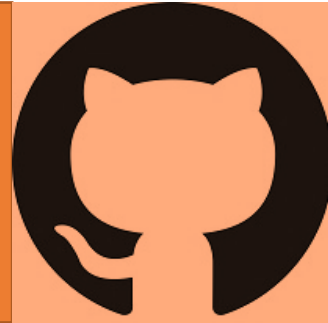




# Git and Github



# What is Version Management / Control?

Version control, also known as source control, is the practice of tracking and managing changes to software code.

# Git and Github

Git



Version Control System

Manage Code History

Track Changes

Github

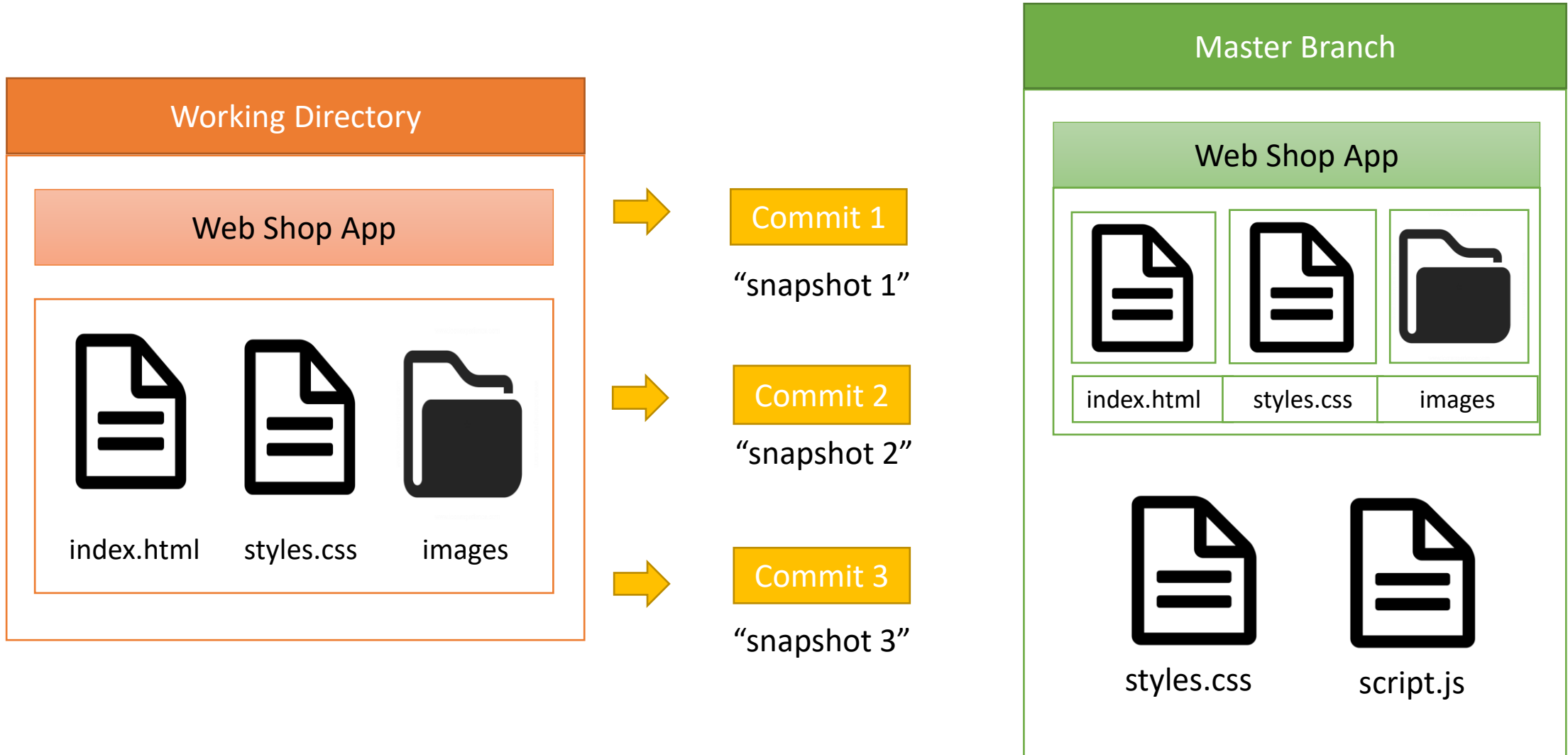


Largest Development Platform

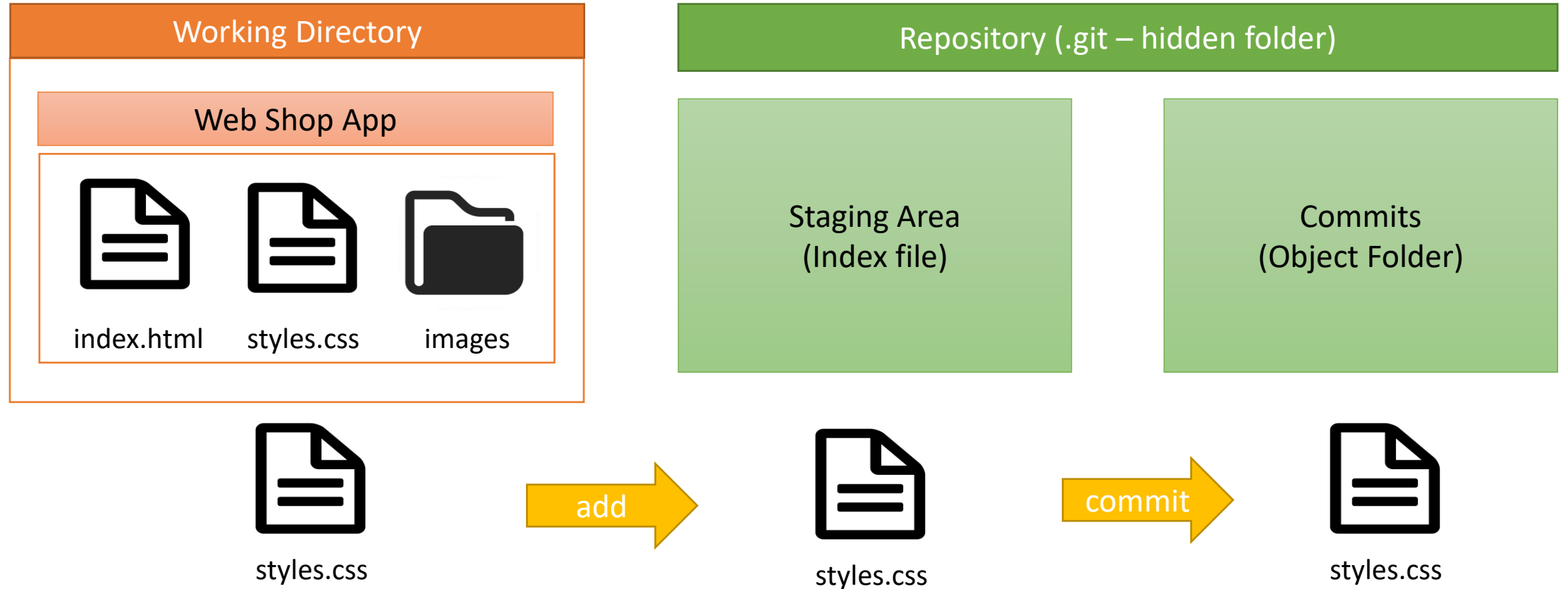
Cloud Hoisting and Collaboration  
Provider

