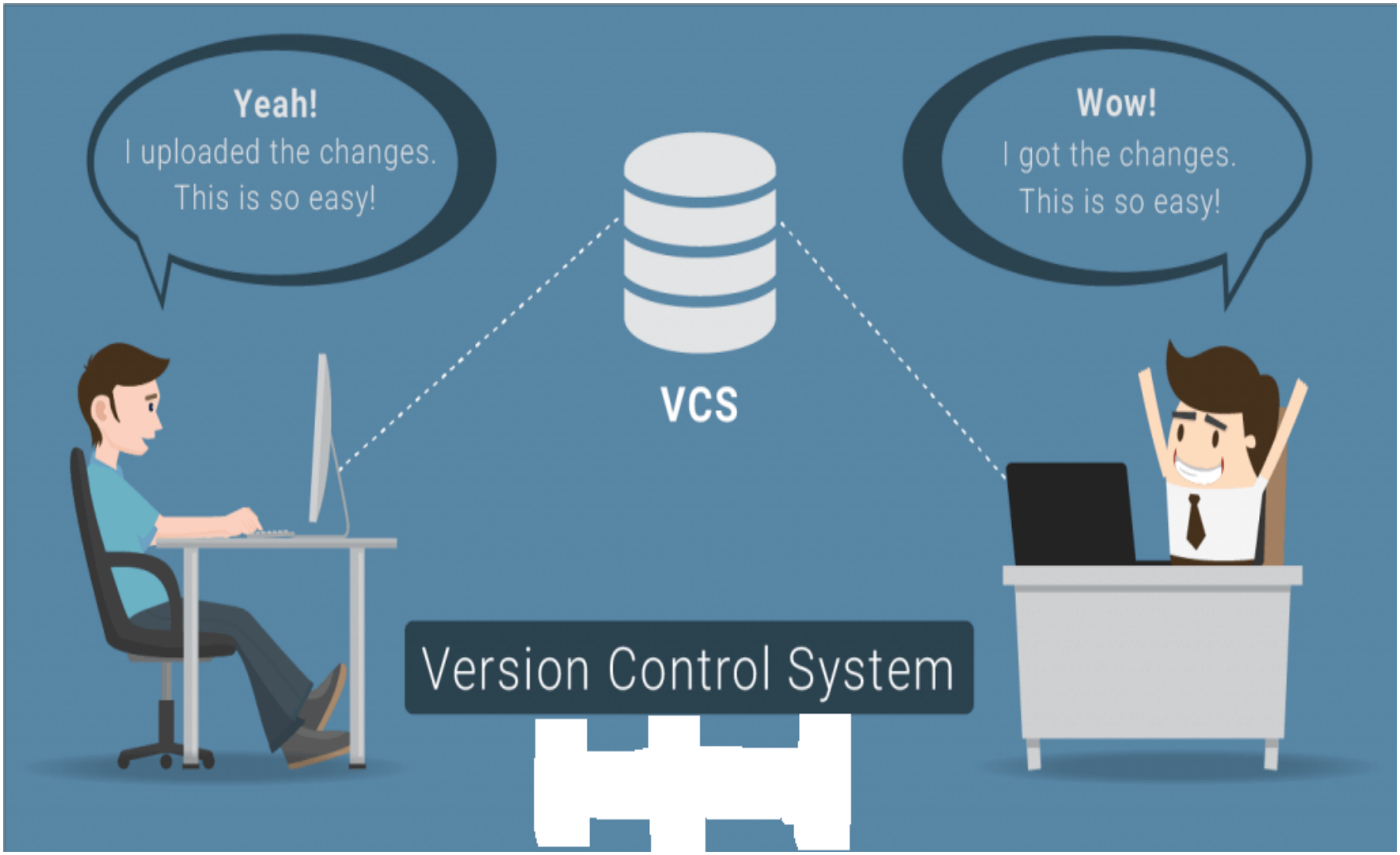

git

Source Code Management


Yeah!
I uploaded the changes.
This is so easy!
Wow!
I got the changes.
This is so easy!
VCS
Version Control System

What is a version control system?

