Efficient tools and techniques for modern software development

Git – Part 3

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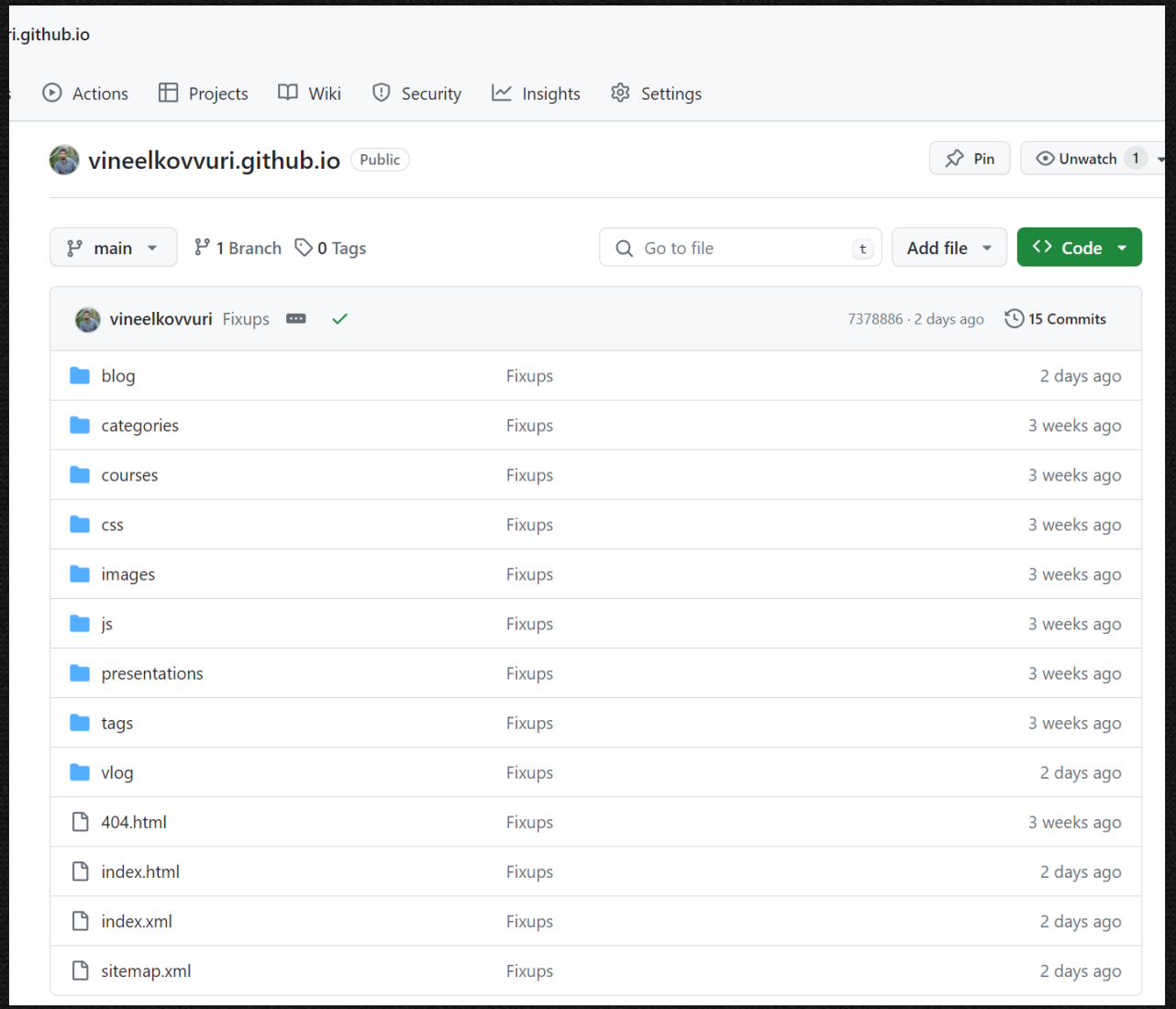
Agenda

