

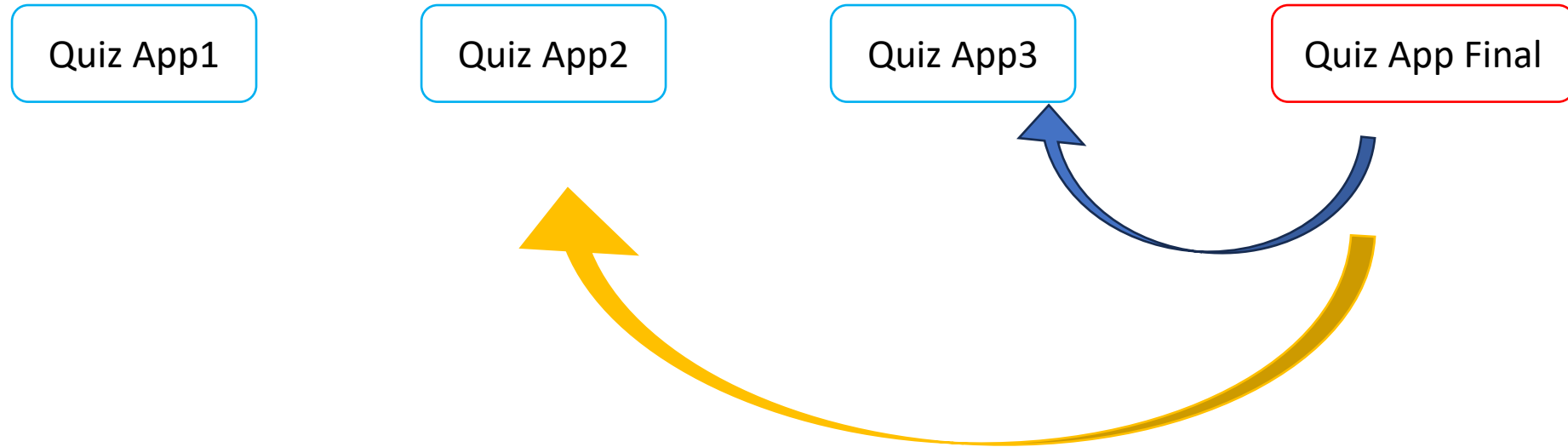
# Git and GitHub

# Today Agenda!

- What Is Git?
- What Problems It Solves?
- Types Of Version Control Systems
- Other Distributed Version Control System
- Advantage's Of Git!
- Git Installations!
- Setting Credentials!
- How Git Works?
- How Git Track Files
- Useful Commands
- Staging Area And Committing
- Stashing
- Remote Repository
- Searching project and contributors
- Tags And Their Types
- Creating Branches
- Merge Branch And Resolve Conflict
- Clone A Repo And Open Source Projects
- Collaborations