A version control system (VCS) allows you to track the history of a collection of files. Each version captures a snapshot of the files at a certain point in time and the VCS allows you to switch between these versions. These versions are stored in a specific place, typically called a repository.

VCS Types

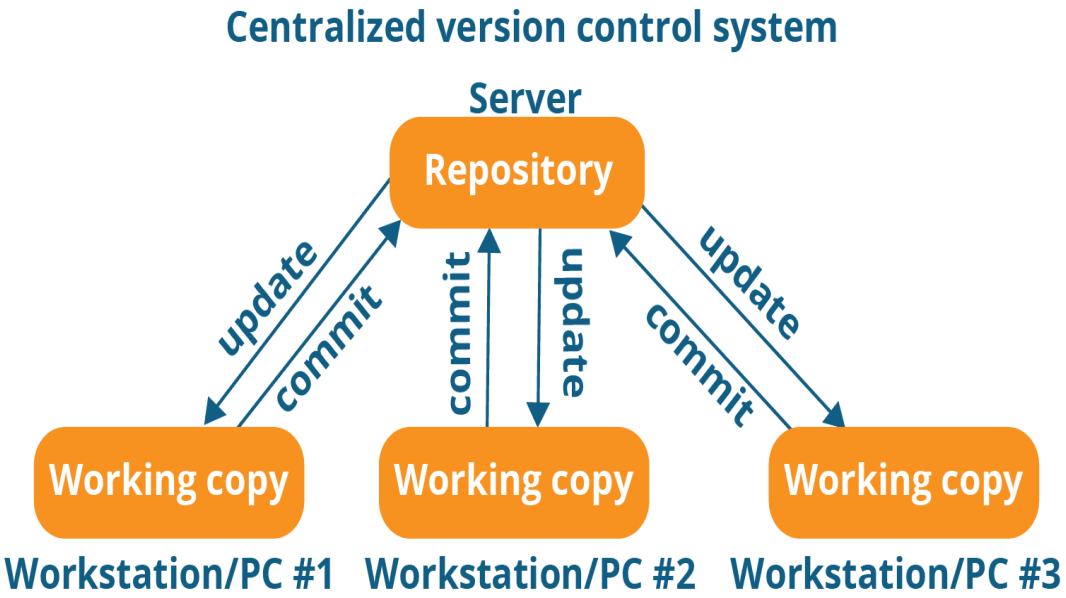
1) Localized and centralized version control systems

2) Distributed version control systems

Localized and centralized version control systems

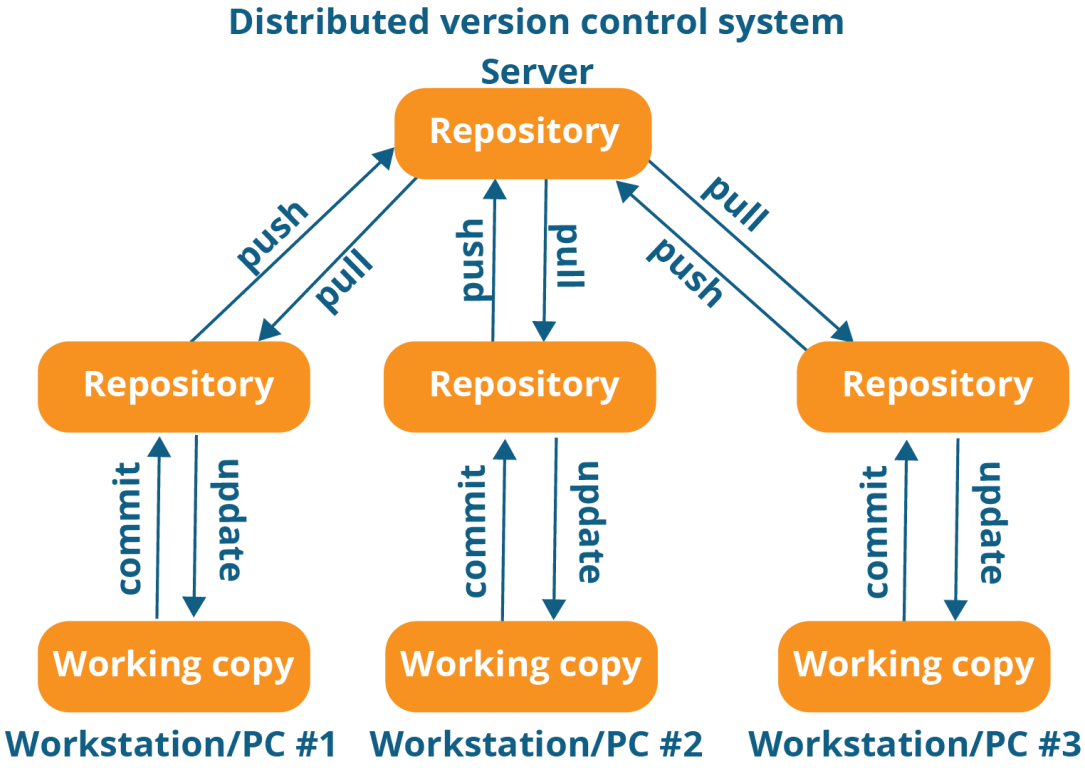
A centralized version control system provides a server software component which stores and manages the different versions of the files.

