

# Git and GitHub

Jaiden Trawick

# About Me

- Junior at Troy
- Cybersecurity major
- I <3 open-source software

Contact:

admin [at] jaiden [dot] dev

[jaiden.dev](mailto:admin@jaiden.dev)

# You Will Need:

- Your laptop
- A GitHub account
- Basic knowledge of computer science terminology (“Linux”, “source code”, “hash”, etc.)
- Basic knowledge of the command line (how to open PowerShell and type a command)
- A file that you want to track with git (like a hello world program)

# Collaboration Challenges

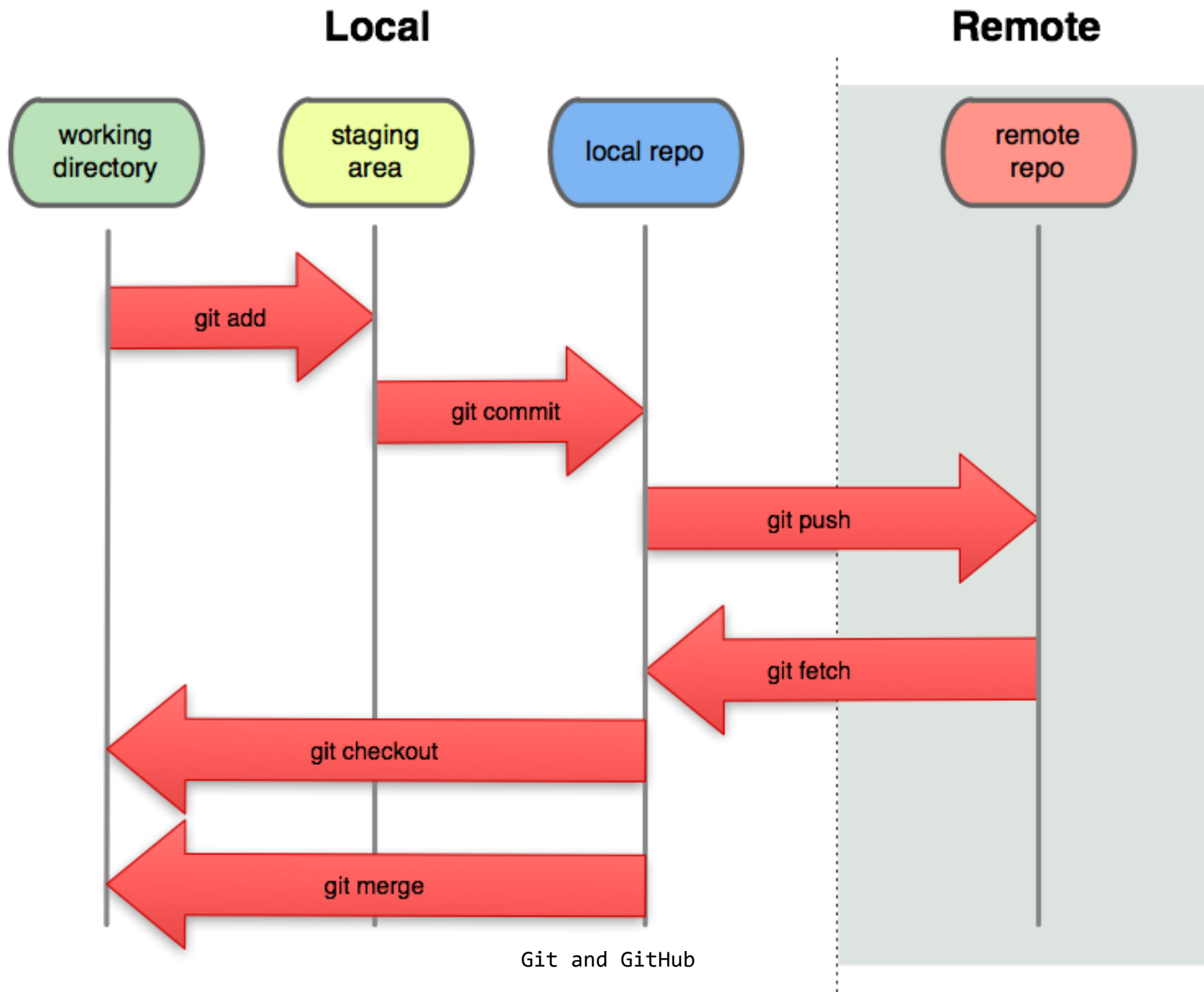
- Each collaborator has a different version of the file
- Merging their personal changes with someone else's can cause conflicts
- Difficult to track project history or undo changes
- Difficult to have multiple branches/versions of the same project
- Sending large files back and forth can be inefficient

# What is git?

- Git is a *distributed file versioning system*
- Read: a collaboration tool
- Git solves the common problems outlined in the previous slide
- Major companies use git, as well as non-profit open-source projects and even solo developers
- Most people use git from the Linux command-line, although GitHub has a web interface