# What is Git ?

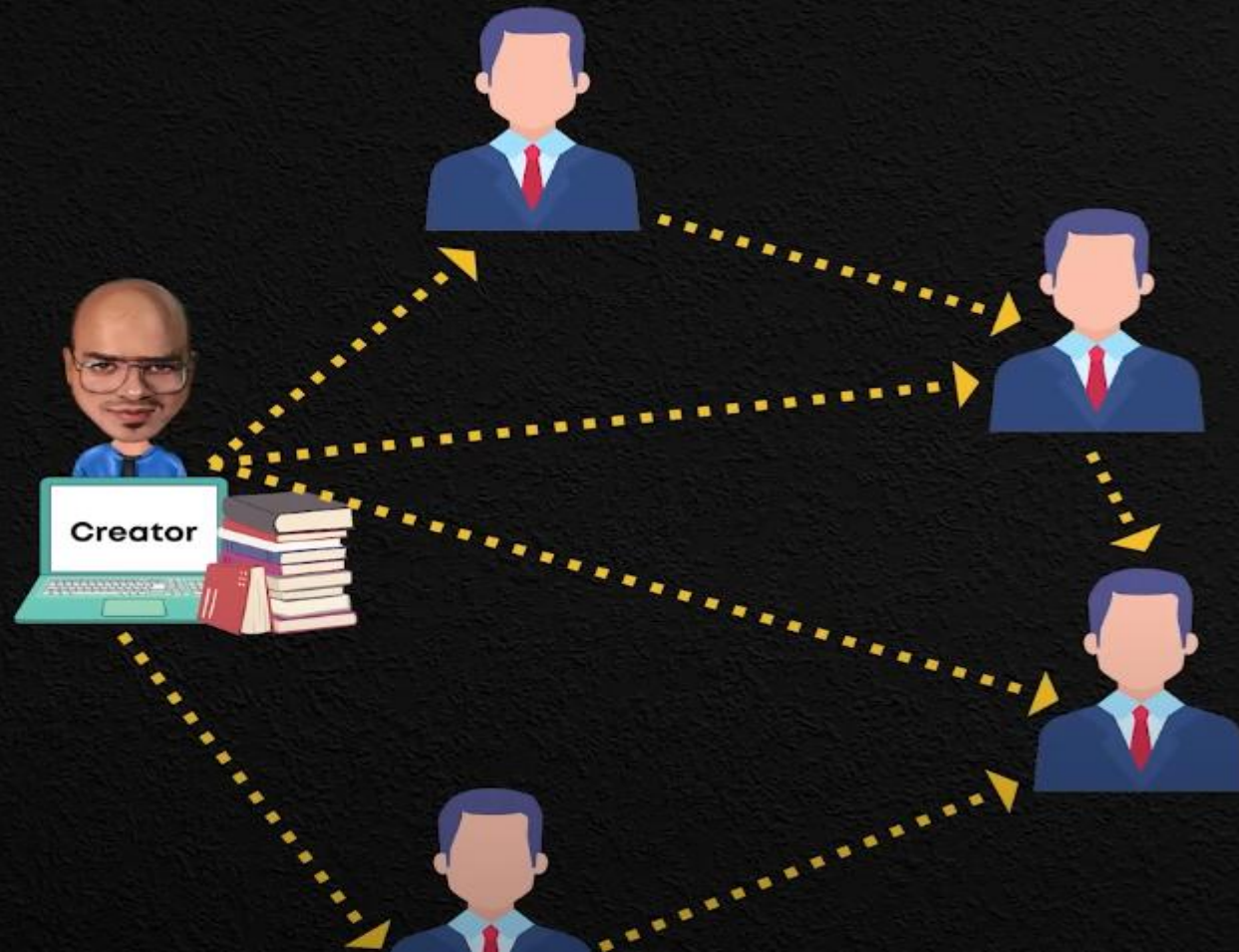
Git is a Distributed Version Control System