In a localized version control systems it is the individual computer and in a centralized version control systems it is the server machine. Both system makes it also harder to work in parallel on different features



Distributed version control systems

In a distributed version control system each user has a complete local copy of a repository on his individual computer. A global repository ‘github.com’ used to keep data as centralised server.



Centralized vs. Distributed Version Control Systems

Centralized Version Control Systems	Distributed Version Control Systems
Require Central Server to store the code master copy.	Central server is not required to store project code.
Each developer keeps a local copy. Developers use separate branches.	Each developer has a clone for the repository. Developers use either distributed repositories or branches.
Project history is not maintained locally, its only maintained on the server.	Each developer has a full project history.
Commits happen direct to the server	Commits are made locally.
Requires connectivity as commits happen directly to the server.	Connectivity is required only for push/pull operation.
Examples: SVN, CVS, Perforce	Mercurial, Git

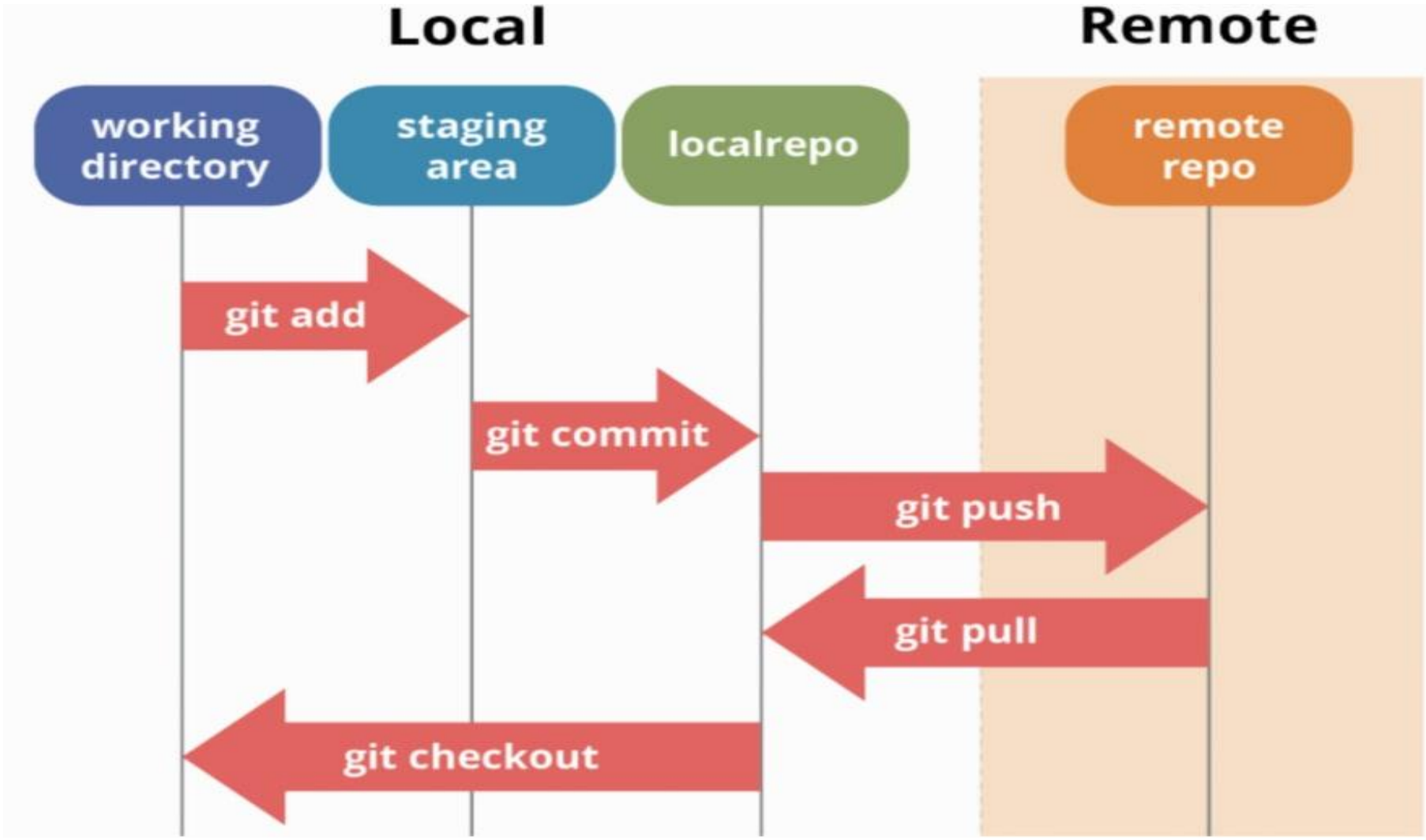
What is Git?