- Github
- Remote
- Push
- Clone
- Fetch
- Pull

Recap

Create Repo	git init	Initialize a repository	Part-1
Inspect Repo	git status	Know the status of the repository	
Create Commits	git add	Add files for staging	
	git commit	Create commit of the staged files	
Inspect Commits	git log	View the commit log	
	git diff/difftool	See changes between the commits	
Undo Commits	git reset	Undo commit(unpack the commit)	
	git checkout	Discard the changes	
Branching Commands	git branch	List all branches	Part-2
	git branch <new> <existing>	Create <new> branch from <existing> branch	
	git checkout <branch>	Switch to <branch>	
	git checkout –b <new> <existing>	Create a new branch and switch to that branch	
Merge Command	git merge <feature>	Merge current branch with <feature> branch	
Rebase Command	git rebase <feature>	Rebase current branch with <feature> branch	

Github – Walk through

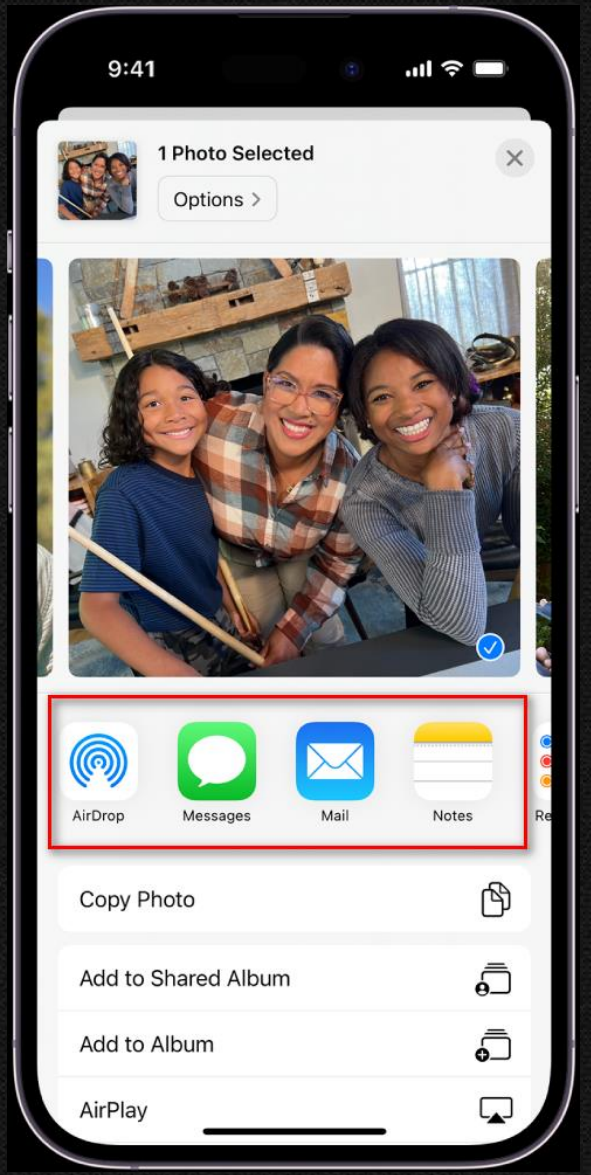


Remote

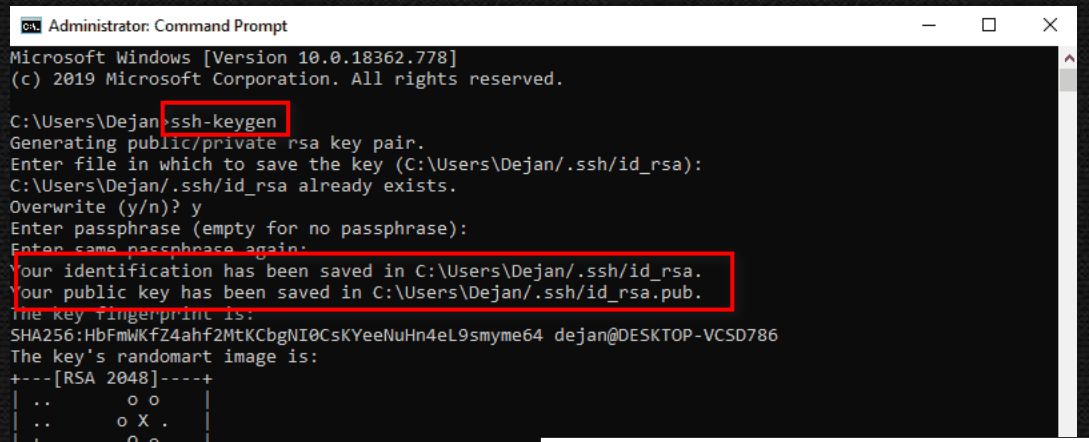
- Remote is a place where you can upload your git source code. Github is one such place
- There can be more than one remote for a given repository