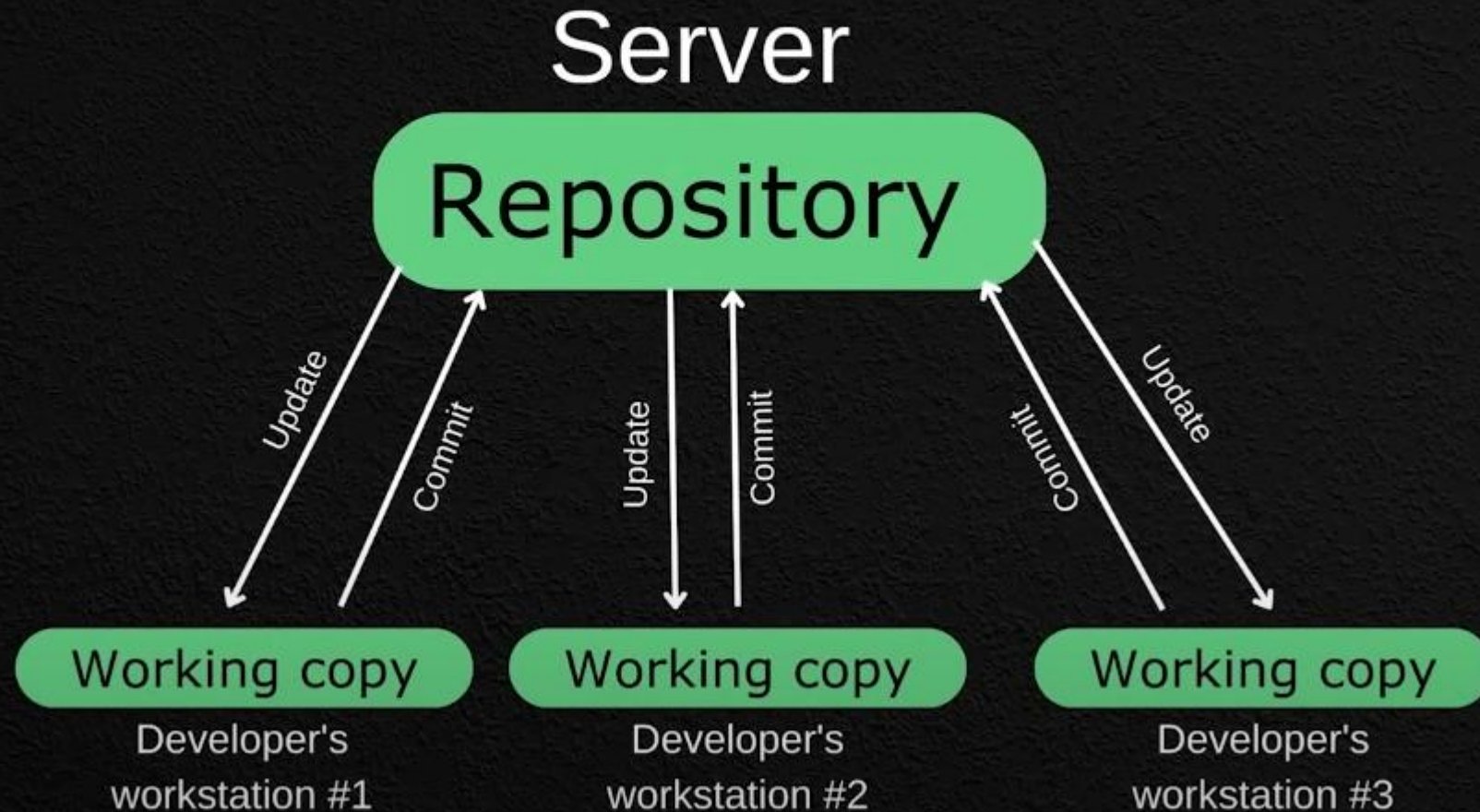
To achieve this, we need 3 kinds of version controls System

1. Local Version Control System(LVCS)
2. Centralized version Control System(CVCS)
3. Distributed version control system(DVCS)