Git Repository Hoisting

# How does Git Works?



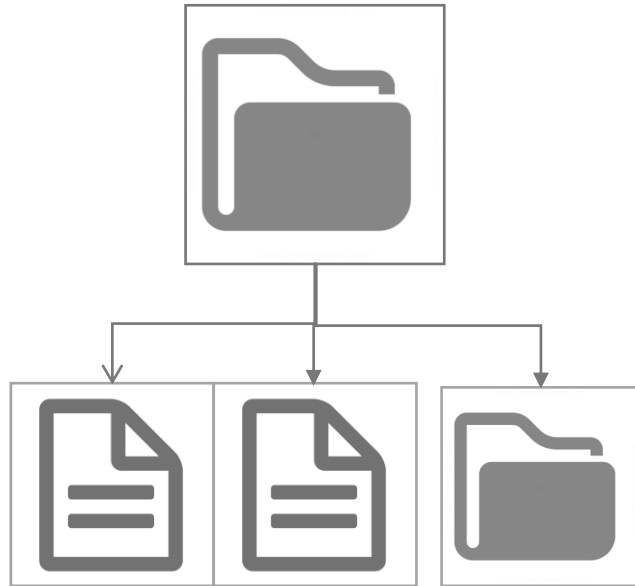
# Git under the hood



Git = tracking changes – NOT storing the files again and again

# Branches and Commits

Working Directory / Tree



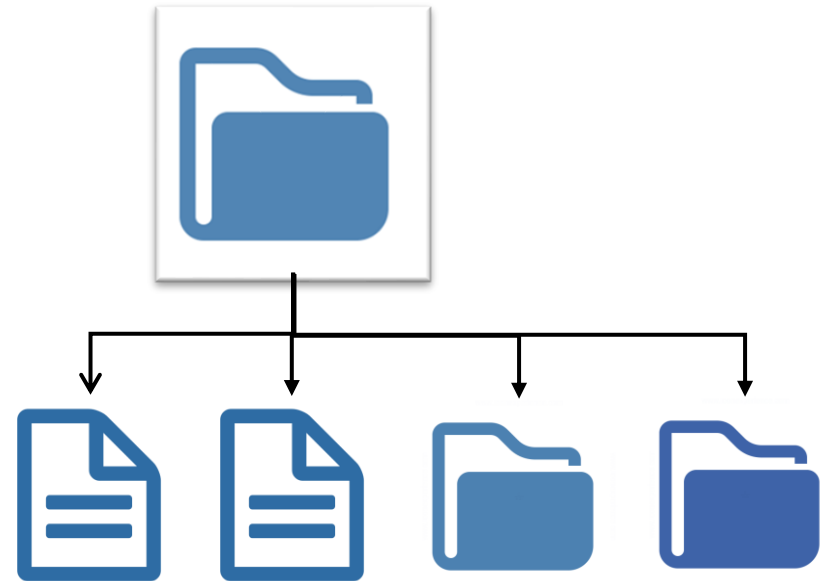
Master Branch

Commit 1

Commit 2

Commit 3

Working Directory / Tree



Development Branch

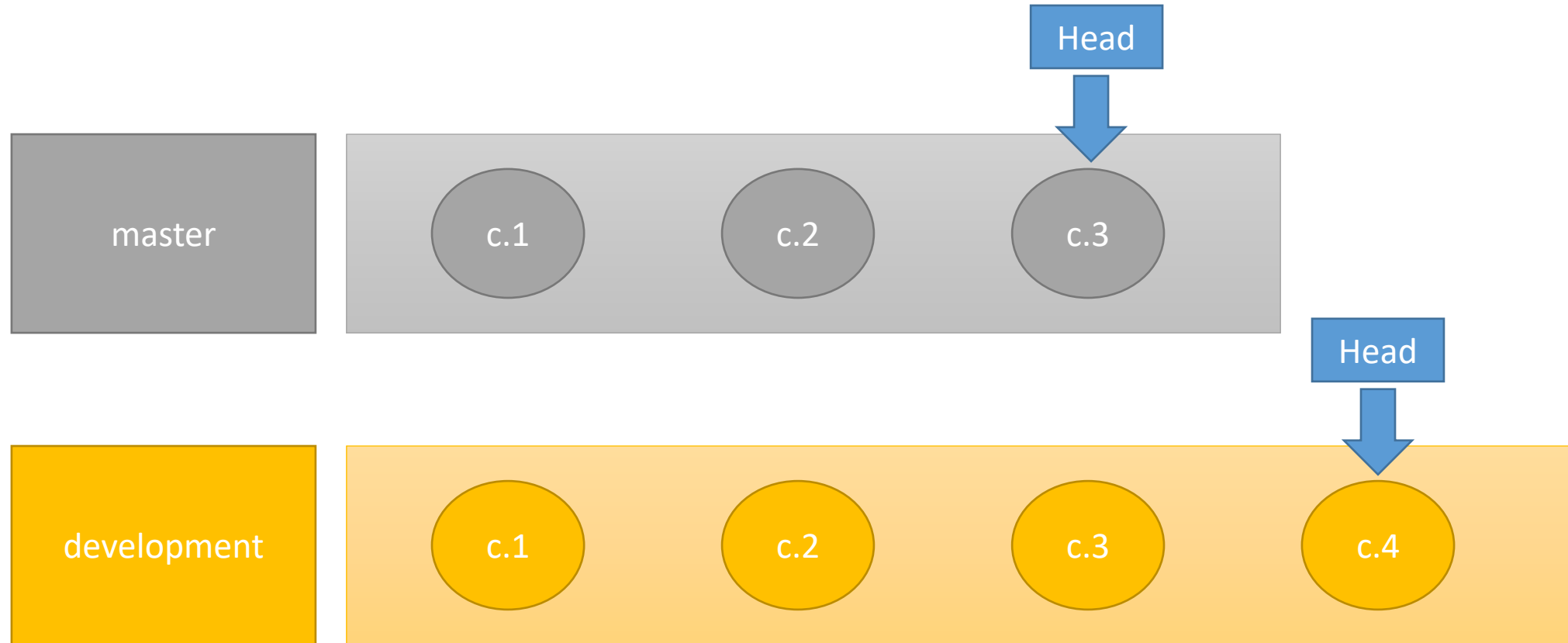
Commit 1

Commit 2

Commit 3

Commit 4

# What is HEAD?



# Deleting Data

Working Directory Files  
(Already part of previous commits)

Unstaged Changes

Staged Changes

Latest Commits

Branches



# Commands Summary - General

git --version

Checks installed Git version

git init

Creates empty Git repository

git status

Check working directory & staging area status

git log

Display all commits of current branch

git ls-files

List tracked files

# Commands Summary – Commit Creation and Access

git add **filename**  
git add .

Add single file or all WD files to staging area

git commit -m "**message**"

Creates new commit

git checkout **commitID**

Checkout commit (detached head)

# Commands Summary –Branch Creation and Access

git branch **branchName**  
git switch **branchName**

Creates new branch

git checkout **branchName**

Go to branch

git checkout -b  
**branchName**

Creates and Access new Branch

git merge **otherBranch**

Bring other branch changes to current  
branch

# Commands Summary –Deleting Data

WD File\*

```
git rm filename  
git add filename
```

Run command after file was deleted  
from current directory

Unstaged  
Changes

```
git checkout .  