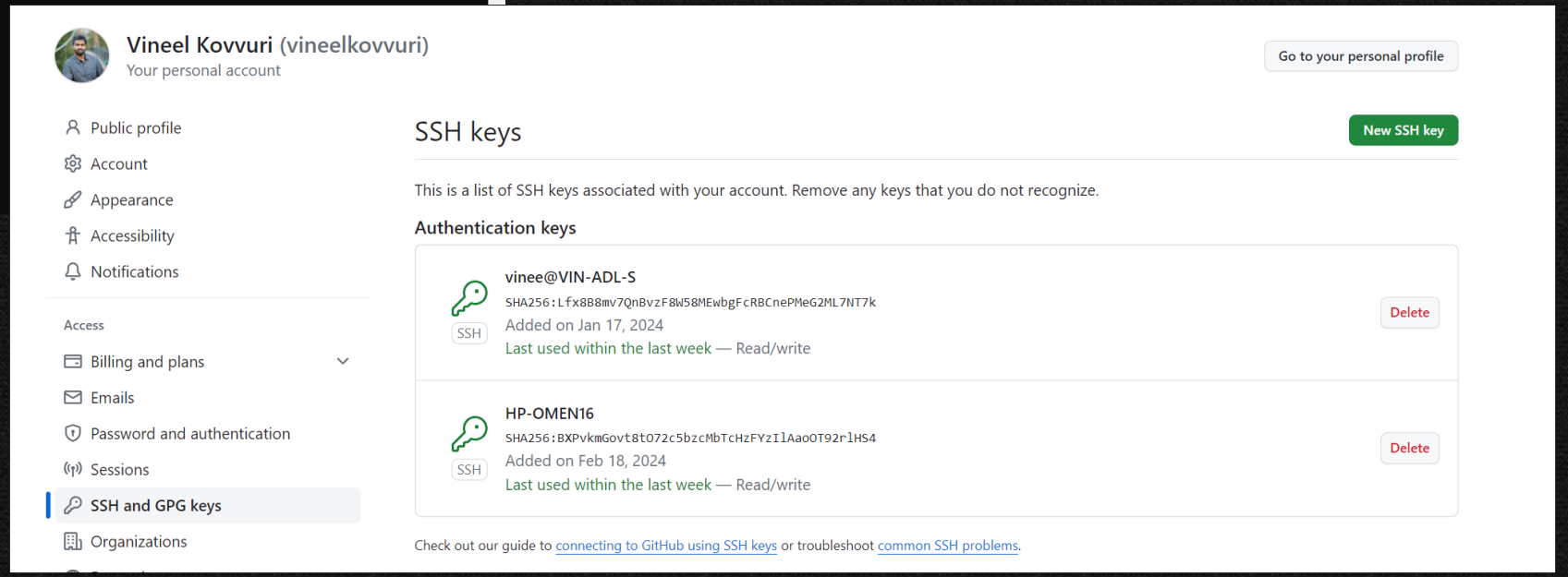
```
C:\repos\wimlib>git remote -v
origin  https://github.com/ebiggers/wimlib.git (fetch)
origin  https://github.com/ebiggers/wimlib.git (push)
```