# 1. Local Version Control

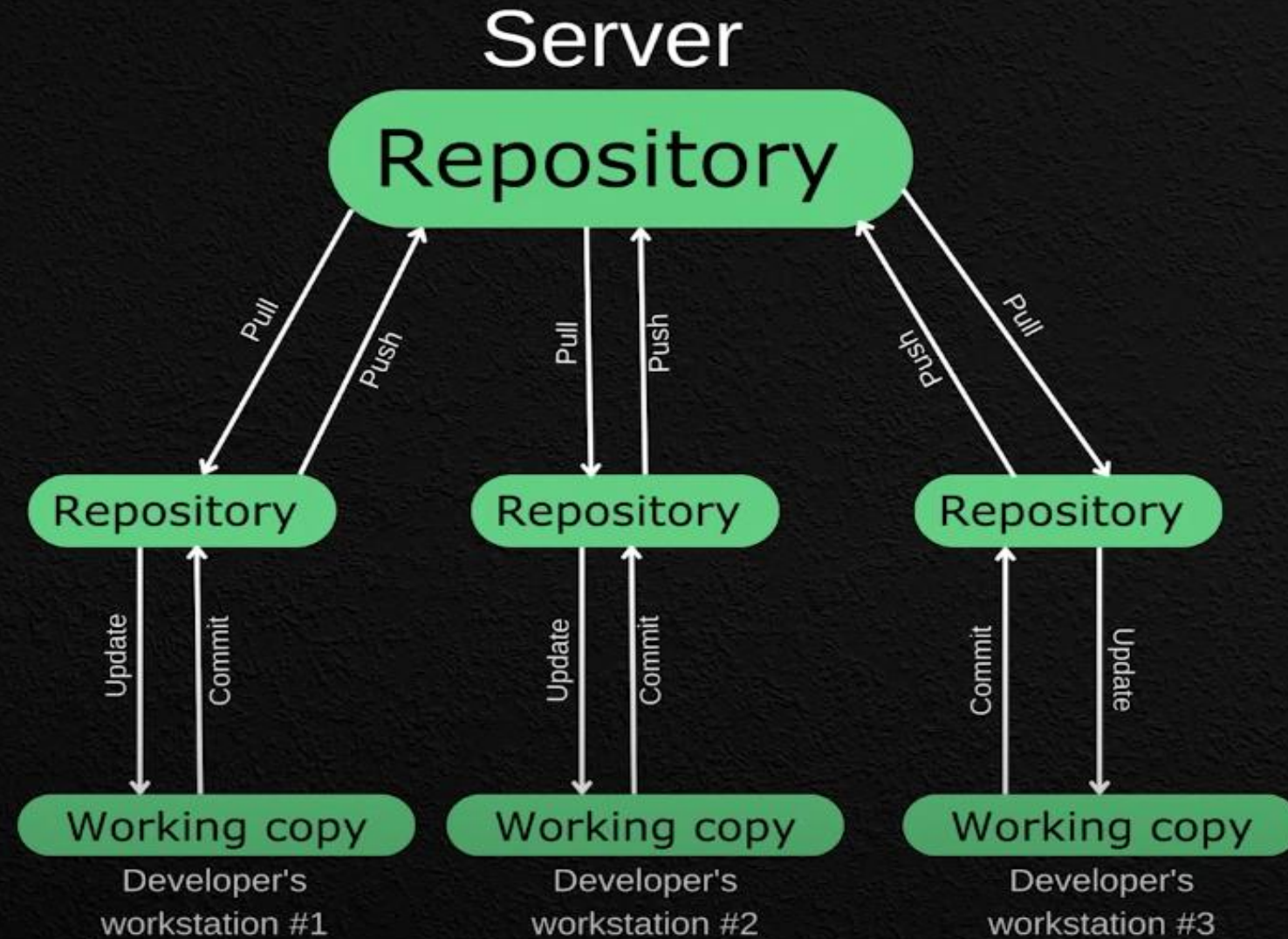


## 2. Centralized Version Control System (CVCS)





### 3. Distributed Version Control System (DVCS)





## Some other Distributed version control system



### Advantages of GitHub

1. Simple to USE
2. Fast
3. Collaboration
4. Merging & Version Control
5. GitHub Actions (CI/CD)

# Git Installation

```
git -version
```

```
git config --global user.name "Your Name"
```

```
git config --global user.email "you@example.com"
```

```
git config --global --list
```