- *Git* is currently the most popular implementation of a distributed version control system.
- Git allows the user to synchronize the local repository with other (remote) repositories.

Advantages of Git

- ✓ Free and open source
- ✓ Fast and small
- ✓ Implicit backup
- ✓ Security
- ✓ No need of powerful hardware
- ✓ Easier branching

Git workflow



Points to be covered in Git

1) Git Installation
2) Initialization, Add and commit
3)Creating account in Github
4) Linking Github with local server
5)Git push
6)Git clone
7)Git pull
8) Branching
9) Git log, Git diff
10) Versioning
11) Deleting content in local and global repository

Git Installation

In RHEL

- #dnf install git-all or #yum install git-all

In Ubuntu

- #apt-get update
- # apt install git-all
- # git –version

In Windows

- Download and Install gitbash

Additionally Open github.com and create your account then create a repository there

Git operation

```
# mkdir  mygitproject
# cd   mygitproject
# git   init        ( to initialising)
# cat   > test1.txt
# cat   > test2.txt
# git status
# git add  test1.txt   test2.txt       ( add these two files)
or
# git add   .                          ( add current directory)
# git   status
# git commit  -m  " first commit adding test1.txt and test2.txt)
# git status
```

Git operation

git remote add origin

"https://github.com/depakkumarrts/demo.git"

git config --global user.name "deepak-kumar-rts"

git config --global user.email "deepak.amie.it@gmail.com"

git config --list

git push origin master

Now open github.com and check the files

Git operation

cat >test3.txt
cat >test4.txt
git status
test3.txt .....untracked file
test4.txt .....untracked file
vi test2.txt
.....do some modification
git status
modified test2.txt
git add test3.txt
git status
git commit -m " my 2nd commit“
git log --online
(this changes done in local repo only)
check in github.com - nothing changes happened in test2.txt
#git push origin master

Cloning

1) Create a new Instance –Install git –create a directory –go there -----or In the same system switch to other directory

2) # git init

#git clone "https://github.com/depakkumarrts/demo.git"

3) # ls

demo

we can see github account repository copied here

cd demo

ls

nano test4.txt

git add .

git commit -m "adding clone file"