git restore filename or .
```

Revert changes in tracked file

```
git clean -df
```

Delete untracked file

Staged Changes

```
git reset filename  
git restore --staged filename  
and  
git checkout -- filename
```

Removes file from staging area

Latest Commits

```
git reset HEAD~1
```

Undo latest (~1) commit

Branches

```
git branch -D branchName
```

Delete branch

# Git Assignment

- Create a new folder and initialize the repository
- Paste the "instructions.txt" file into this folder
- Add a .txt file named "file-1" containing any text of your choice to the working directory
- Create a second .txt file named "file-2"
- Add "file-1" and "file-2" to the staging area - don't add "instructions.txt"
- Change the initial text you added to "file-1"
- Now add all working directory files to the staging area
- Create the first commit
- Create a second branch named "feature" (two commands are possible)

# Git Assignment (Contd...)

- Add a third .txt file ("file-3.txt") to this branch
- Create a new commit
- Add the following text to "file-3": "I will be deleted"
- Add the updated file to the staging area
- Undo the staged change
- Add the following text: "Please add me to the master/main branch"
- Commit this latest change
- Merge the "master" (or "main") branch with "feature"
- Delete the "feature" branch



# Working with Stash

git stash

Record the current state of the working directory

git stash apply [index]

Restored the stashed item

git stash list

List down all stash

git stash push

Push new stash in the list (with tag)

git stash pop

Pop the stash item

git stash drop (index)