- origin is the name given to the default remote

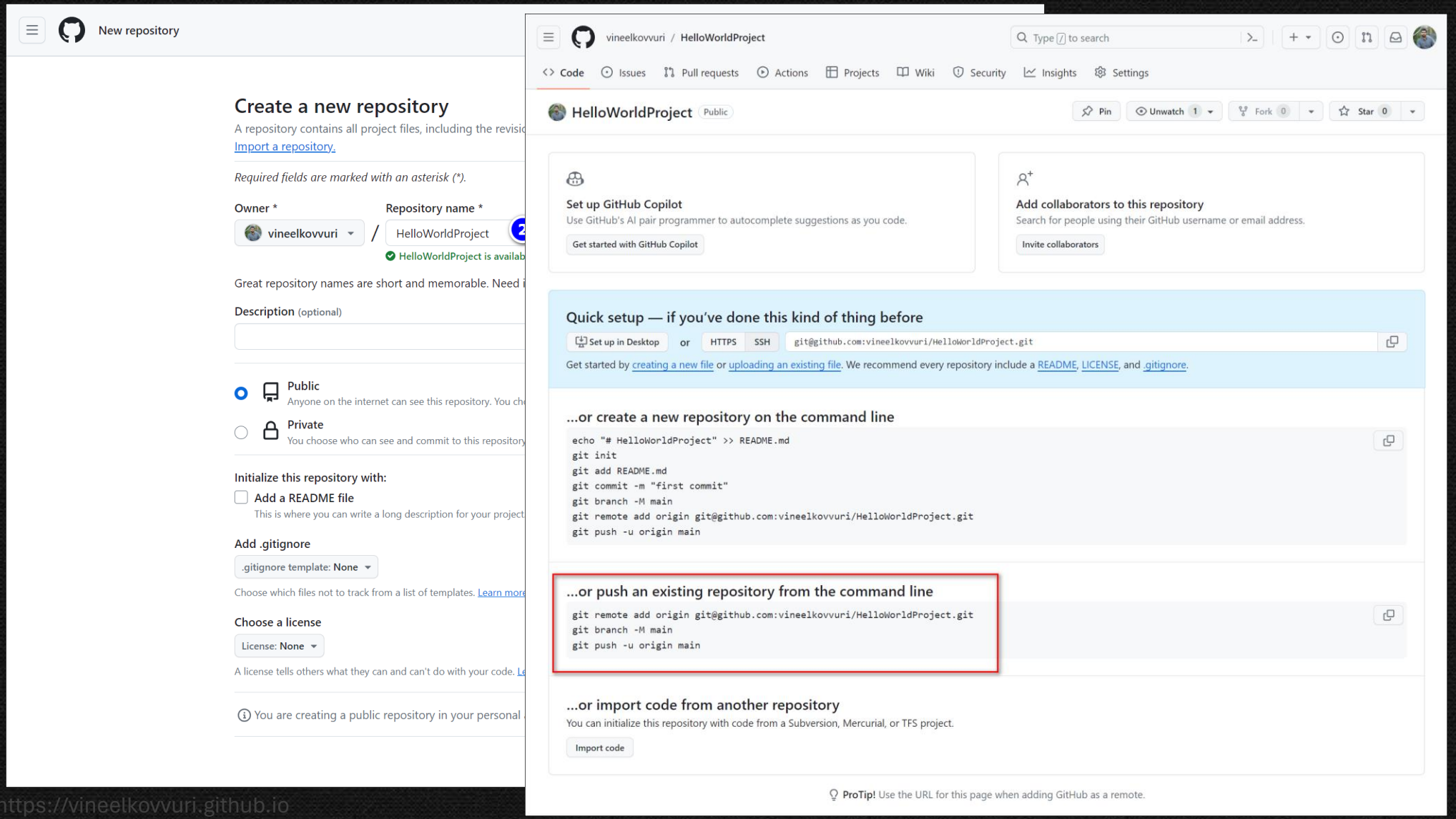


Github – Configure ssh



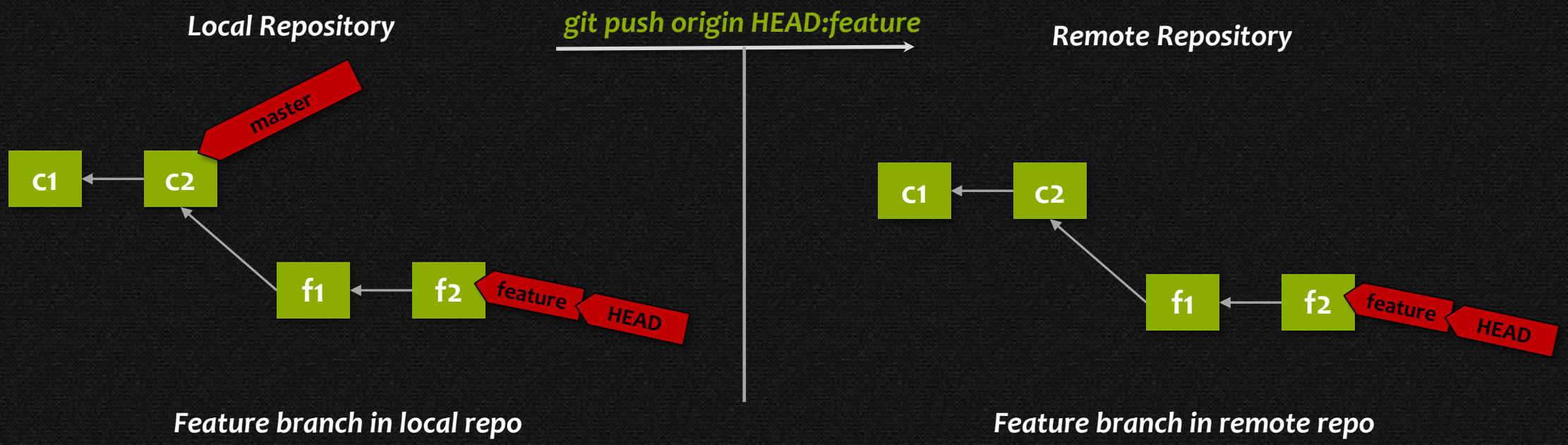