#git push origin master

Now open github.com and check the file test4.txt

Pulling

1) In developer instance or in the same instance –switch to developer directory

2) #git pull origin master

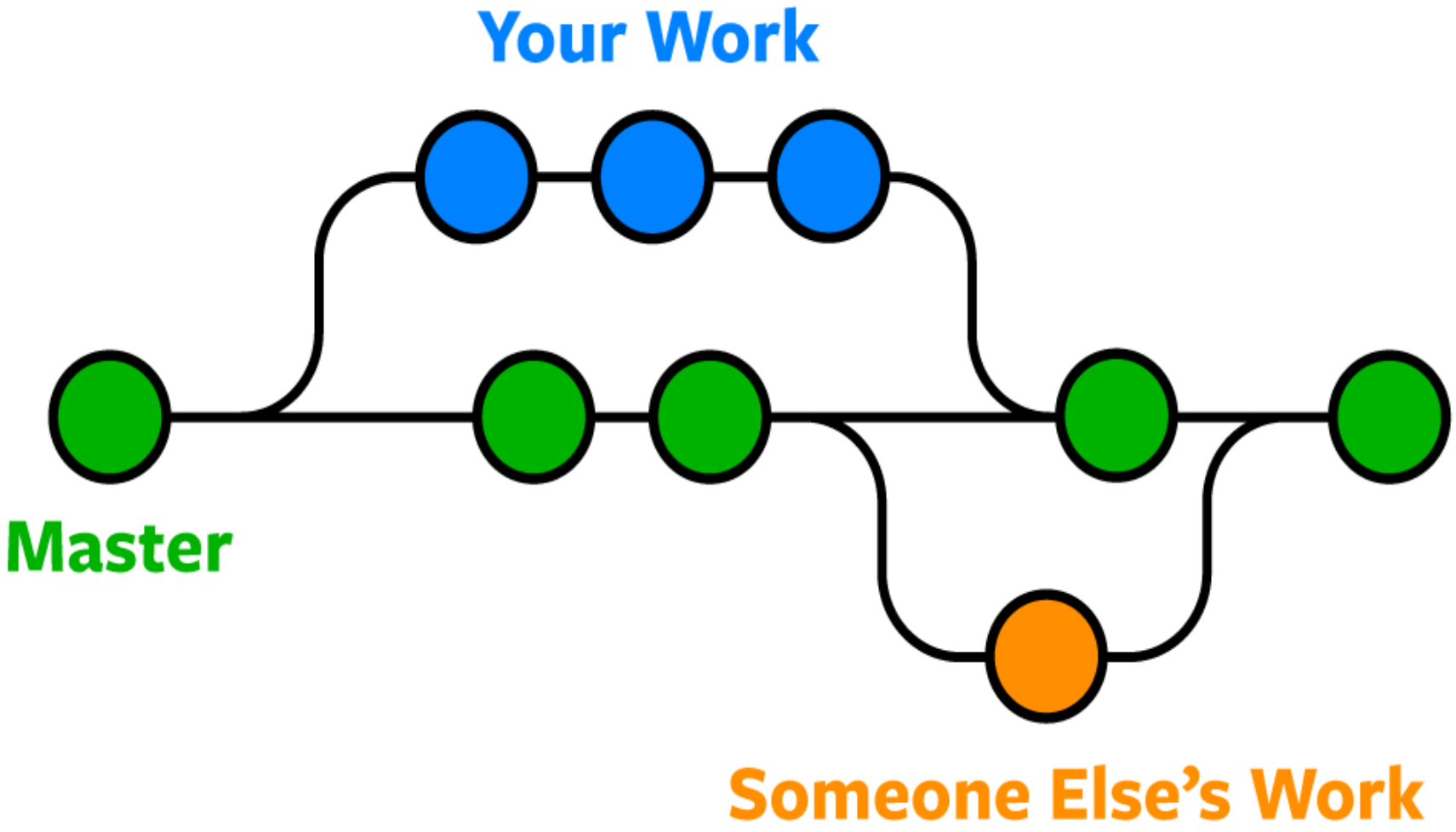
Now check test4.txt comes here

Parallel Development(Branching)

