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# Git and GitHub



# What is Git?

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- Git is a distributed revision control and a source code management system with an emphasis on speed, data integrity, and support for distributed and non-linear workflows.
- Git manages changes of files over time.



# Why use Git?

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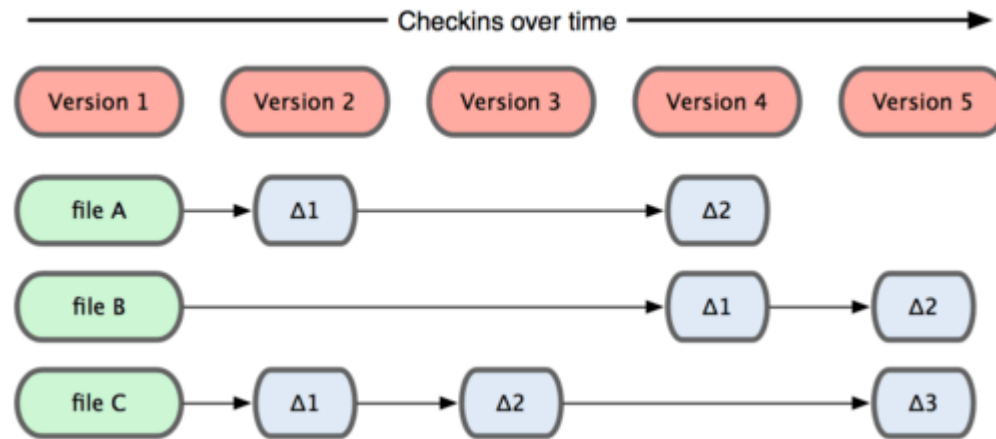
- Git allows a team of people to work together, all using same files.
- Git helps the team to handle the confusion that tends to happen when multiple people are editing the same files.



# How it manages?

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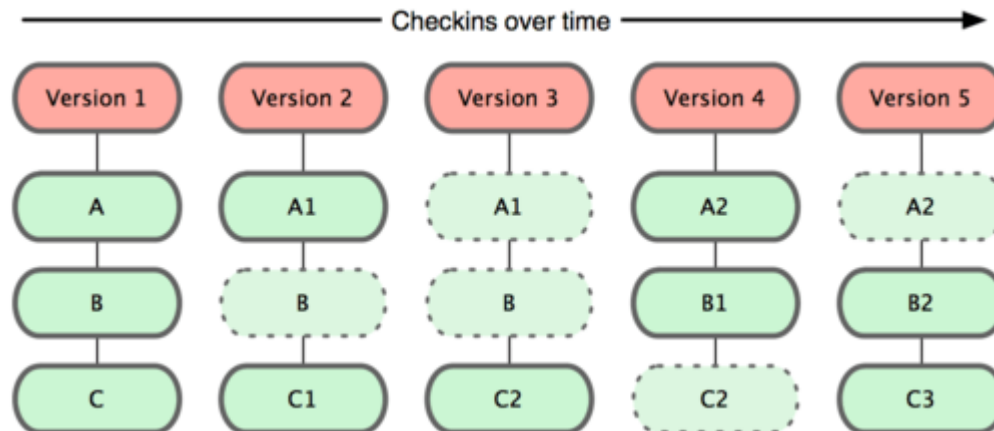
- Git saves all changes of files according to versions.



# How it manages?

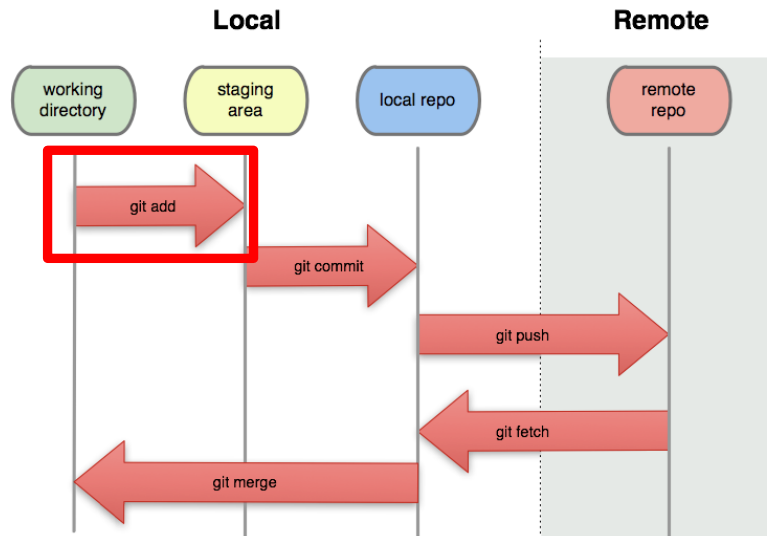
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- Git saves snapshots of the project according to versions into a repository.