Drops single stash item



# Reference Log

**Git keeps track of updates to the tip of branches using a mechanism called reference logs,**

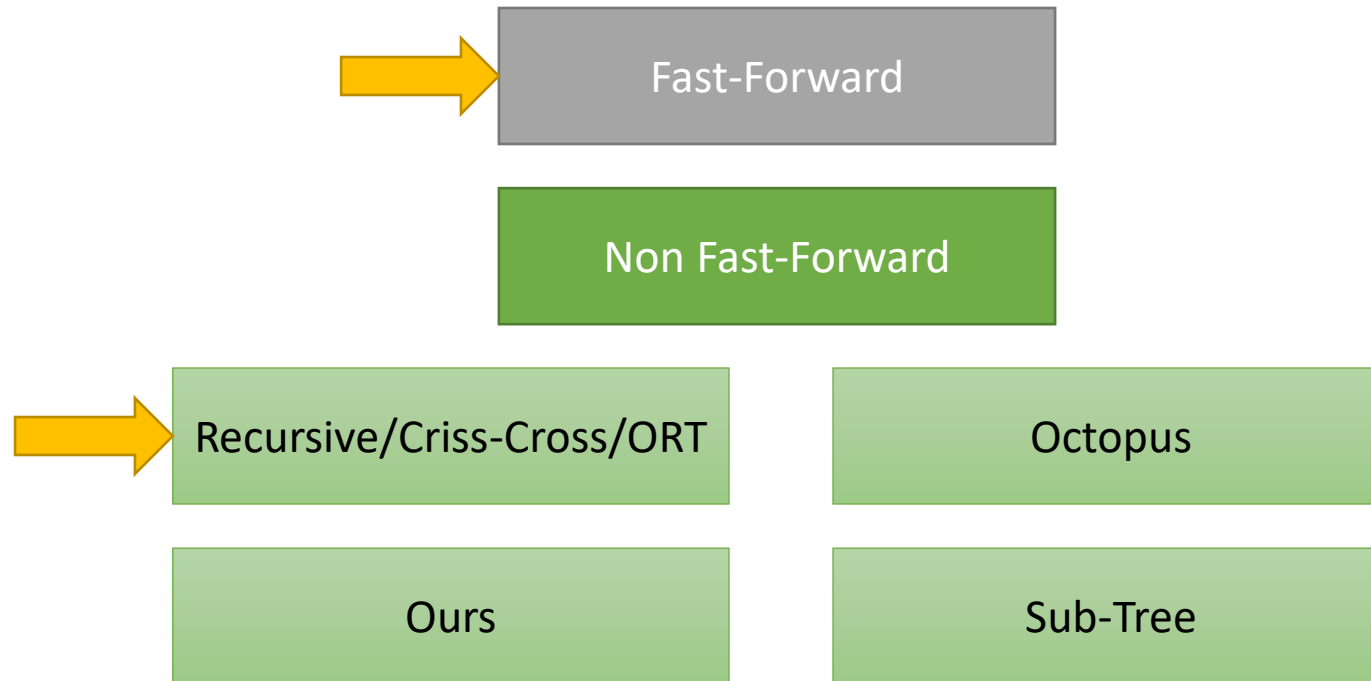
git reflog

Manage reflog information