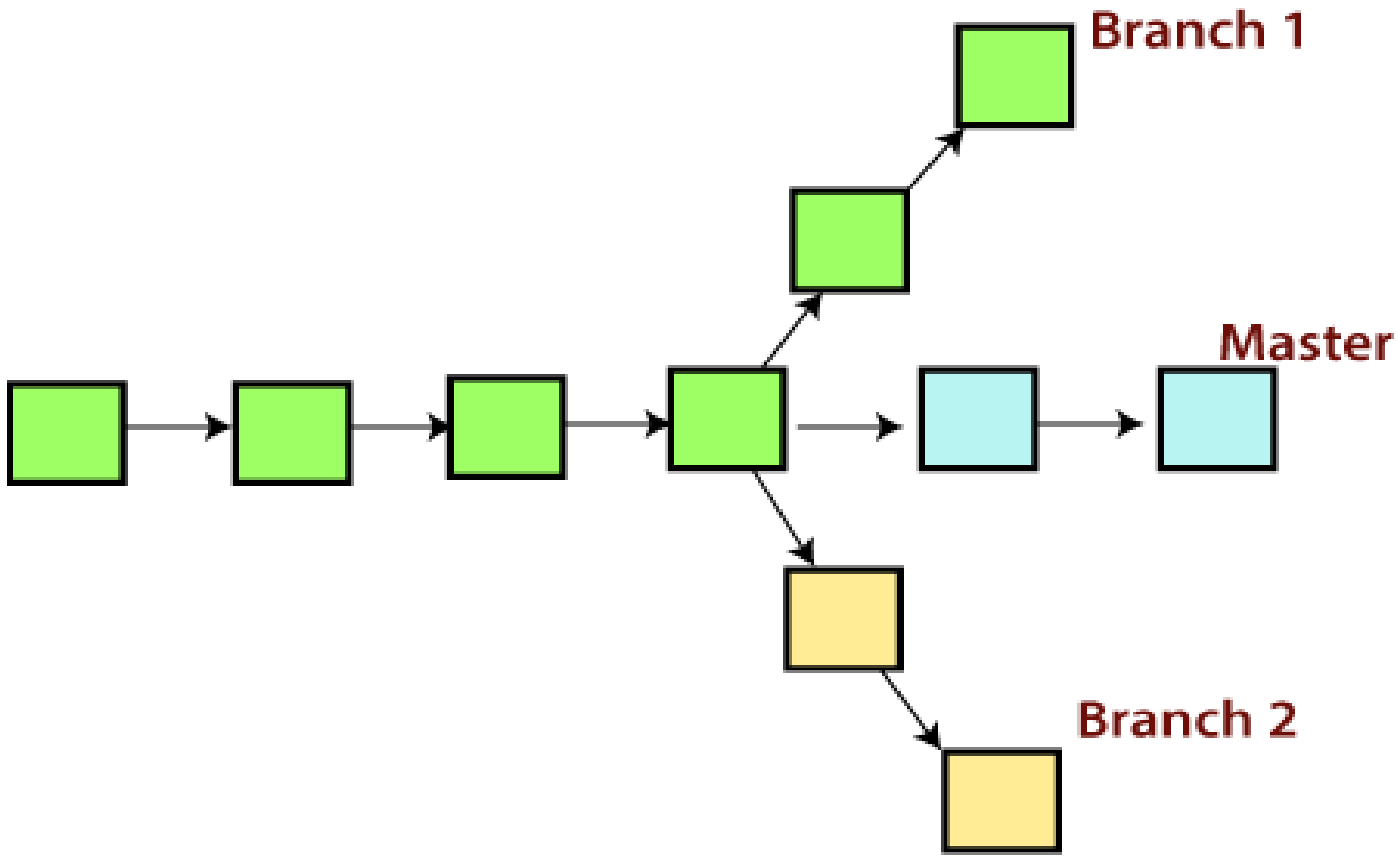
- Our development model uses a variety of supporting branches to aid parallel development between team members, ease tracking of features, prepare for production releases and to assist in quickly fixing live production problems.