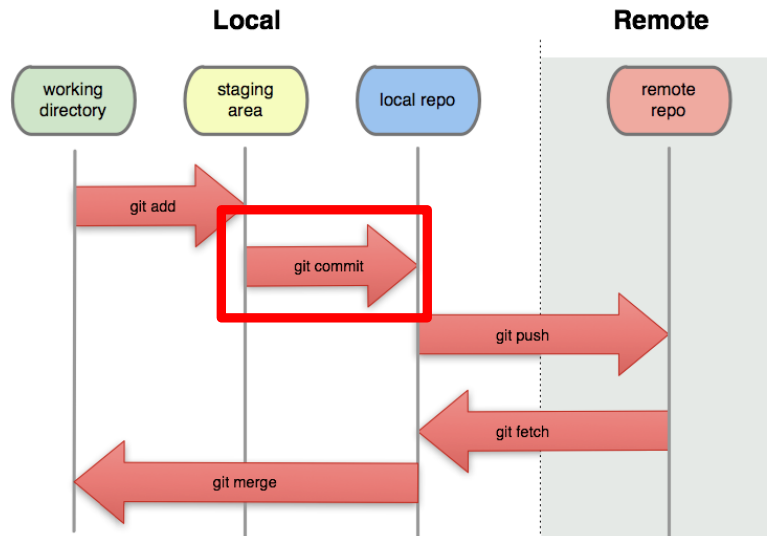
# How it works? (git add)

- Files **modified** or newly **added** are staged for updating your own local repository, which may be located in your PC.
- You can choose files to be taken a snapshot through staging.



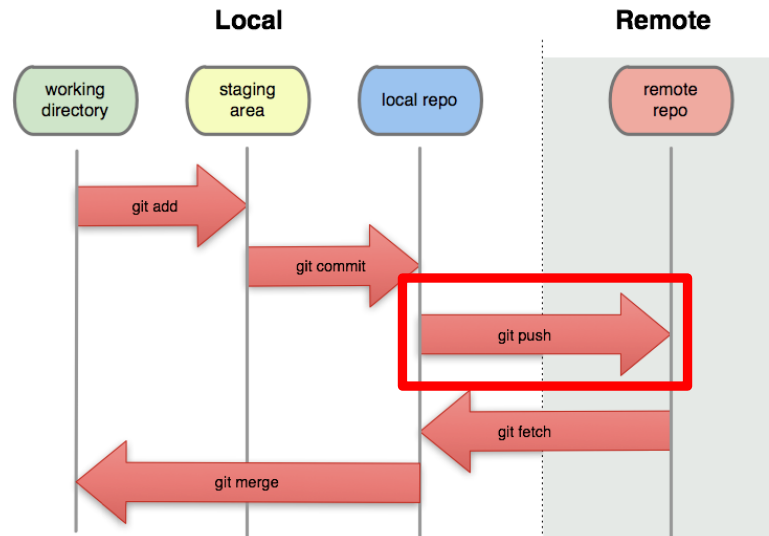
# How it works? (git commit)

- You can update the local repository by committing staged files.
- A snapshot of updated files is generated in your **local** repository.



# How it works? (git push)

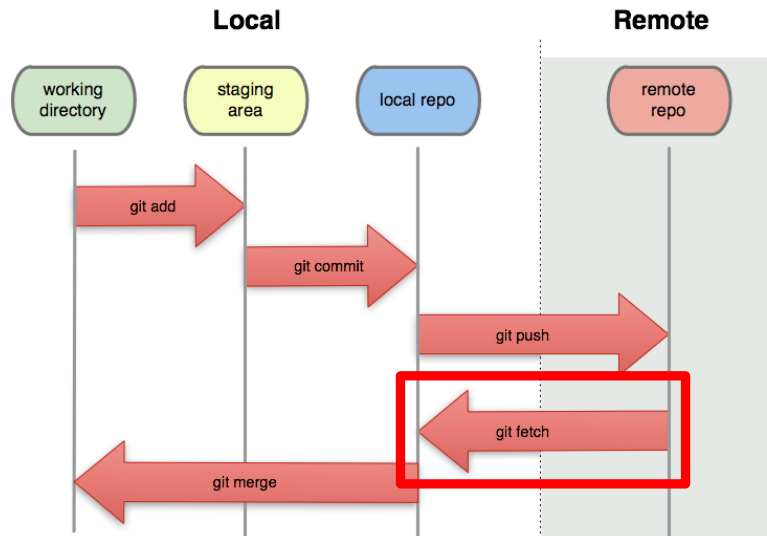
- You can update the remote repository by pushing committed files.
- A snapshot of updated files is generated in **remote** repository.