`git status`

`git add QuizApp.txt`

`git commit -m "first commit"`

`git commit -a -m "first commit"`

`git init -b main`

`git log`

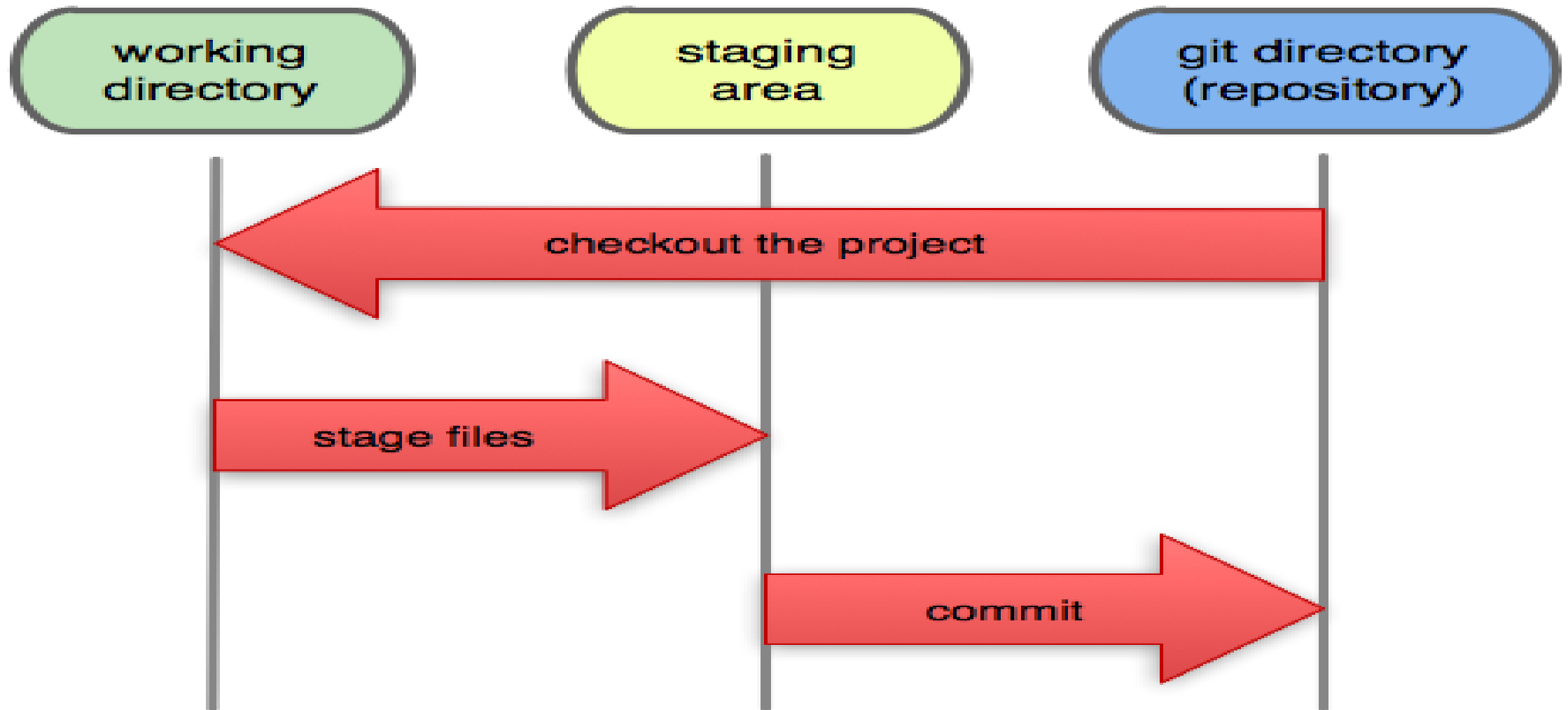
`git diff` ( works before adding to staging area after initial commits)

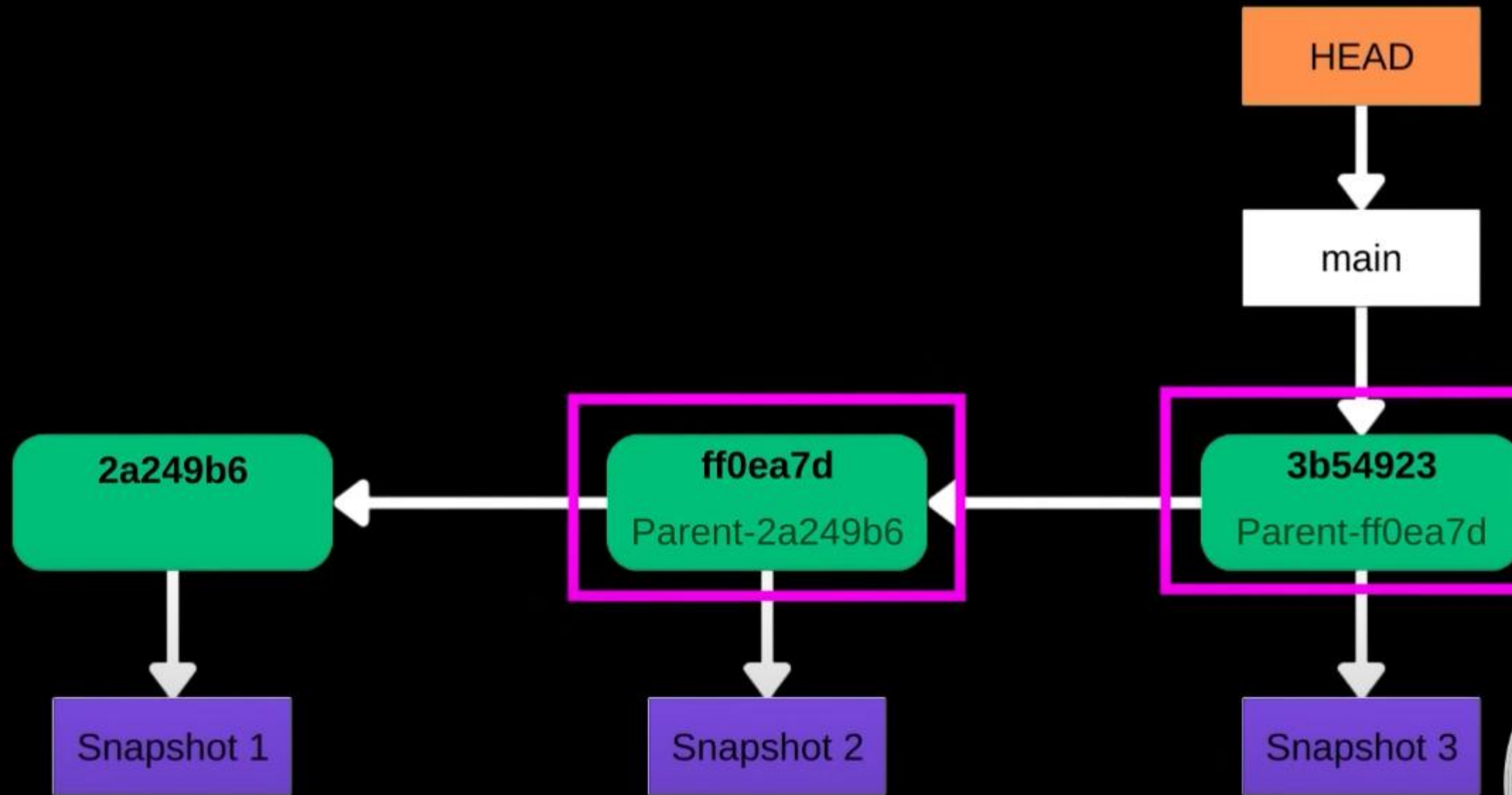
`git switch --detach 9804b34536db16b0a6d1177aae51a09c38f1ad71`