- Simply: Multiple developers working on the same project or repository. To handle the workspace of multiple developers, we use branches.

Branching: Last commit of master become the first commit of feature branch



Branching: Last commit of master become the first commit of feature branch



Git operation in branching

#mkdir myproject
cd myproject
git init
touch test11.txt test22.txt
git branch
*master
git branch feature1
git branch
*master
feature1
#git checkout feature1
#ls
test11.txt test22.txt (last commit of master become the first commit of feature branch)

Git operation in branching

nano test33.txt

git add .

git commit -m "added to feature branch"

git branch

*feature1

master

git checkout master

ls

test11.txt test22.txt

This feature is used for parallel development . No branch is interfering each other. When all codes are ok then only developer merge it with master branch.

git status

Git operation in branching

#git checkout feature1

on branch feature1

nothing to commit

git push origin feature1

username:

password:

Now open github.com ---> Branch -master --feature1

check file in both branch

Git tag

Tagging in git or any other VCS refers to create specific point in history for your repository/data.

This is usually done to mark release points (version 1, version 2 ....)

Why should create tag:

-> To mark release point for your code/data.

->To create historic restore point

When to create tag:

-> When you want to create a release point for a stable version of your code

-> create a historic point to restore the data

How to create tag

checkout the branch where you want to create tag

git checkout master

git tag <tagname> eg: :--> #git tag version1 #git tag version1.2 #git tag version2

git tag : to show all tag

git show version1 : to see only specific tag details

How to push into github

logon into github.com

git push origin version1

git push --tags (to push all tags)

Now go to github.com and check in release

Delete Operation

How to delete tag

--> git tag -d version1

--> git tag : to see deleted record

To delete tag in remote github

--> git push origin -d version1 (delete tag in github)

How to checkout tag

--> we cannot checkout tag in git

--> we can create a branch from tag and checkout the branch

git checkout -b branchname tagname

Delete Operation

Q: How to remove files from stagged or workspace or remote repository

git rm filename (removes the file from the repo but also deletes it from the local file system)

git rm *.txt

git rm *

git rm --cached filename (remove the file from the repo and **not** delete it from the local file system)

git rm -r foldername

git commit -m " removing filename"

git push origin master

Now check in github.com

Edit Operation

Q: How edit github.com repository link from system

#git config --edit

Q: How to rename branch name

git branch -m oldname newname

Q: How to remove github.com repository link from system

git config --list

git remote remove origin

git config --list

AWS Amplify

For Next-Gen App Development

AWS Amplify

AWS Amplify is a set of tools and services that enables mobile and front-end web developers to build secure, scalable full stack applications, powered by AWS.

With Amplify, it’s easy to create custom onboarding flows, develop voice-enabled experiences, build AI-powered real-time feeds, launch targeted campaigns, and more.

