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Git: Version Control for Everyone

The non-coder's guide to everyday version control for
increased efficiency and productivity

Beginner's Guide

Ravishankar Somasundaram

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PUBLISHING community experience distilled

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BIRMINGHAM - MUMBAI

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Junior Scientist: Apart from winning several prizes in science projects in his lower schoolings, he was awarded the title "Junior Scientist" by the committee consisting of people from the Indian Space Research Organization (ISRO) in an Inter school Science Fest for a model display on *Evolution of Airplanes through Aerodynamics*. This is one of his childhood achievements.

His final year college project, aimed at eliminating the scenario of English alone being the medium of programming in all programming languages, which restricts people who don't know English from getting into the IT field and implementing their ideas, was selected and funded by MIT NRCFOSS and considered as a landmark.

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Finally, thanks to Packt Publishing for giving me this wonderful opportunity to share my knowledge and thank you for reading!

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My gratitude goes out to my intelligent, beautiful, and creative wife Kali M. Whyte-Smalley for always believing in my bold, arguably crazy interests and endeavors, and for encouraging my enthusiasm in bringing these ideas to life and goals to fruition. Thank you to my elegant and selfless mother, Lisa A. Smalley, for encouraging me to stay well-rounded, for showing me the true meaning of fortitude, and for encouraging me to surround myself with people who exemplify these qualities. Thank you to my father Michael G. Smalley for his dedication to our family unit through hard work and commitment, and for recognizing my constant questioning of the world around me not as naivety, but as a desire for truth and knowledge. Thank you to my brother David P. Smalley for continuing to stand as an unyielding ally. Thank you to my charming Persian cat, Desmond, for unknowingly demonstrating that even lifelong dog people can unwillingly become cat people. Finally, thank you to Packt Publishing for giving me this opportunity to share my knowledge, and thank you for reading!

"All men dream: but not equally. Those who dream by night in the dusty recesses of their minds wake in the day to find that it was vanity: but the dreamers of the day are dangerous men, for they may act their dreams with open eyes, to make it possible." - T.E. Lawrence, *Seven Pillars of Wisdom*.

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Preface

This book is a non-coder's guide to get a kick start in using the Git version control system on a daily basis to improve their efficiency and productivity when dealing with all forms of electronic data.

With step-by-step examples and illustrative screenshots, you will be guided through the process of installing, configuring, and mastering the concepts needed to version control your data with the help of the best in class tool, Git.

Concepts in every chapter are explained through simple, day-to-day examples and interesting analogies which makes the learning itself an experience to cherish.

Specifically catered to address the needs of an audience from diverse backgrounds using multiple operating systems such as Microsoft Windows, Linux, and Mac OS, all illustrations are explained using both Graphical User Interface (GUI) and Command-Line Interface (CLI) modes.

The final chapter is dedicated to readers who want to understand the behind the scenes operations of Git's functions which they performed in all other chapters, in simple terms. This will also interest people who have been using Git prior to this book.

By the end of the book, you will not only gain theoretical knowledge but also a hands-on practical understanding and experience about the concepts which are needed to make a difference in the way you deal with digital files.

This book can also be used as a reference or to relearn the concepts that have been discussed in each chapter. It has illustrative examples, wherever necessary, to make sure it is easy to follow.

What this book covers

Chapter 1, Breathe Easy – Introduction to Version Control System, introduces the concept of version controlled systems, its necessity along with its evolution, and more importantly why Git is considered to be the best in class.

Chapter 2, Welcome Aboard – Installing Git, guides you through the installation of Git, specific to your operating system.

Chapter 3, Polishing Your Routine – How to Increase Everyday Productivity, teaches you five basic, important concepts (initiate your repository, add your files to it, start versioning by committing them, travel back using checkout, and reset whenever it is needed) which is all you need to get started with versioning your files using Git.

Chapter 4, Split the Load – Distributed Working with Git, teaches you the essentials of collaborative development by sharing content with others over multiple mediums such as the Internet and intranet and explores various methods to continue the work from different locations with different people.

Chapter 5, Be a Puppet Master – Learn Fancy Features to Control Git's Functions, teaches you a few tips and tricks which can be implemented in various situations to change Git's usual behavior pertaining to the functions which we have come across in earlier chapters.

Chapter 6, Unleash the Beast – Git on Text-based Files, exposes to you a new feature called merging that is considered to be one of the hallmarks of Git. You will learn how to merge content and solve conflicts caused by such merges.

Chapter 7, Parallel Dimensions – Branching with Git, introduces one of Git's most applauded features, the concept called branching, its importance, and the ways it can be implemented to transform your mode of work.

Chapter 8, Behind the Scenes – Basis of Git Basics, takes a deep dive into Git's internals and puts it in simple terms. You will get to know the underlying operations which Git performed when you executed the various Git commands in all of the earlier chapters.

What you need for this book

The basic requirement for learning the concepts in this book will be an administrative (or at least installation) access to a machine running a Windows, Linux, or Mac operating system. And occasionally, Internet connectivity for the said machine.

Apart from this, it's good to have your favorite text editor along with a zip utility (your machine will have one by default) and an office package such as MS Office, OpenOffice, and LibreOffice to create word documents.

Who this book is for

This book is for any one who is computer literate and wants to maintain multiple versions of his/her files in an efficient manner and travel back in time to visit such different versions without juggling numerous files along with their confusing names stored at different locations.

This book is even for people who have prior experience with Git or any other version control system, as they will pick up interesting points from the final chapter which is focused on Git's internals put in simple terms.

Conventions

In this book, you will find several headings appearing frequently.

To give clear instructions of how to complete a procedure or task, we use:

Time for action – heading

1. Action 1
2. Action 2
3. Action 3

Instructions often need some extra explanation so that they make sense, so they are followed with:

What just happened?

This heading explains the working of tasks or instructions that you have just completed.

You will also find some other learning aids in the book, including:

Have a go hero – heading

These set practical challenges and give you ideas for experimenting with what you have learned.

You will also find a number of styles of text that distinguish between different kinds of information. Here are some examples of these styles, and an explanation of their meaning.

Code words in text are shown as follows: "Create a directory called `BCT` on your desktop."