the real-world expertise of GitHub's own Ayodeji Ayodele, who works within our Customer Success team, this guide combines the same best practices we use to onboard our enterprise customers with curated learning pathways designed for public learners. You'll gain practical insight into workflows, terminology, collaboration strategies, and the core concepts behind repositories, version control, and project automation—essentials for anyone using GitHub in today's workplace.

But we also recognize that technology is constantly evolving. That's why this book doesn't just help you prepare for the certification—it also points you to where you can find the most up-to-date information, ensuring you stay current well beyond the exam.

This book also complements the content and hands-on labs available through GitHub Learn and aligns with training developed in collaboration with Microsoft Worldwide Learning and other trusted third-party providers. Whether you prefer instructor-led training, on-demand videos, or interactive labs, the GitHub Foundations Certification journey meets you where you are, making learning accessible, engaging, and relevant.

We're also at a unique moment in the evolution of learning itself. The rise of generative AI is transforming how we write, build, and think. GitHub Copilot is just one example of how AI is enabling both developers and non-developers to accelerate their work—and with it comes a growing need for individuals to understand the foundational tools that support this new wave of innovation.

This book is your guide to mastering the fundamentals, validating your skills, and joining a global community of learners and builders. Whether you're just getting started or looking to formalize your knowledge, the GitHub Foundations Certification—and the journey you will take through these pages—will help you take that next step with clarity and confidence.

Let’s get started!

Ali Condah

Senior Director, Certification & Enablement,

GitHub

Contributors

About the author

Ayodeji Ayodele, also known as **"Ayo,"** is a seasoned architect, software engineer, and DevOps coach with over 20 years of experience across industries including finance, tech, FMCG, and the public sector. Currently a senior customer success architect at GitHub, he helps enterprise clients unlock the full potential of modern software delivery. Ayo is passionate about building innovative, user-centric solutions and has worked with teams across Asia, Oceania, and Africa to champion Agile and DevOps practices. When he's not immersed in technology, Ayo enjoys football, music, and exploring new places around the world.

I want to especially thank my loving wife and sons for their patience, and the people who are close to me and have guided me all these years. To my great colleagues and amazing hubbers helping the world build software, Merci!

About the reviewers

Massimo Bonanni, a Microsoft Technical Trainer, excels in tech and community leadership. A six-time Microsoft MVP, Intel Black Belt, and Software Innovator, he drives Azure skill enhancement. He has delivered over 200 conference sessions in a decade. Massimo has founded Italian tech communities. He is also a dog lover, reader, and LEGO enthusiast.

My deep gratitude to the editorial team. To my wife, Floriana, and to my family: your unwavering support is invaluable. Thanks to the vibrant tech community: your enthusiasm fuels my work.

Jerome Hardaway is a software engineer, instructor, and technical author with a background in the United States Air Force. He is the founder and executive director of Vets Who Code, a nonprofit that helps military veterans transition into tech careers. With over a decade of experience, Jerome has contributed to developer education at LinkedIn Learning, Frontend Masters, and GitHub, and has been featured by major tech organizations. He has authored and reviewed several publications focusing on developer tools, career growth, and open source. Jerome is passionate about using technology to create economic empowerment and increase access to opportunity.

I want to thank the Vets Who Code community for their inspiration, and my wife, Shatara, for her love and patience. My deep gratitude to Natalia, whose thoughtful critiques and notes sharpen my thinking and make all my work better. I'm also thankful for my family's support, and to Ayumi for her constant insight and empathy. I'm honored to have played a part in bringing this book to life.

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Ask questions, provide solutions to other readers, chat with the authors via Ask Me Anything sessions, and much more. Scan the QR or visit the link to join the community.

https://packt.link/deep-engineering

Preface

Hello! Welcome to *GitHub Foundations Certification Guide*. GitHub is the most advanced AI-powered collaborative developer platform; hundreds of millions of developers across the world build software on it. This book is a guide to the GitHub Foundations Certification, one of the five exams available as of the time of writing. It is the entry-level exam, and arguably the easiest of the five (although this is subjective!).