Github – How to Create a new repo?



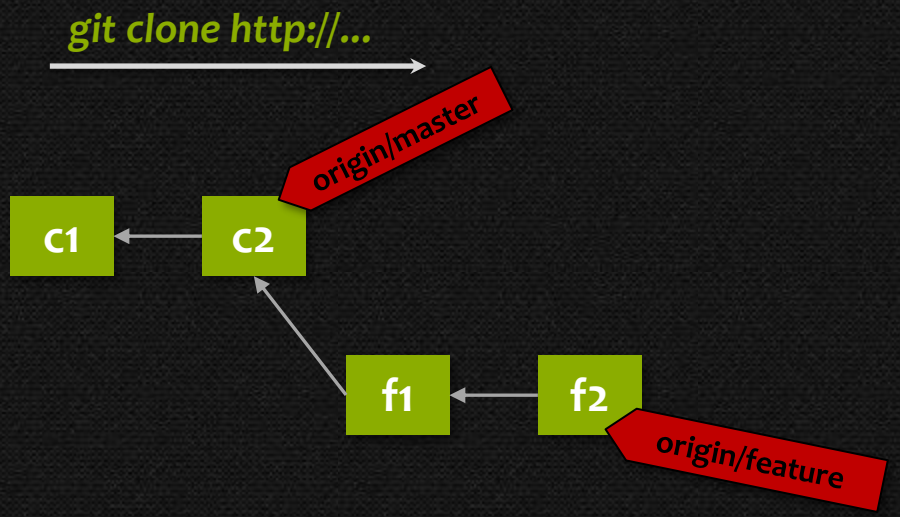
How to push to a new remote repository?

