


Introduction to Git & GitHub

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Outline

- Introduction to VCS
- Introduction to Git
- Introduction to GitHub
- Git v\s GitHub
- Centralized v\s Distributed Model
- Local 3 areas
- Git Architecture
- Benefits of GIT
- Getting started
- Basics commands
- Learning outcomes

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 primary designed for coordinating work among programmers.
- Git and Github both are different!
- It is not same as cloud storage like google drive, one drive etc.
- Git is installed locally on pc.

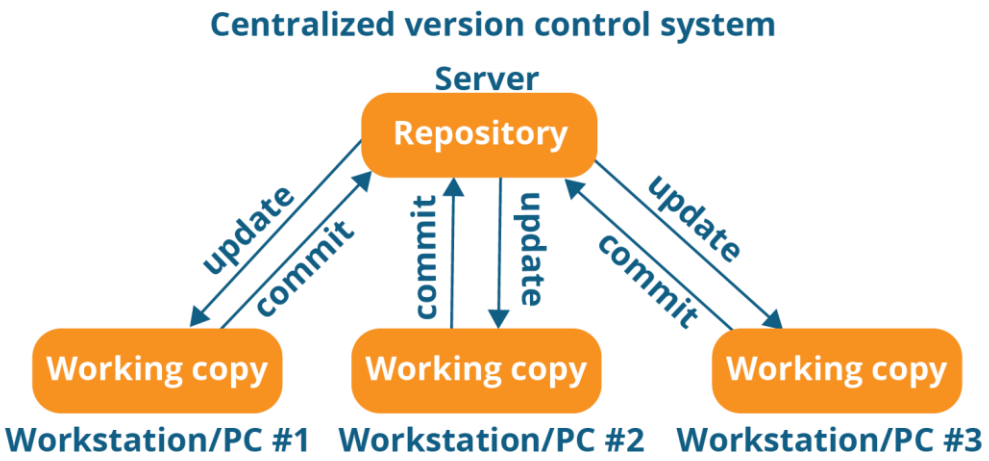
What is GitHub ?

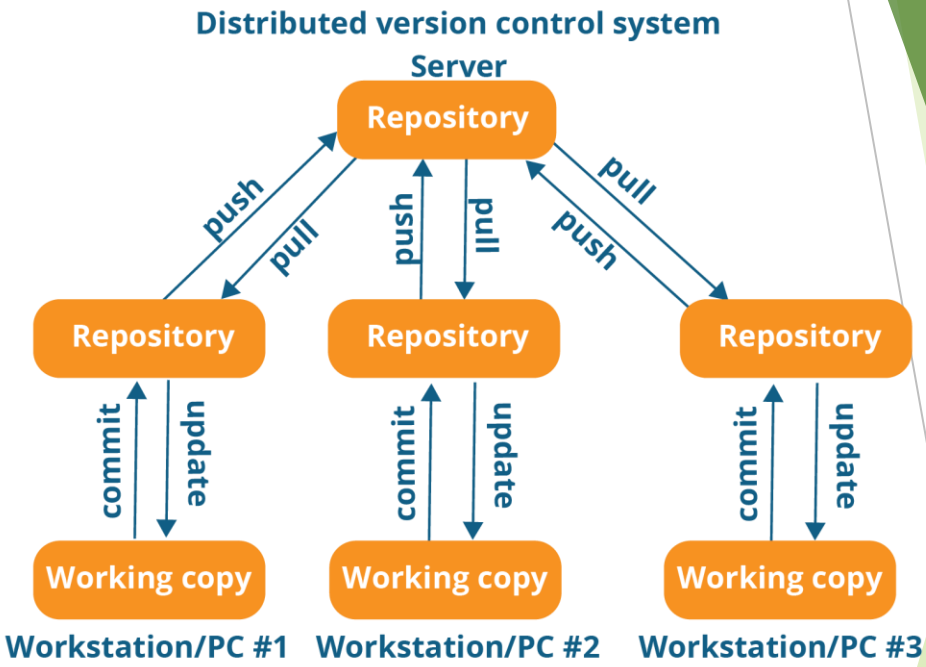
- **GitHub** is a hosting service for **Git** repositories i.e. it makes them accessible via the World Wide Web.
- GitHub is a **web-based** Git repository **hosting service.**
- Github provides a web-based graphical interface.
- It provides as way to Share your repositories with others.
- Users have 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 Git GUI	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

