



Introduction to Git & Github

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Outline

- ▶ Introduction to VCS
- ▶ Introduction to Git
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- ▶ Git v\s Github
- ▶ Centralized v\s Distributed Model
- ▶ Local 3 areas
- ▶ Git Architecture
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VCS (Version Control System)

- ▶ Version control system keeps track of every modification to the code in a special kind of database & help a software team manage changes to source code over time.
- ▶ Version control is all about managing multiple versions of documents, programs, web sites, etc.
- ▶ Allows us to track changes in a project.
- ▶ Some version control systems are- **GIT, CVS(centralized version control) Mercurial, Subversion(SVN)**

What is Git ?



- ▶ Git was created by Linus Torvalds in 2005.
- ▶ Git is a distributed version-control system.
- ▶ Git is free and open-source software.
- ▶ It is primarily designed for coordinating work among programmers.
- ▶ Git and Github both are different!
- ▶ It is not the same as cloud storage like google drive, onedrive etc.
- ▶ Git is installed locally on pc.

What is Github ?



- ▶ **GitHub** is a hosting service for **Git** repositories i.e. it makes them accessible via the World Wide Web.
- ▶ GitHub is a **web-based** Git repository **hosting service**.
- ▶ Github provides a web-based graphical interface.
- ▶ It provides as way to Share your repositories with others.
- ▶ Users have Access to all public repositories.
- ▶ We can use GIT without Github.
- ▶ Github is both free and also a paid version.



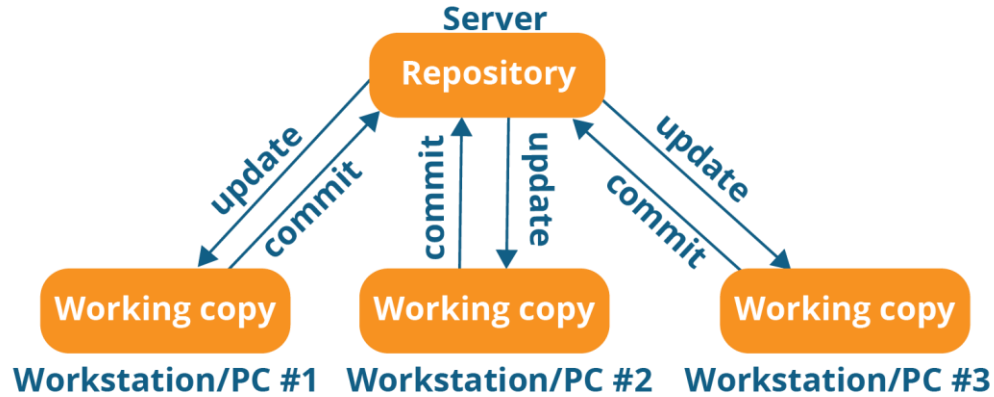
Git V/S Github



Git		Github
1	It is installed locally	Hosted in the cloud service.
3	Maintained by the Linux Foundation.	Maintained by Microsoft.
4	Command line based	GUI based through web
5	Provides a desktop interface named GitGui	Provides a desktop interface name Github Desktop
6	Competes with CVS Mercurial,SVN,Clearcase etc.	Competes with Bitbucket, Gitlab etc
7	Open Source	Include free as well as paid version

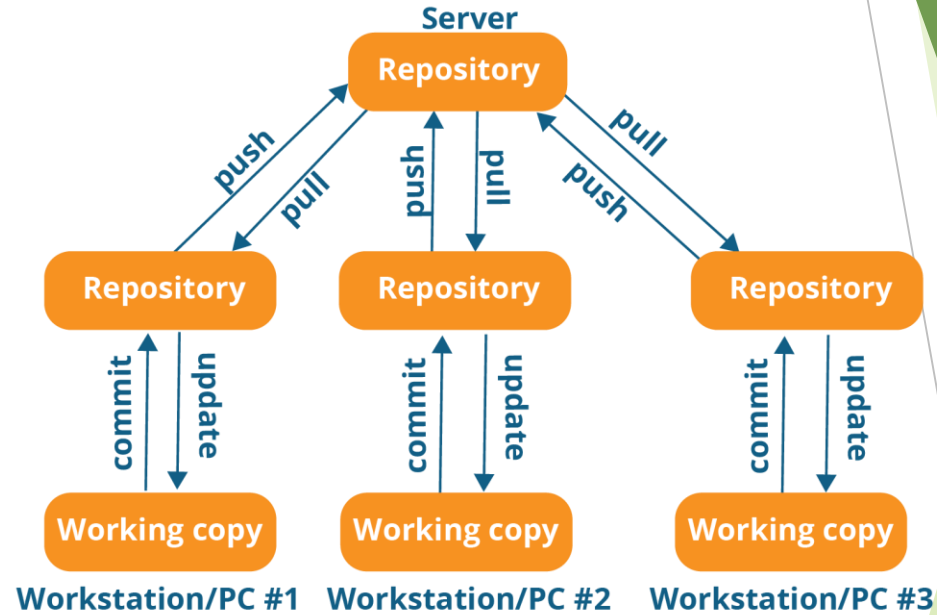
Centralized vs Distributed

Centralized version control system



Centralized version control system (CVCS) uses a central server to store all files and enables team collaboration. It works on a single repository to which users can directly access a central server.
ex: CVS, Subversion, Perforce

