Git Command Line Interface (CLI)

Business Science

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Contents

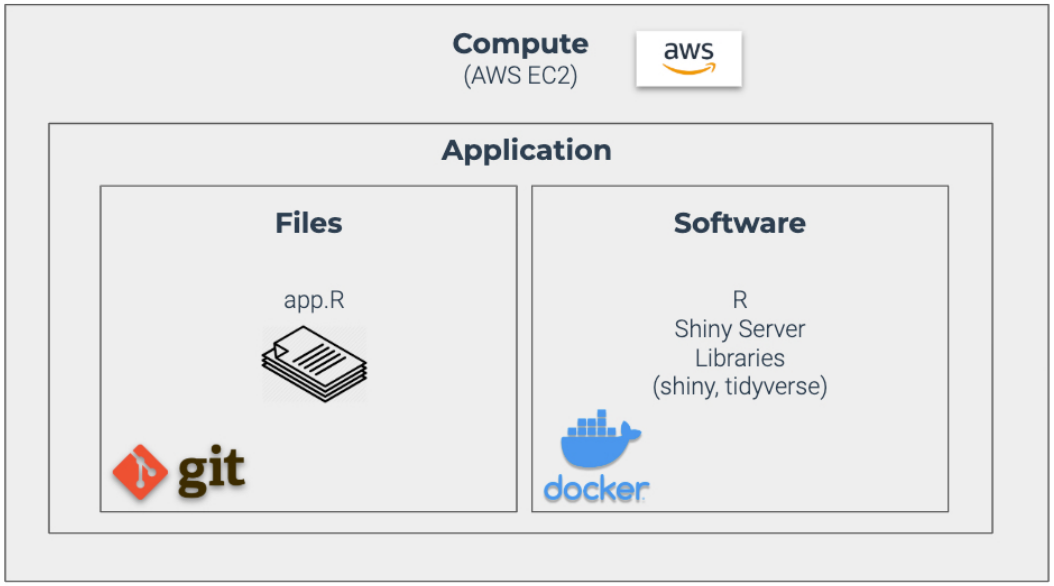
Git Command Line Interface (CLI)

This document covers the basic `git` commands used frequently developing and deploying software.

How Git Works

A `Shiny` App run on AWS EC2 consists of:

1. **Files** - Controlled by `git` version control
2. **Software Environment** - Controlled by `docker` image



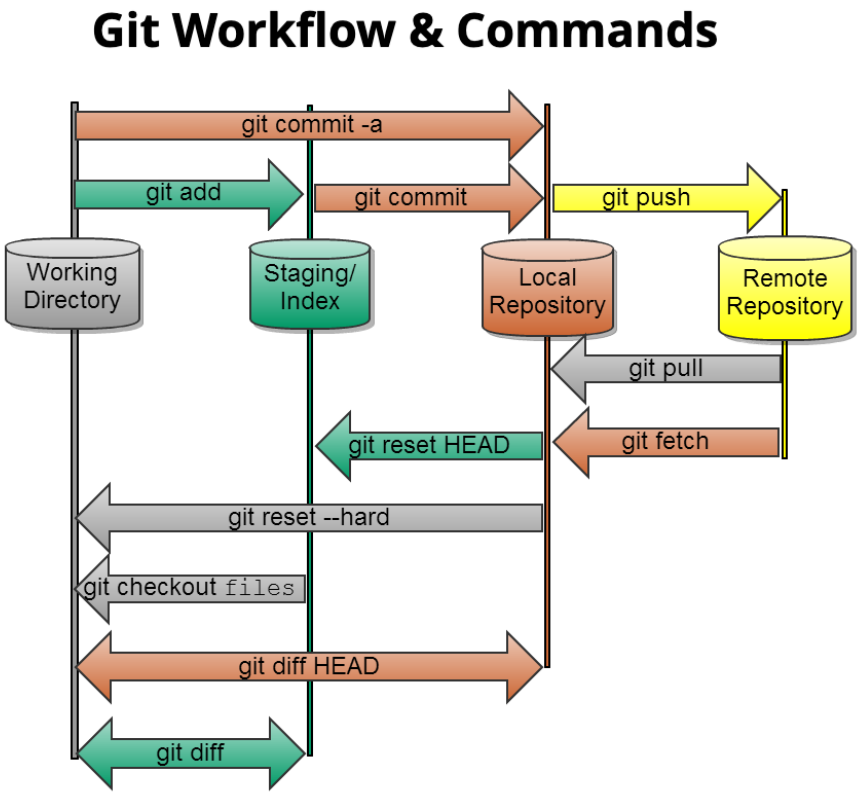
Definitions

1. `GitHub` - An online community for storing and sharing version-controlled software files. Has Public and Private repositories.
2. `Repository` (repo) - A group of files that are version controlled by `git`. Every change made to any of the files is tracked and can be differenced from the working version and any previous version that was committed.
    - `Remote Repository` - A remote repository is one that is stored in a shared location typically on GitHub (or BitBucket, GitLab, Azure, etc).
    - `Local Repository` - The local repository is one that is stored on your computer or your EC2 Server.
3. `commit` - Creates a checkpoint for version controlling your file. As you develop, you should commit often because committing creates a safety harness (rock climbing analogy). The more often you commit, the shorter your fall when you screw something up.
4. `push` and `pull` - These actions are used to send files to (`push`) and from (`pull`) your remote repository.
5. `clone` - Used to setup a local repo from a remote repo. We do this commonly when setting up software on EC2 servers.
6. `branch` - Branches are used for creating prototype software (development version) without modifying the working (production version) until you are ready. Once ready, we `merge` the `branch` (development version) with the `master` (production version).