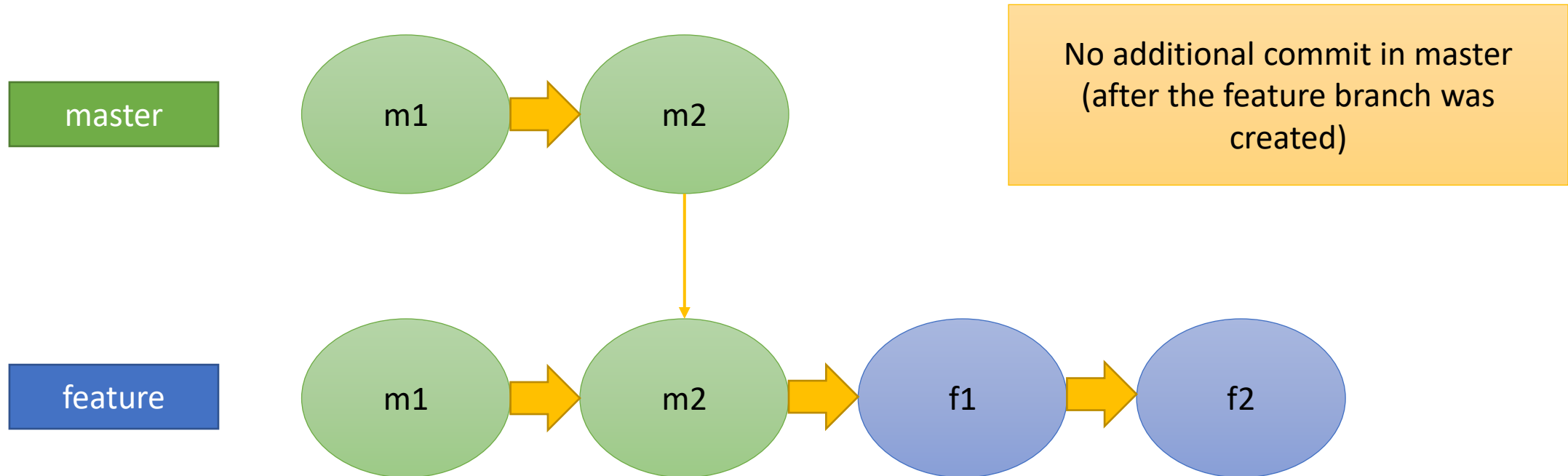


# Merge Types



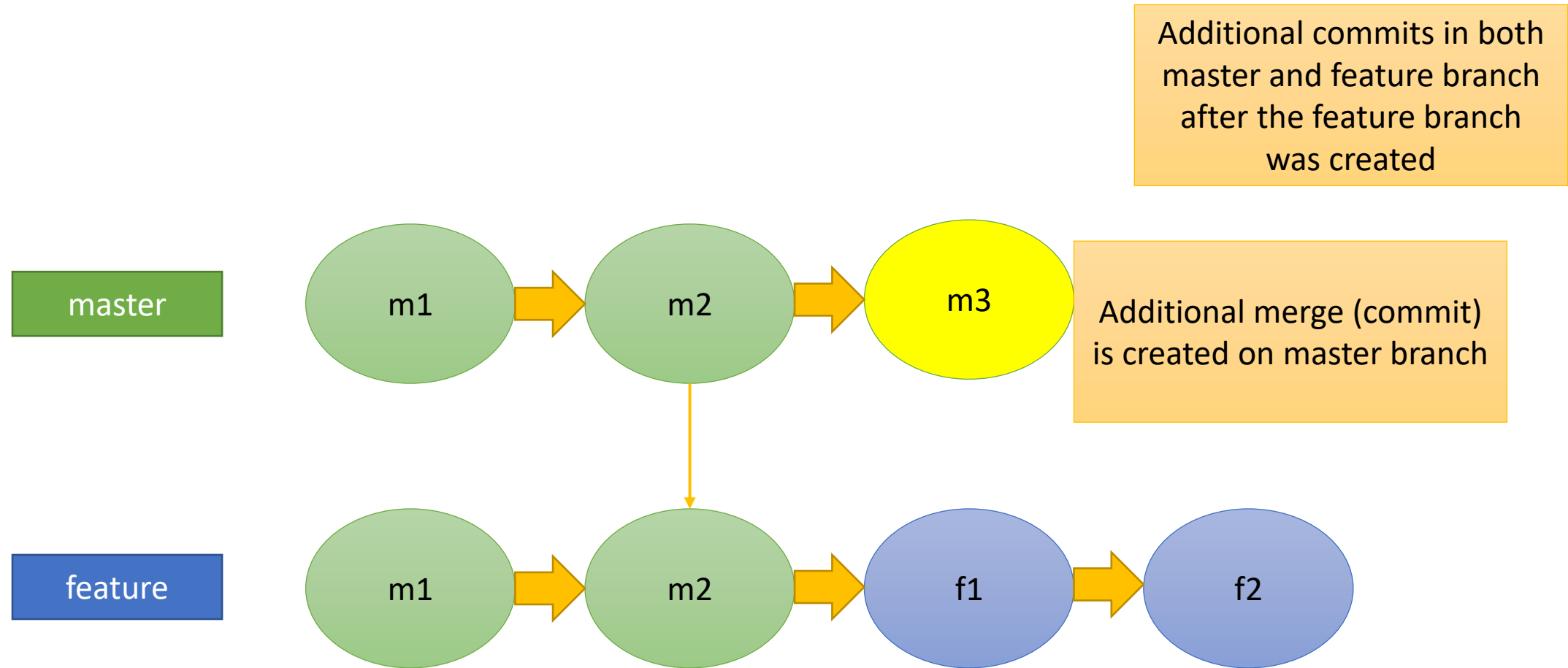


# Master and Feature – Merge (“fast-forward”)





# Master and Feature – Merge (“recursive”)





# Branch Types

Local Branch