Distributed version control system



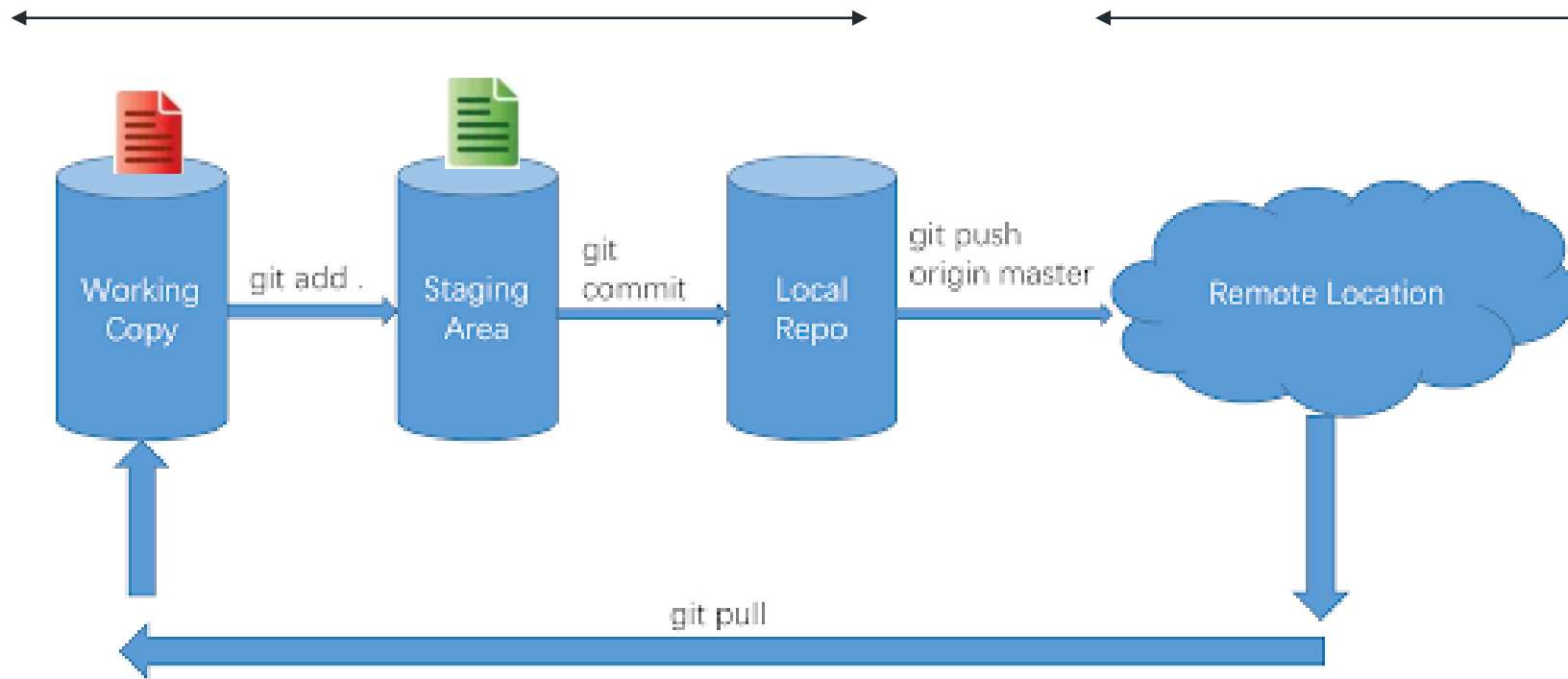
In Distributed VCS, every contributor has a local copy or “clone” of the main repository i.e. everyone maintains a local repository of their own which contains all the files and metadata present in the main repository. **ex : Git, Mercurial, Bitbucket**