GitHub Certifications help you to reinforce your knowledge, establish your skills, and prove your proficiency in using the platform.

This book serves as a comprehensive guide to preparing for the GitHub Foundations Certification exam, detailing the critical components, expectations, and strategies necessary for success. It outlines the significance of the GitHub Foundations Certification, which validates expertise in Git and GitHub, and highlights the competitive edge it provides in the job market. The certification validates skills in navigating the platform, collaborating securely, and contributing effectively to software and open source projects.

I will provide information on the exam structure, preparation strategies, and domains to focus on to increase your chances of acing the exam. In addition, I will dive deeper into the world of Git and GitHub, highlighting the various features and products. You will learn the basics of Git repositories, source control management on GitHub, GitHub issues, pull requests, projects, GitHub Actions, Copilot, Discussions, and many other features that have made the world love it so much.

There are two relevant takeaways from Insight's report in January 2025 (https://interviewprep.org/are-software-developers-in-demand-opportunities-and-growth/):

- **Digital transformation**: The ongoing digital transformation across various industries, such as healthcare, finance, and retail, is driving the demand for skilled developers. Companies are enhancing their digital presence and operational efficiency, which requires continuous development and optimization of software solutions.

- **Emerging technologies**: The integration of emerging technologies such as **artificial intelligence** (**AI**), machine learning, and blockchain is creating new opportunities for developers. Businesses need developers proficient in both traditional programming languages and cutting-edge innovations.

Excellence in teamwork and practical experience with collaborative tools and version control systems would be sought after. Proficiency on GitHub will set you apart!

Who this book is for

This book is for software developers and engineers looking to master Git and GitHub for efficient code management, project collaboration, and streamlined workflows. Infrastructure engineers and system administrators will benefit from learning how to manage scripts and track infrastructure changes.

Educators and trainers can use this guide to teach software development and prepare students for industry certifications. Aspiring developers and tech professionals will find it a valuable resource for building essential GitHub skills and advancing their software development careers.

It is aimed at entry-level developers, seasoned software engineers, platform engineers, and project managers, providing a pathway to exciting career opportunities.

What this book covers

Sprint 0, Preparing for the Certification, helps you get ready for the certification journey, outlining the necessary preparations and mindset.

Chapter 1, *Introduction to Version Control with Git*, introduces the concept of version control, its importance in software development, and the basics of Git. You will learn why Git is the industry standard for version control and how it can significantly improve coding efficiency and collaboration.

Chapter 2, *Navigating the GitHub Interface*, explores the GitHub platform, helping you understand its interface and learn how to navigate through its various features. This chapter is crucial for utilizing GitHub effectively for project management and collaboration.

Chapter 3, *Repository Creation and Management*, discusses creating and managing GitHub repositories, including best practices for naming, initializing, and licensing.

Chapter 4, *Basic Git Commands and Workflows*, guides you through intermediate Git commands, flags, and workflows, including setting up repositories, making changes, collaborating with others, and troubleshooting common issues. You will learn how to use Git for everyday development tasks, ensuring a smooth and efficient workflow.

Chapter 5, *Branching and Merging Strategies*, examines the branching model, as well as branching and merging strategies in Git and GitHub, highlighting structured branching for team collaboration and techniques to enhance productivity and code quality.

Chapter 6, *Pull Requests and Code Reviews*, explains the concept of pull requests and code reviews on GitHub for maintaining code quality and fostering collaboration in software development. It highlights best practices for maintaining code quality through peer reviews.

Chapter 7, *Issues, Projects, Labels, and Milestones*, provides a basic guide to GitHub's project management tools, focusing on issues, labels, and milestones, and includes practical exercises to enhance understanding and application. It also teaches you how to use these features to track progress and organize work within a team.

