# Tutorial on Git and GitHub

## DS221_2022

**Ghanshyam Chandra, 12/09/22**

# Agenda

- Introduction
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    - Why Git?
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- Getting Started
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    - Overview of Git commands
    - First repository on GitHub
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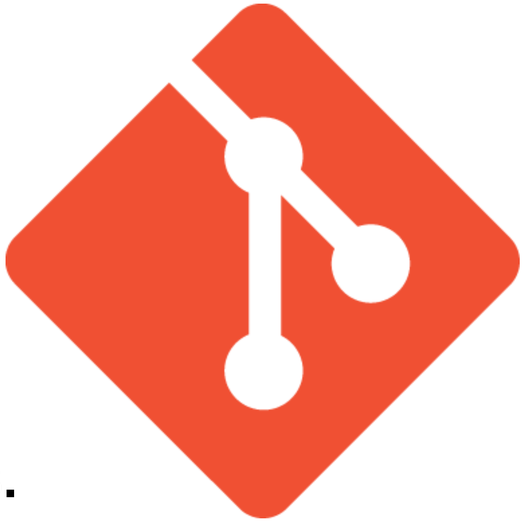
- Stashing in Git

# Introduction

## What is Git?



- Version Control: System to track and manage the code changes.

Reference: https://git-scm.com/

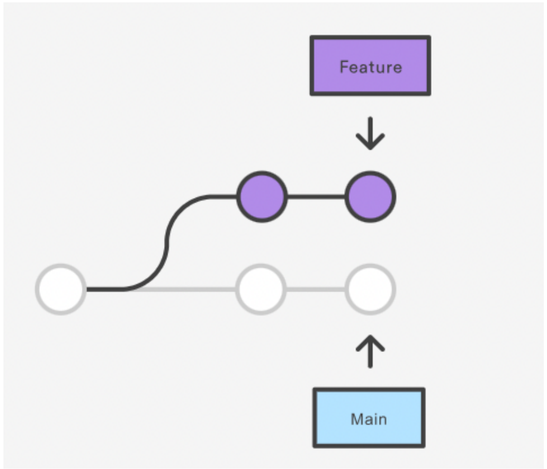
- Extremly popular version control system, it is installed on a local machine and works with/without git host provides, e.g. GitHub and Bitbucket.
- Branching model of a git makes it apart from other version control systems e.g. SVN, SOURCEFORGE etc.
- Branching adds more freedom to add features to code, for example, we can create new branches implement and test ideas and then merge into master branch or just delete the branches.
- Now, what is the GitHub?

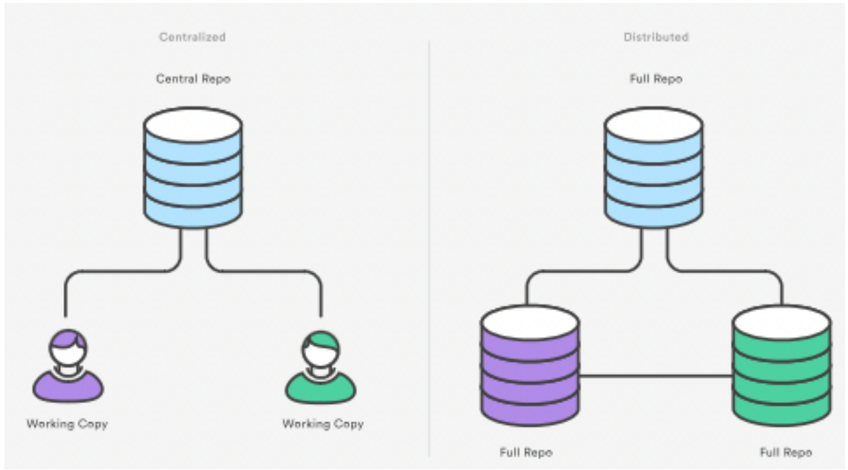
Reference: https://devmountain.com/blog/git-vs-github-whats-the-difference/