- *git push origin HEAD:<branchname>*
  - Push the local branch to remote branch with the name *<branchname>*



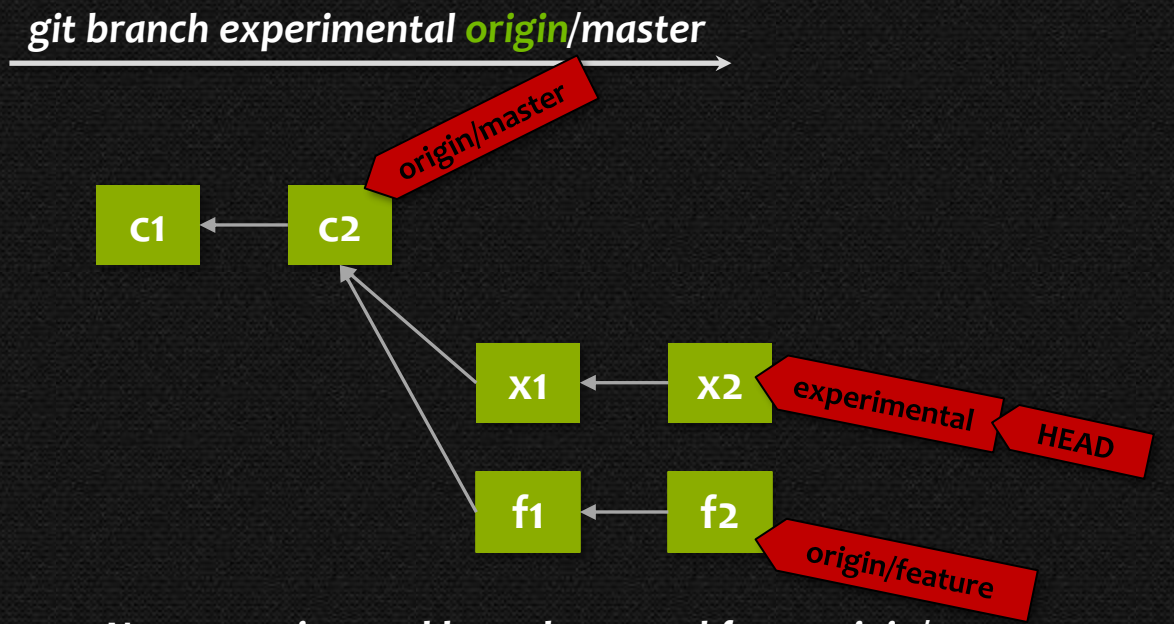
Cloning an existing remote repository

- *git clone* is used to create a new copy of remote repository in local machine
- Git clone completely copies all the branches from the remote repository
- By default, git will add the cloned remote as *origin*



All branches from remote repository are Cloned into local repo after a git clone

Create local branch with remote branch reference



New experimental branch created from origin/master

Listing local and remote branches

- *git branch –r* can be used to list only remote branches

```
C:\RemoteHelloWorld>git branch -r
  origin/feature
  origin/master

C:\RemoteHelloWorld>git branch -r -vv
  origin/feature 119aaed Added help file to use multiply function
  origin/master  6ec5b63 Converted int to long to fix overflow

C:\RemoteHelloWorld>
```

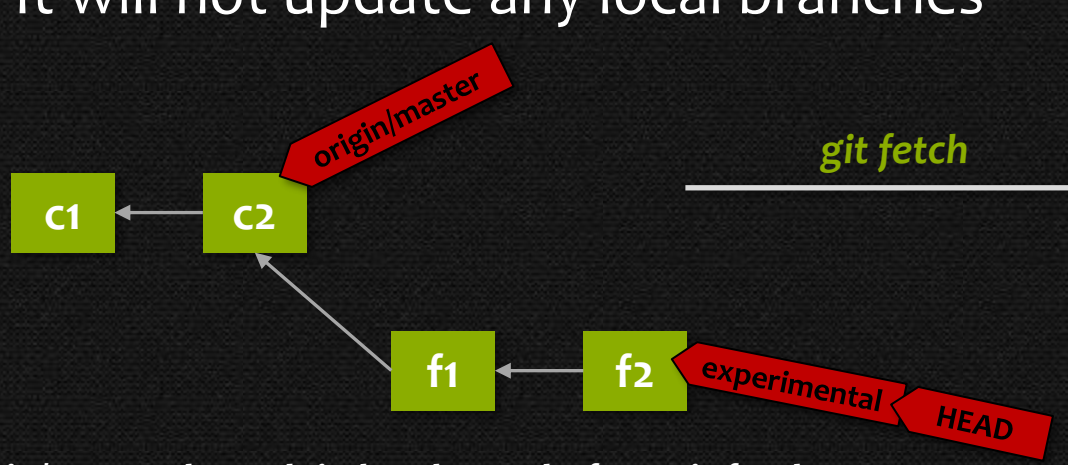
- *git branch –a –vv* list all(-a) branches(both local and remote) with tracking information(-vv)

```
C:\RemoteHelloWorld>git checkout -b experimental origin/master
Branch experimental set up to track remote branch master from origin.
Switched to a new branch 'experimental'

C:\RemoteHelloWorld>git branch -a -vv
* experimental             95f2e83 [origin/master] Initial multiplication commit
  master                   95f2e83 [origin/master] Initial multiplication commit
  remotes/origin/master    95f2e83 Initial multiplication commit

C:\RemoteHelloWorld>
```