Branch on your machine only

Remote Branch

Branch on remote location

---

Remote Tracking Branch

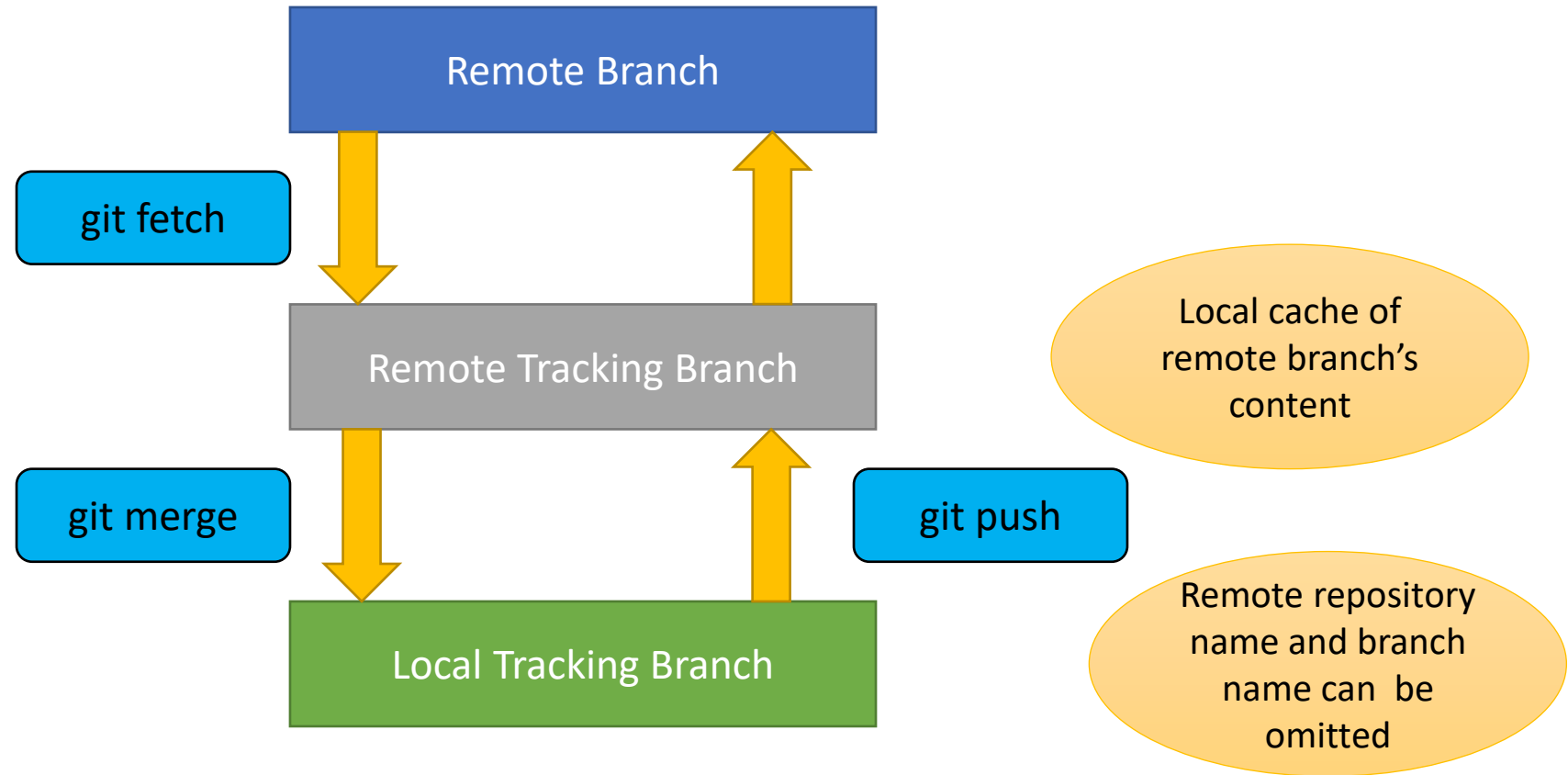
Local copy of remote branch  
(not to be edited)