Local Git project has three areas

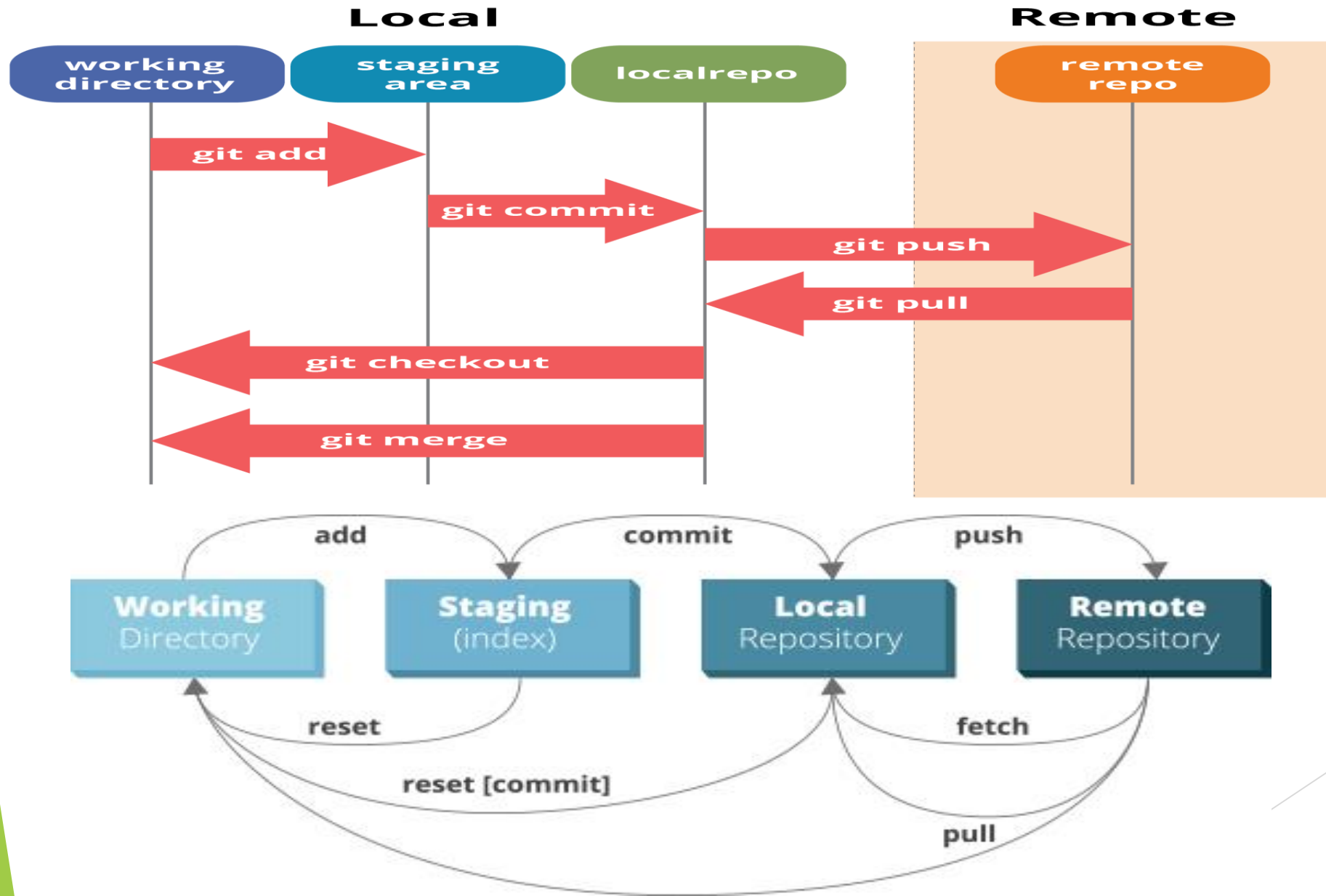
Local



Remote



Architecture of Git



Benefits of using git

- ▶ More efficient, better workflow, etc.
- ▶ Easy to distribute work ex: clone
- ▶ Easy to modify work of others ex: fork
- ▶ Easy to take help from others ex: pull
- ▶ Easy to Rollback a mistake eg :reset
- ▶ Easy to create different version of project eg :tags



Getting Started

These will be set globally for all Git projects you work with.

Installing Git

```
sudo apt-get install git
```

Create your identity

```
git config --global user.name "USERNAME"
```

```
git config --global user.email "USER E-MAIL"
```

Check your Git Settings

```
git config --list
```



Getting Started

Colorization

```
git config --global color.ui true
```

Cloning a Git repository

```
git clone https://github.com/username/repo.git
```

Github URL

https://github.com/username/reponame

Hosting site

Author

Repository



Basic Git commands

Command		Description
1	<code>Git init</code>	Initialize a new Git repository
2	<code>Git status</code>	Checks status of repo.
3	<code>git add filename.txt</code>	Adds file contents to the staging area
4	<code>git commit -m 'commit message'</code>	Records a snapshot of the staging area
5	<code>git remote add <remotename> url</code>	To add a new remote.
6	<code>git push <remote> <branch></code>	Push all changes to remote repo
7	<code>git log</code>	Show all logs
8	<code>git help <i>[command]</i></code>	Get help info about a particular command
9	<code>git diff</code>	Shows diff of what is staged and what is modified but unstaged

Learning outcomes

- ▶ Got a more Understanding of VCS and GIT.
- ▶ How to make a ppt.
- ▶ Learnt some new git commands.

Thank You

Source : <https://github.com/wasitshafi/JMI-MCA/tree/master/II-sem/SAD>