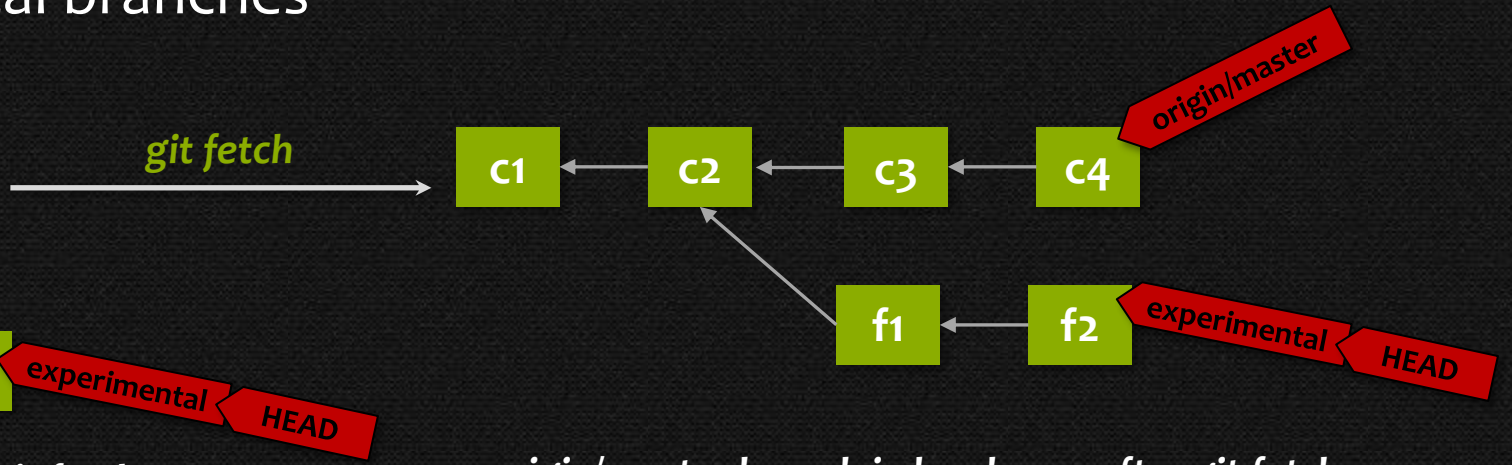
origin/master

Fetching

- *git fetch* gets and updates all the remote branches
- It will not update any local branches