Local Tracking Branch

Local reference to remote  
tracking branch (to be edited)

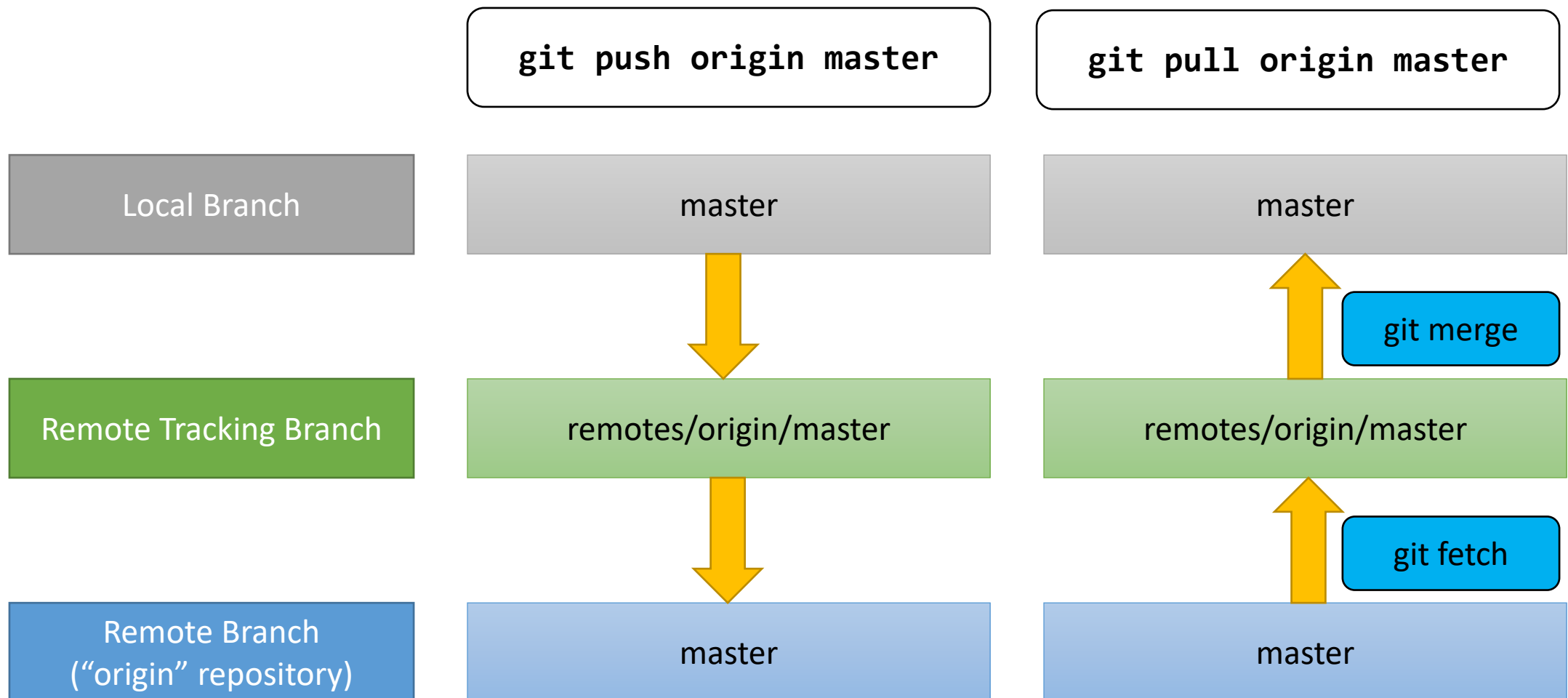


# Local & Remote Tracking Branches





# More on Branches





# Local & Remote Tracking Branches – General Commands

git remote

Show remote servers

git branch -a

List all branches

git branch -r

List all remote branches

git remote show origin

Show detailed configuration

git branch -vv

List local tracking branches and their  
remotes

git branch -t  
branchName  
origin/branchName

Creates local tracking branches