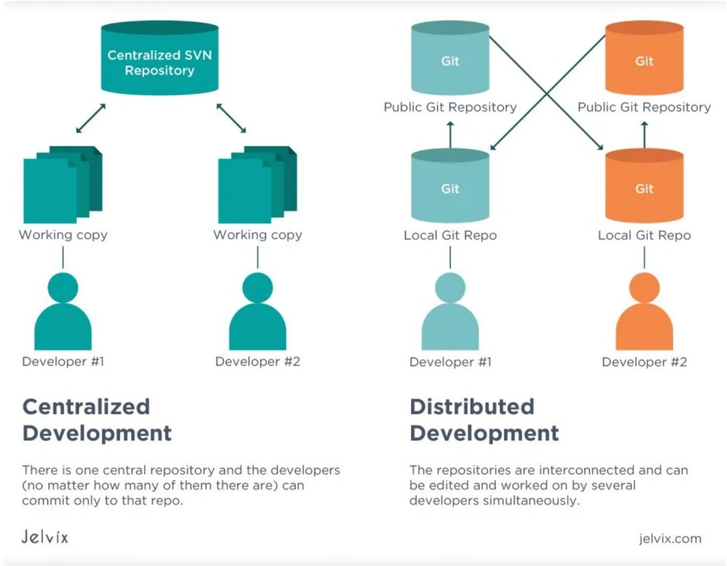
# Introduction

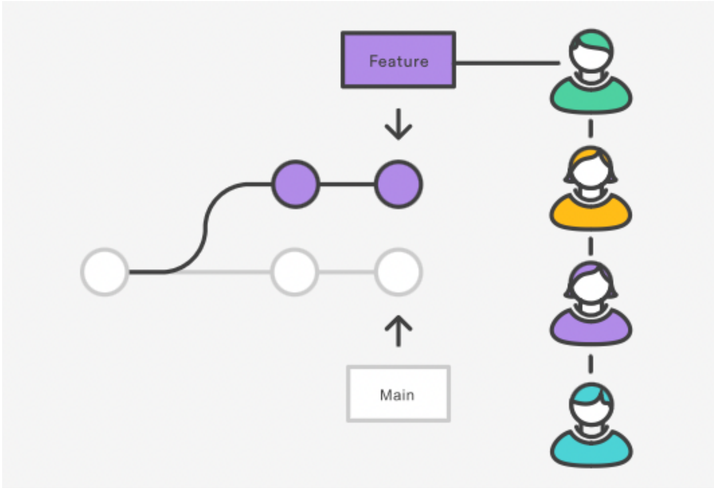
## Why Git?

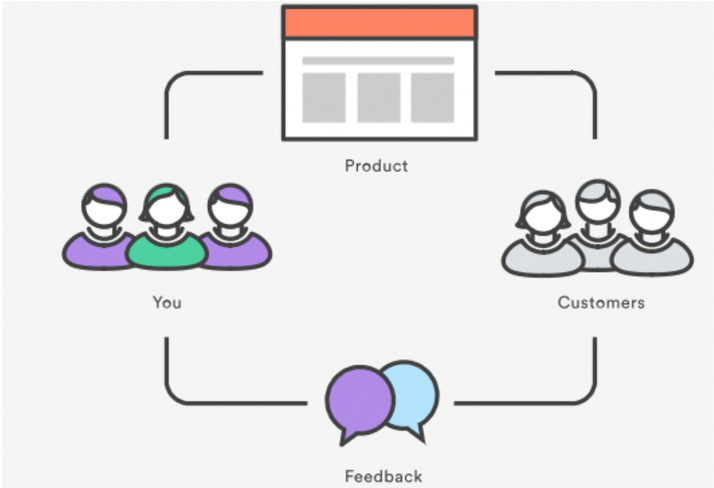
- Feture branch workflow.
- Distributed developement.
- Pull requests.
- Faster release cycles.




Reference: https://www.atlassian.com/git/tutorials/why-git

# Introduction

## Hosting services for Git

GitHub

GitLab


Bitbucket

SOURCEFORGE

- What is GitHub? : GitHub is designed as a Git repository hosting service.
- GitHub is an online database, which allows us to control version, outside the local machine.