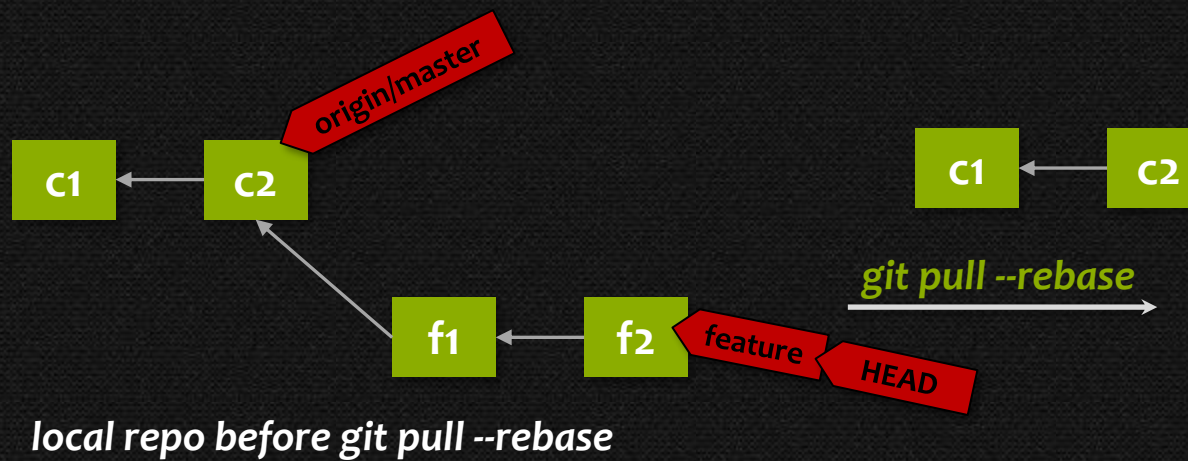
origin/master branch in local repo before git fetch

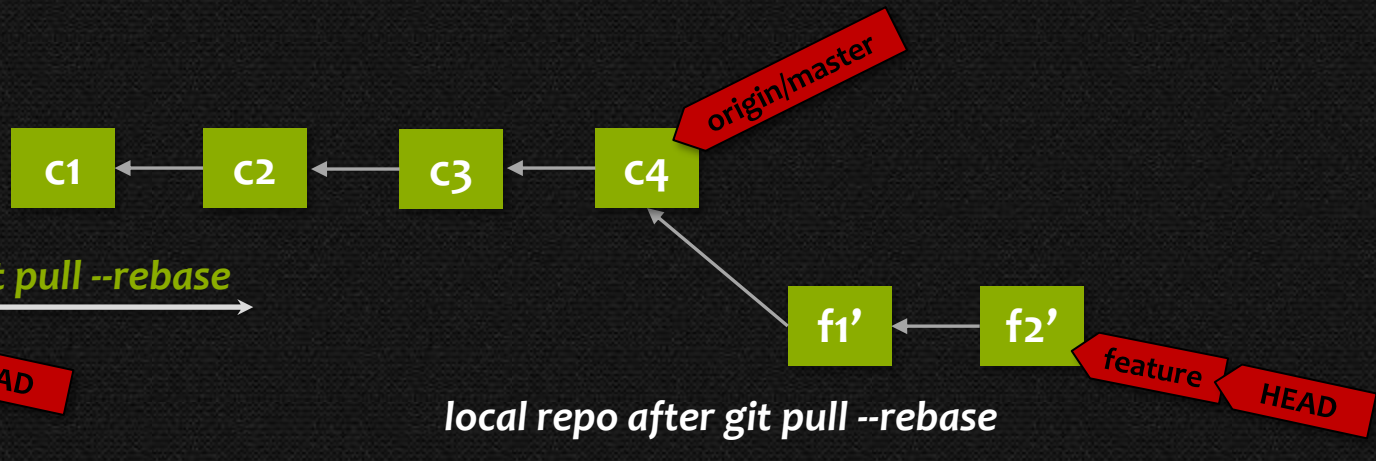


origin/master branch in local repo after git fetch

Pull

- *git pull –-rebase* fetches and also rebases the current branch with the origin/master





***git pull –-rebase = git fetch + git rebase**(current branch)*

Recap

Clone Command	git clone <url>	Clone a git repository
Branch Command	git branch –r	Show only remote branches
Push Command	git push origin HEAD:<branch>	Push current branch as <branch> to origin
Fetch Command	git fetch	Update all locally cloned remote branches(aka origin/…) with any updates from origin
Pull Command	git pull –-rebase	Update all locally cloned remote branches(aka origin/…) with any updates from origin and also rebases the current local branch

References

- https://github.com/vineelkovvuri/gvpcoe-sessions-2024/blob/master/Git-Part3
- https://stackoverflow.com/

Thank You