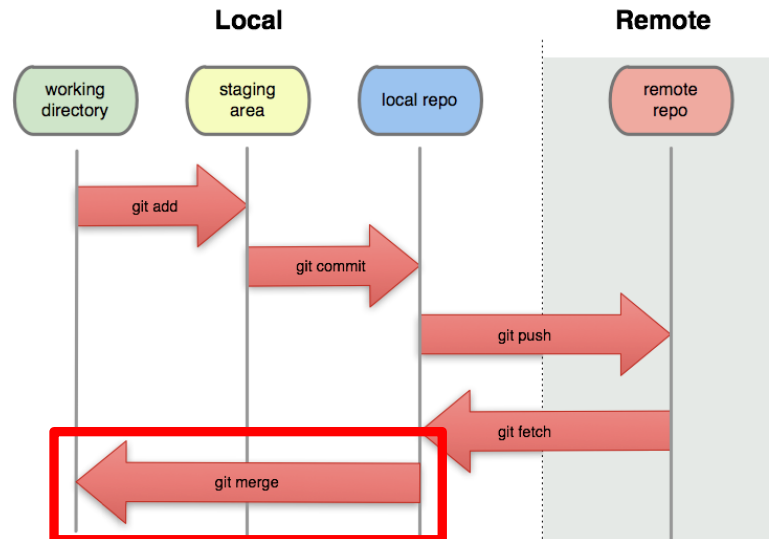
# How it works? (git fetch)

- You can also update your local repository up to date by fetching files.
- A snapshot of updated files is loaded from **remote** repository.



# How it works? (git merge)

- Files in your working directory can be revised with fetched snapshots.



# Why separates repositories?

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- When you and others edit same files, it may occur conflicts.
- By using a local repository, you can easily resolve conflicts at the stage of pushing or merging.
- If there is no conflict when fetching, you can merge snapshots by pulling them(`git pull`).

# Github

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- **GitHub is a web-based Git repository hosting service.**
- **It offers all of the distributed revision control and source code management functionality of Git.**



# Github

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- Please do not mistake Git with Github.



# How to use Github

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- Create an account and a new repository
  - <https://github.com/>
- You can get your repository whose URL is:  
`https://github.com/UserName/RepositoryName/`

# How to use Git

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- Install Git
  - <https://rogerdudler.github.io/git-guide/index.html>
- Run Git Bash
  - Type **'git config --global user.name "YourGitHubName"'**.
  - Type **'git config --global user.email "YourGitHubEmail"'**.

# How to use Git

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- Create a new directory, open it and type **'git init'** to create a new repository.
  - You can clone an existing repository from a remote server by typing **'git remote add origin 'https://github.com/UserName/RepositoryName/'**.
- You can propose changes of a file by typing **'git add <filename>'** or of whole files in the current directory by typing **'git add \*'**.



# How to use Git

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- You can check the status of staged files by typing **'git status'**.
- To commit these changes, type **'git commit -m "Message about changes"'**.
- To send those changes to your remote repository, type **'git push origin master'**.
  - If the remote target is not set, you can connect with **'git remote add origin 'https://github.com/UserName/RepositoryName/'**.

# Reference material

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- [http://www.slideshare.net/ibare/dvcs-git?utm\\_source=slideshow02&utm\\_medium=ssemail&utm\\_campaign=share\\_slideshow\\_loggedout](http://www.slideshare.net/ibare/dvcs-git?utm_source=slideshow02&utm_medium=ssemail&utm_campaign=share_slideshow_loggedout)
- <https://rogerdudler.github.io/git-guide/index.html>
- <https://git-scm.com/book/en/v2/Git-Basics-Getting-a-Git-Repository>
- [http://www.slideshare.net/chandler0201/git-50655983?qid=c32410ec-eb98-4155-896c-10f7f03747e6&v=&b=&from\\_search=4](http://www.slideshare.net/chandler0201/git-50655983?qid=c32410ec-eb98-4155-896c-10f7f03747e6&v=&b=&from_search=4)
- [http://www.slideshare.net/WooGenius/git-branch-stregagy-case-study-woo-genius?qid=c32410ec-eb98-4155-896c-10f7f03747e6&v=&b=&from\\_search=12](http://www.slideshare.net/WooGenius/git-branch-stregagy-case-study-woo-genius?qid=c32410ec-eb98-4155-896c-10f7f03747e6&v=&b=&from_search=12)
- [http://www.slideshare.net/holykss/git-24792958?qid=c32410ec-eb98-4155-896c-10f7f03747e6&v=&b=&from\\_search=14](http://www.slideshare.net/holykss/git-24792958?qid=c32410ec-eb98-4155-896c-10f7f03747e6&v=&b=&from_search=14)