`git show` ( to show code inside)

`git log --graph`

# Local Operations





## Delete files!

```
git rm --cached creds.txt
```

## Git hub

Adding code to Git hub ,UI, clone repository, languages, Search

HTTPS vs SSL(after setup no password is needed ,https asks for login



**git push origin master** → this just name of remote repository(default name)

D:\Git cources demo>**git remote -v**

origin https://github.com/SuryaBhaskarG/-deme-repo-delete.git (fetch)

origin https://github.com/SuryaBhaskarG/-deme-repo-delete.git (push)

In Git, a remote is like a shortcut name for a repository stored somewhere else, usually on a server like GitHub.

# Tagging

- Tag is giving a version name
- Two types of tag :
  1. Light weight tag
  2. Annotated tag

```
git tag v1.0-light
```

```
git tag -a v1.0 -m "First stable release"
```

```
git tag
```

```
git show v1.0
```

```
Git push origin v1.0
```

## What is a Git Branch?

In Git, a **branch** is like a separate workspace where you can make changes and try new ideas without affecting the main project. Think of it as a "parallel universe" for your code.

We can create new branch in CMD and remote server also.

```
git checkout -b feature-new    or    git switch -c feature-new
```

```
git branch
```

```
git switch main
```

```
git branch -d hello-world-images
```

## What is a Git Branch Merge?

`git merge feature 1` -----> before that we need to change to main branch




```
git log --oneline
```

```
git reset --hard f6cdd4c
```

Now we will have original code



## git clone VS git pull — What's the difference?

Command	Purpose	When to Use	
<code>git clone</code>	 Copy the <b>entire repository</b> (including all history, branches, files) from GitHub to your local machine	First time you're downloading a project	
<code>git pull</code>	 Download <b>new updates</b> from GitHub into an existing local repository	When you already cloned the repo earlier	



## Git Stash

Git Stash to save unfinished work

```
git stash
```

Modify the file but don't commit yet

```
git stash pop
```

```
git stash    # this becomes stash@{0}
```

```
git stash again # now this is stash@{0}, and the previous one  
moves to stash@{1}
```

# What is Forking in GitHub?

## What is Forking in GitHub?

**Forking** means making a **copy of someone else's repository** into your own GitHub account. It lets you **freely experiment, modify, or contribute** without affecting the original repository.