# Getting Started

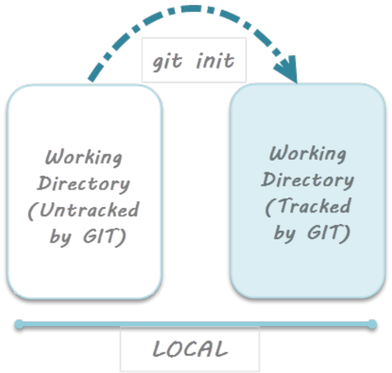
## Adding public ssh keys to GitHub

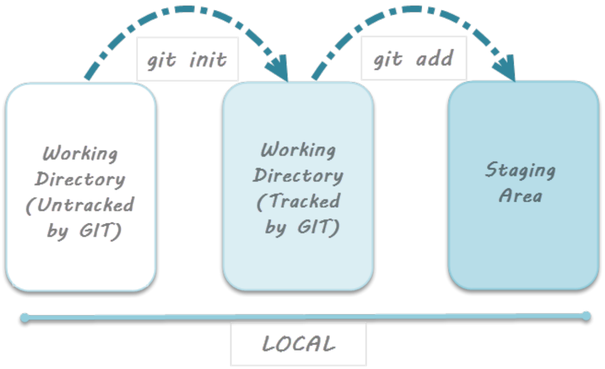
- How many times, we want to add credentials to add changes to a repo?
- Solution: public ssh key ***id_rsa.pub.*** How to generate and add to GitHub?

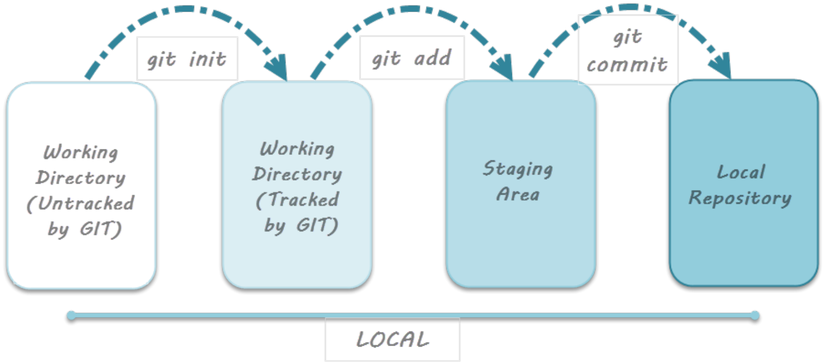
Reference: https://docs.github.com/en/authentication/connecting-to-github-with-ssh/adding-a-new-ssh-key-to-your-github-account

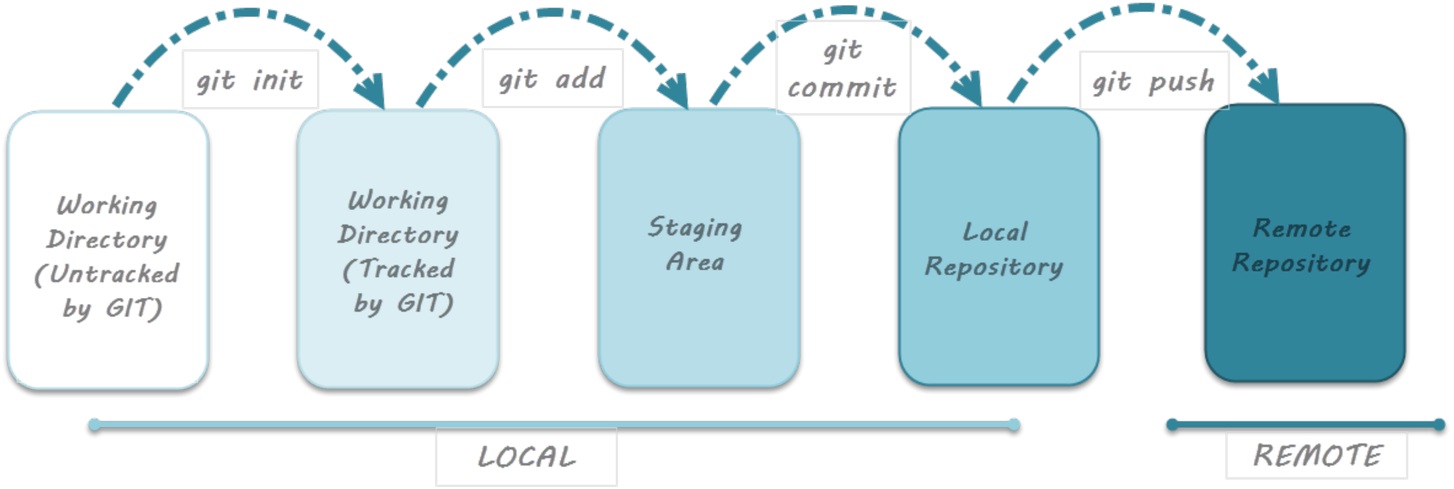
# Getting Started

## Stages in Git lifecycle




Reference: https://www.toolsqa.com/git/git-life-cycle/

# Getting Started

## Overview of Git commmads

- git add filename/ file1 file2 / . : add a file/files to staging area.
- git status : chech the status of a file to staging area.
- git commit -m “message” : commit files from staging area to local repository.
- git log : log of commited files (local/remote).
- git rm filename/ file1 file2 / . : delete a file/files from staging area.