# Git Terminology

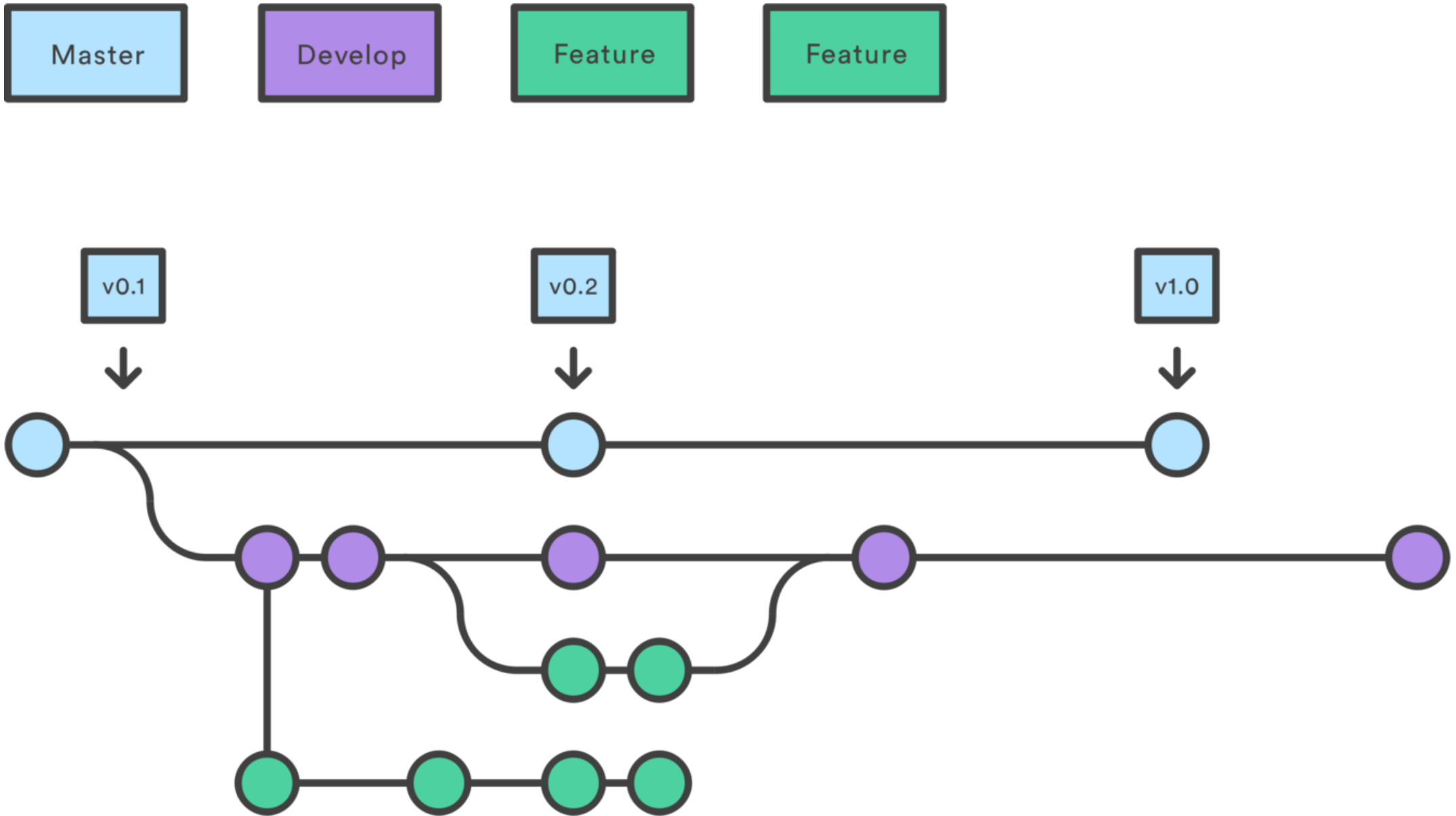
- repository (repo): a collection of files tracked by git
- commit: to add files to a repo
- stage/add: to prepare files to be committed
- branch: a version of files in a repo
- merge: to combine branches
- local repository: a repo on your computer
- remote repository: a repo on someone else's computer (GitHub, BitBucket, your employer, etc.)



# Branches

- *Branches* are a key feature of git
- Multiple people can work on different versions of a project at the same time
- Every project has a master or main branch that all other branches are based on
- Branches are merged with other branches with a *pull request*
- After any conflicts have been solved, the pull request is approved and the branches are merged





# What is GitHub?

- GitHub is a website developers use to host their git repositories
- GitHub also has social features (user profiles, following, liking, etc.)
- GitHub is the most popular git hosting website
- You can publicly display your software projects and easily collaborate with others

# Git vs. GitHub

## Git

- Tool created for the Linux project in 2005
- File versioning system
- Used to create and manage repositories
- Free and open-source

## GitHub

- Company founded in 2009
- Popular git hosting platform
- Hosts git repositories online
- For-profit company owned by Microsoft

# Thanks for Listening!

Any Questions?

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