AWS Amplify Steps

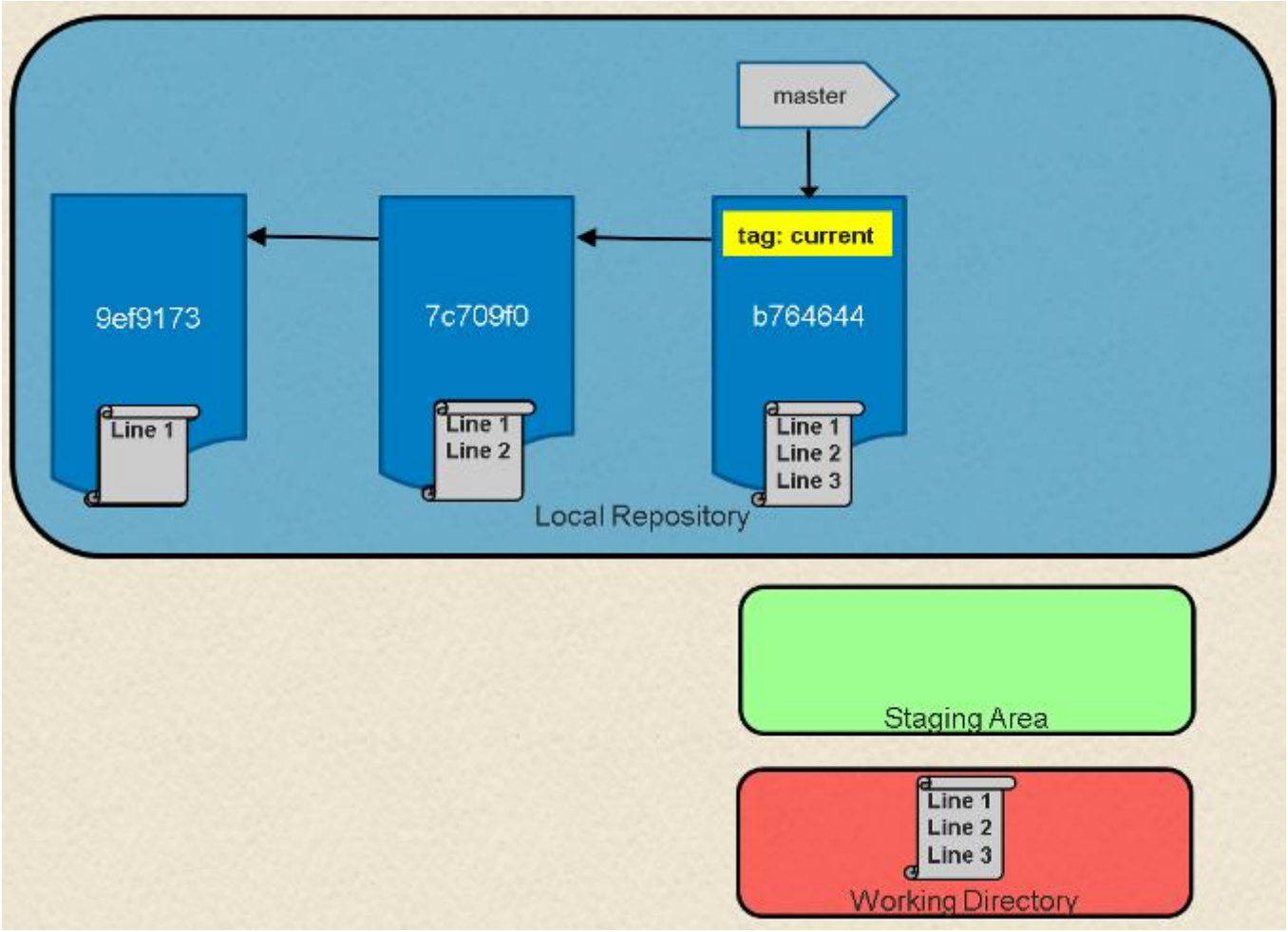
1) Open aws console ---services –aws amplify-----verify github account—add master branch -----ok

2) Create some html file in system –push to github

3) Open aws amplify ---app setting general – reconnect repository – confirm

4) Rewrites and redirects –click here

5) Go to general –copy domain name and paste in new tab


master
tag: current
9ef9173
7c709f0
b764644
Line 1
Line 1
Line 2
Line 1
Line 2
Line 3
Local Repository
Staging Area
Line 1
Line 2
Line 3
Working Directory

How to reset, revert, and return to previous states in Git

Reset

#Git log --online

b764644 File with three lines
7c709f0 File with two lines
9ef9173 File with one line

we want to reset master to point to the commit two back from the current commit, we could use either of the following methods:

$ git reset 9ef9173

or

$ git reset current~2

$ git log --oneline
9ef9173 File with one line

How to reset, revert, and return to previous states in Git

Revert

Revert adds a new commit, Git will prompt for the commit message:

$ git revert HEAD

If we do a git log now, we'll see a new commit that reflects the contents before the previous commit.

$ git log –oneline
11b7712 Revert "File with three lines"
b764644 File with three lines
7c709f0 File with two lines
9ef9173 File with one line

$ git log --oneline master
6a92e7a C4
259bf36 C2
f33ae68 C1
5043e79 C0

$ git log --oneline feature
79768b8 C5
000f9ae C3
259bf36 C2
f33ae68 C1
5043e79 C0