Installation

- **Mac and Linux** - `git` comes pre-installed on Mac and Linux.
- **Windows** - Visit the git website (https://git-scm.com/download/win) to install on Windows.

Git Workflow



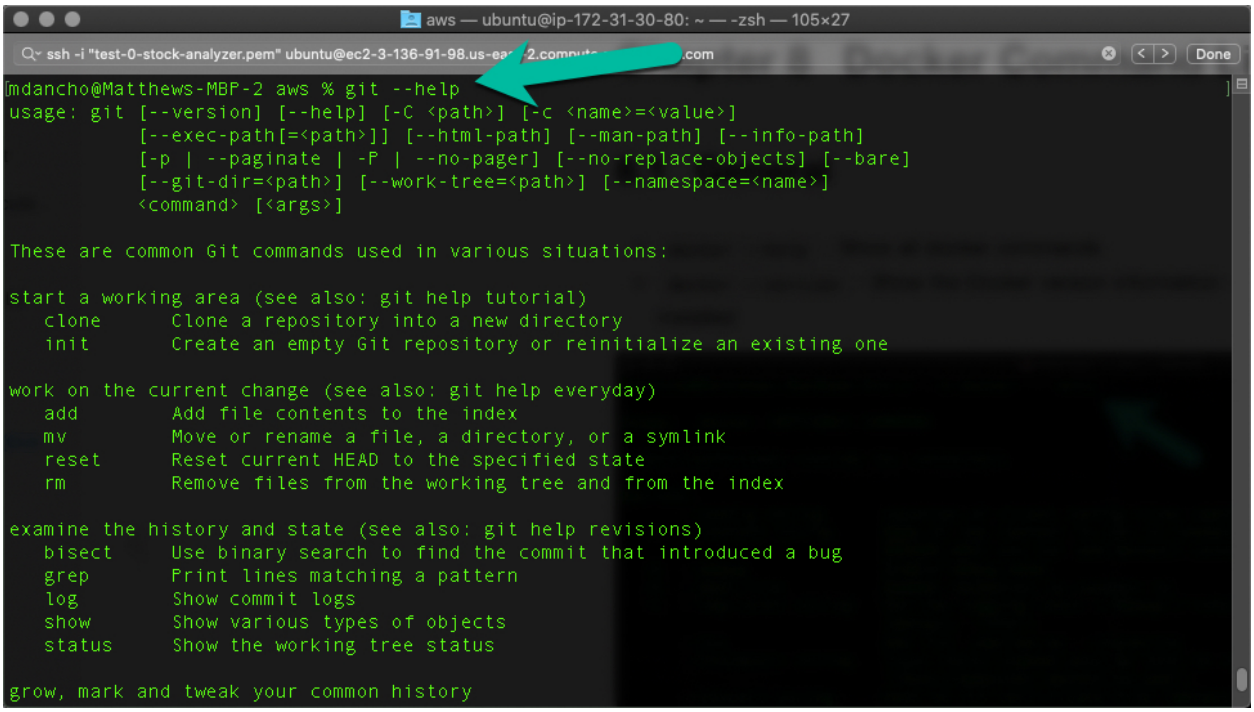
Git Commands

These are the primary commands for working with `git` from the commandline.

Important Note - We will use `RStudio IDE` to abstract away much of the `git` workflow. `RStudio` is integrated tightly with `git` and `GitHub`, which is a massive productivity booster.

General Commands

- `git --help` - Use help to investigate the available commands.
- `git --version` - Useful for getting the version and checking `git` installation.



Local Repo Setup

No Remote Repo set up?

- `git init` - Initialize a Local Repo
- `git commit` - Done to initialize (add) your files to the Local Repo.

Remote Repo already set up?

- `git clone` - Clones a remote repo to your local machine. We do this to get software onto EC2 Servers.

GitHub Repo Setup

Important: Make sure a blank repo exists. Then:

- `git remote add origin https://github.com/user_name/repository.git` - Used to link a local repository with a
- `git push -u origin master` - Pushes your initial commit on your Local Repo to the Remote Repo (e.g. GitHub).

Git Workflow

- `git commit` - Adds snapshots of changed files to your Local Repo.
- `git push` - Pushes committed files from your Local Repo to your Remote Repo (e.g. GitHub)
- `git pull` - Pulls the remote repository files to your local repository

Branches

- `git status` - Find the branch you are currently on
- `git branch` - Creates a new branch
- `git checkout` switches the Local Repository to the specified branch
- `git merge` - Merges a branch with the master. This is typically done via "Pull Requests".