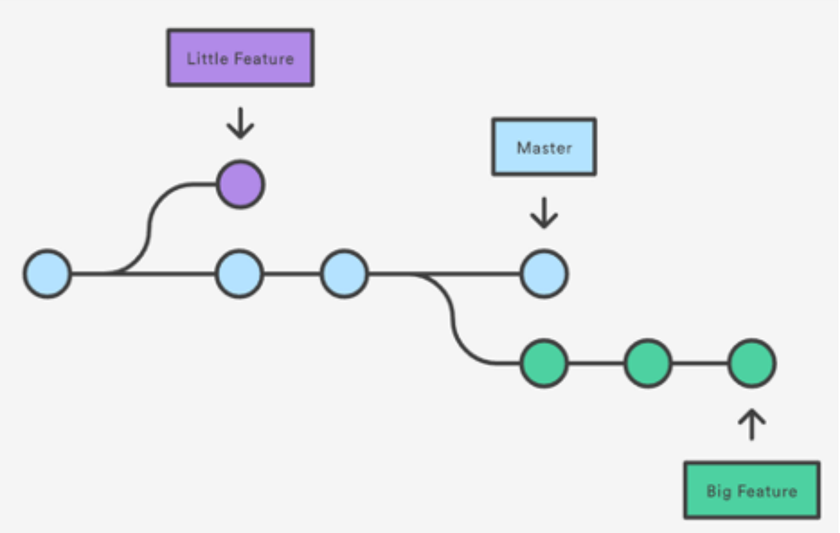
# Getting Started

## First repository on GitHub

- Create remote repository on GitHub with name “<repo_name>”.
- git remote add origin git@github.com:<username>/<repo_name>.git : add a remote origin to a local repository.
- git push -u origin <branch_name> : push a local repository to a remote repository.

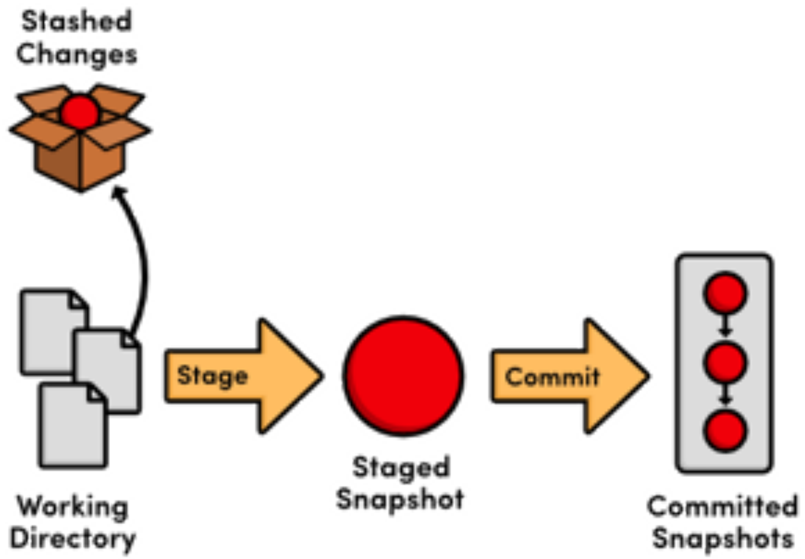
# Branches in a Git

## Create a test branch




- git branch “Branch name” : create a branch.
- git checkout “Branch name” : switch a branch.
- git merge “Branch name” : merge a branch to the current branch.

# Stashing in Git




**git stash : stash the current changes.**

**git stash pop : bring back the previously stashed changes.**

Reference: https://code.tutsplus.com/tutorials/quick-tip-leveraging-the-power-of-git-stash--cms-22988

# References

- Git: https://git-scm.com/docs/gittutorial
- Atlassisan: https://www.atlassian.com/git/tutorials
- GitHub: https://docs.github.com/en/get-started/quickstart/hello-world
- GitLab: https://docs.gitlab.com/ee/gitlab-basics/start-using-git.html

# Thanks!

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https://github.com/gsc74/DS221_Git_2022/tree/master