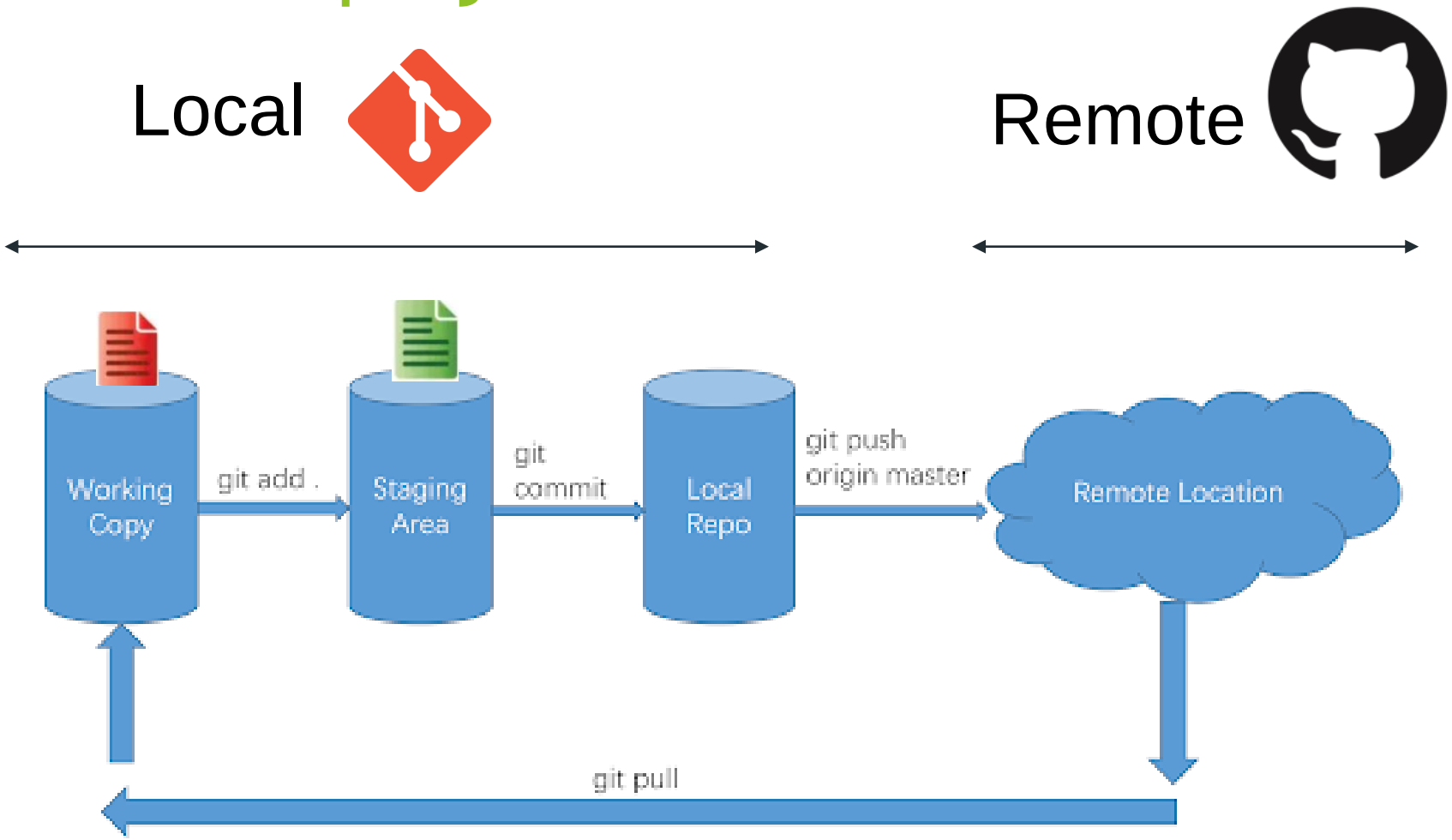




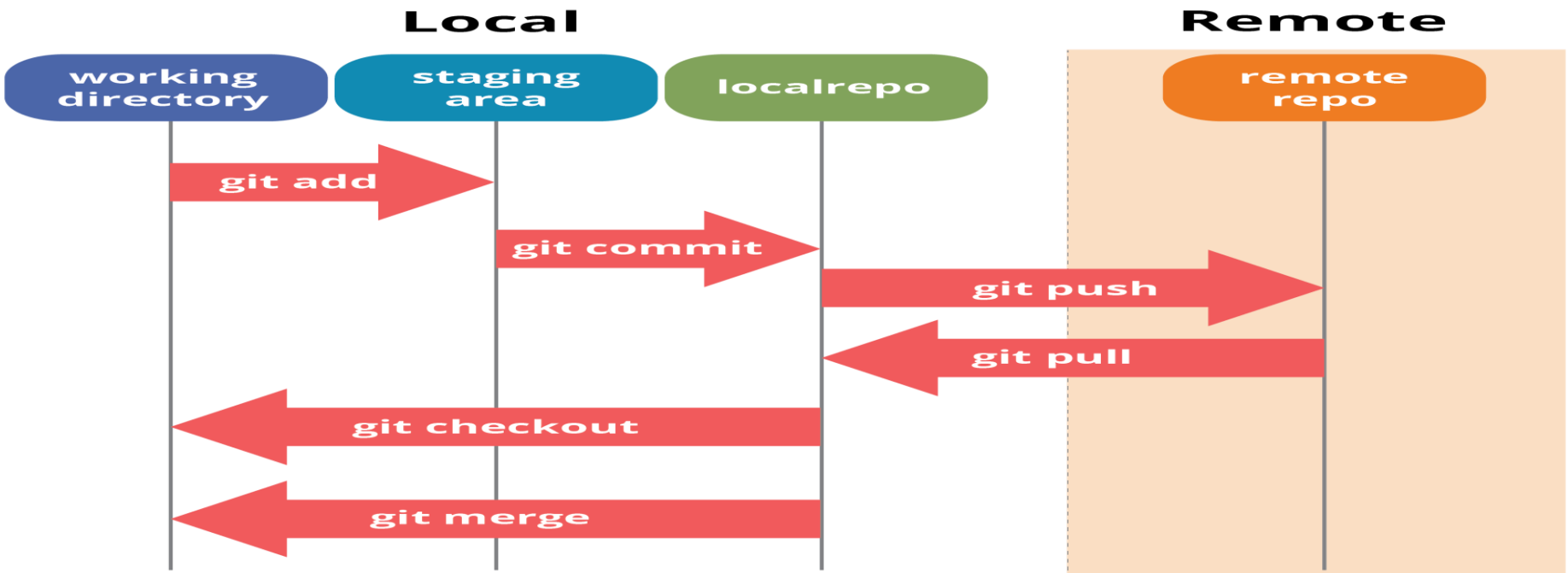
Centralized version control system (CVCS) uses a central server to store all files and enables team collaboration. It works on a single repository to which users can directly access a central server. **ex: CVS, Subversion, Perforce**

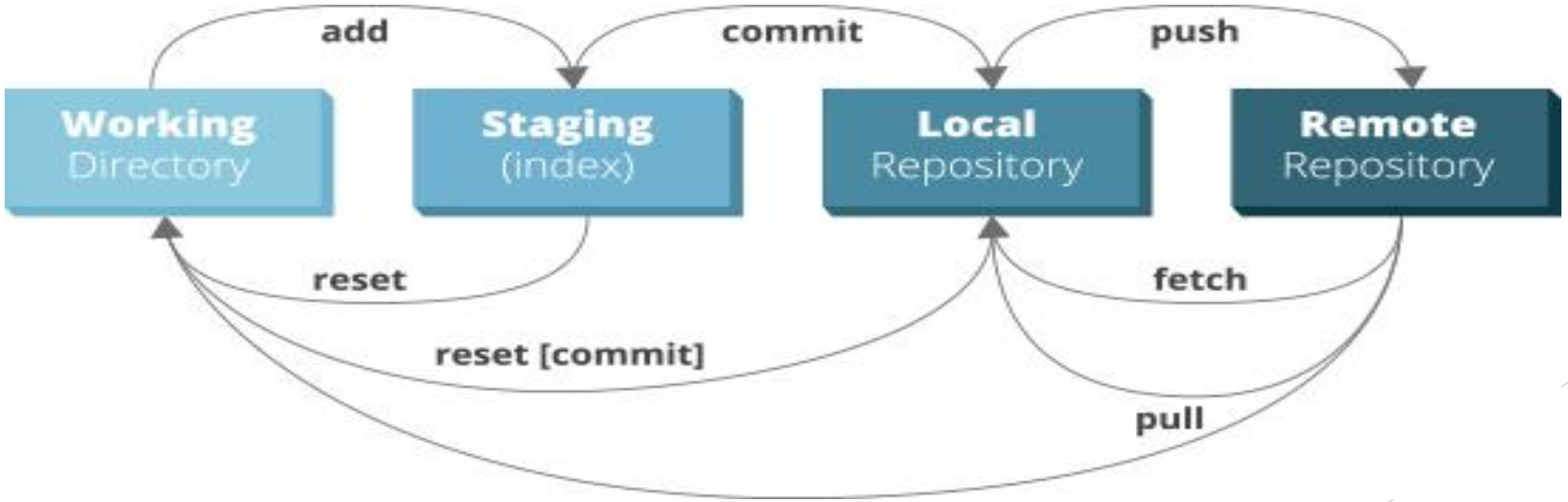
In Distributed VCS, every contributor has a local copy or “clone” of the main repository i.e. everyone maintains a local repository of their own which contains all the files and metadata present in the main repository. **ex : Git, Mercurial, Bitbucket**

Local Git project has three areas



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 --gloabal 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	`Git init`	Initialize a new Git repository
2	`Git status`	Checks status of repo.
3	`git add filename.txt`	Adds file contents to the staging area
4	`git commit -m 'commit message'`	Records a snapshot of the staging area
5	`git remote add <remotename> url`	To add a new remote.
6	`git push <remote> <branch>`	Push all changes to remote repo
7	`git log`	Show all logs
8	`git help` ***`[command]`***	Get help info about a particular command
9	`git diff`	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