Chapter 8, *GitHub Actions and Automation*, provides an introductory guide to GitHub Actions, covering its role in **continuous integration and continuous delivery** (**CI/CD**), the concept of pipeline as code, key components and terminologies, practical lab exercises, and best practices for creating and managing workflows.

Chapter 9, *Engaging with the Community through GitHub Discussions*, teaches you about GitHub Discussions, a platform feature that fosters community engagement. This chapter covers how to start discussions, respond to queries, and build a community around projects.

Chapter 10, *Building and Showcasing Your GitHub Presence*, explores how to build and showcase a professional GitHub presence, including creating a standout profile, effectively showcasing projects and contributions, and utilizing GitHub Pages for personal branding.

Chapter 11, *Contributing to Open Source Projects*, discusses how to contribute to open source projects on GitHub, covering topics such as navigating the open source landscape, identifying suitable projects,

understanding open source licensing, and the benefits of contributing to the open source community.

Chapter 12, *Enhancing Development with GitHub Copilot*, explores the transformative impact of generative AI on software development, focusing on GitHub Copilot's capabilities, setup, usage, and best practices to enhance development workflows and elevate coding experiences.

Chapter 13, *Funding Your Projects with GitHub Sponsors*, teaches you how to set up and manage GitHub Sponsors to secure financial support for open source projects, including creating an appealing sponsorship profile, engaging with sponsors, and leveraging sponsorship tiers for sustained project growth.

Chapter 14, *Project Management with GitHub Projects*, is a guide on using GitHub Projects for effective project management, covering setup, customization, key features, and automation to enhance team collaboration and workflow efficiency.

Chapter 15, *Security Practices and User Management*, provides an in-depth exploration of GitHub's security practices and user management, covering topics such as two-factor authentication, branch protection rules, security configurations, managing access and permissions, and best practices for repository security.

Chapter 16, *Mock Exams and Study Strategies*, includes deeper preparation tips, mock exam questions, study strategies, and tips for mastering Git and GitHub features.

To get the most out of this book

You will need to have a basic knowledge of writing/editing code or scripts in one language, as well as the following tools.

Software/hardware covered in the book	**Operating system requirements**
Visual Studio Code 1.99.3	Windows, macOS, or Linux
Command Prompt, PowerShell, or Terminal	
GitHub.com account	

Obtaining a GitHub.com account is free. You can sign up at www.github.com.

If you are using the digital version of this book, we advise you to type the code yourself or access the code from the book's GitHub repository (a link is available in the next section). Doing so will help you avoid any potential errors related to the copying and pasting of code.

Download the example code files

The code bundle for the book is hosted on GitHub at https://github.com/PacktPublishing/GitHub-Foundations-Certification-Guide. We also have other code bundles from our rich

catalog of books and videos available at https://github.com/PacktPublishing. Check them out!

Download the color images

We also provide a PDF file that has color images of the screenshots/diagrams used in this book. You can download it here: https://packt.link/gbp/9781836206057.

Conventions used

There are a number of text conventions used throughout this book.

`CodeInText`: Indicates code words in text, database table names, folder names, filenames, file extensions, pathnames, dummy URLs, user input, and Twitter/X handles. For example: “This will initialize a new repository and create a new `.git` directory containing all the necessary files for version control.”

A block of code is set as follows:

```
public class HelloWorld {
    // This program prints "Hello, World!" to the console
    public static void main(String[] args) {
        System.out.println("Hello, World!");
```

```
    }
}
```

Any command-line input or output is written as follows:

```
git config --global user.name "Your Name"
```

Bold: Indicates a new term, an important word, or words that you see on the screen. For instance, words in menus or dialog boxes appear in the text like this. For example: “Select the **Commit directly to the main branch** option and click on **Commit changes**.”

Warnings or important notes appear like this.

Tips and tricks appear like this.

Get in touch

Feedback from our readers is always welcome.