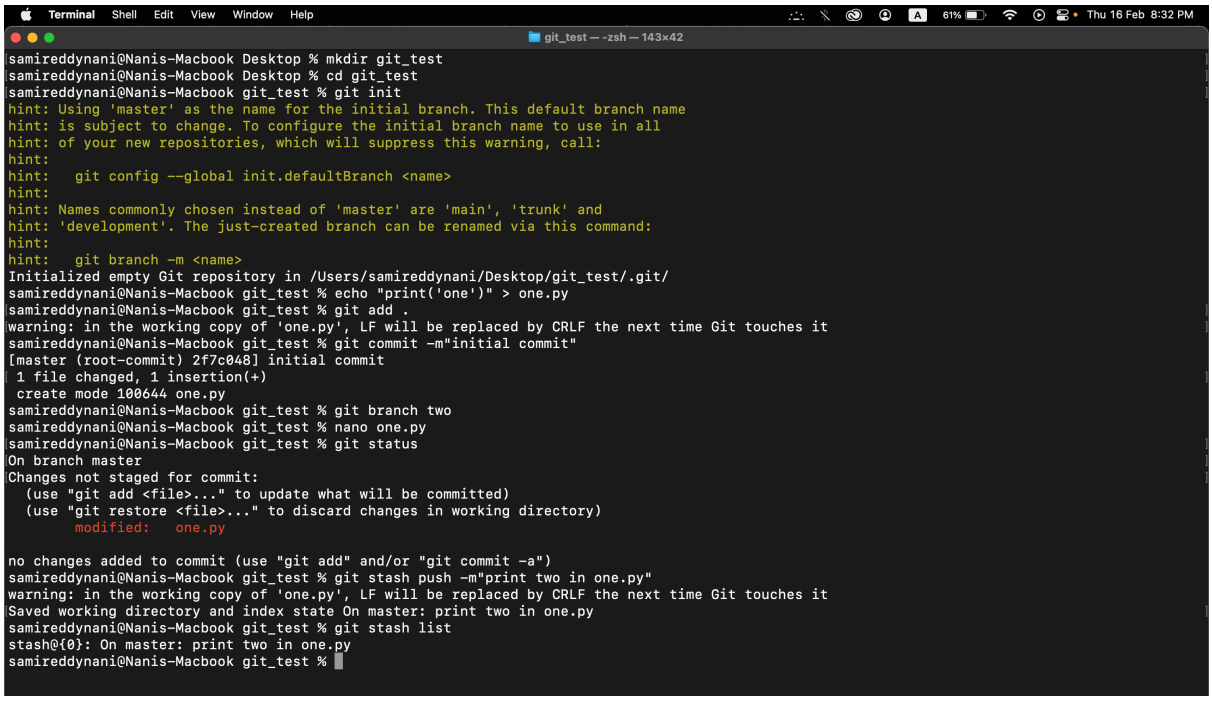
Q1. Describe the usage of the git stash command by using an example and also state the process by giving the screenshot of all the commands written in git bash.

Git stash: Git stash is used to temporarily store the changes which are not committed and under tracked . git stash temporarily shelves (or stashes) changes you've made to your working copy so you can work on something else, and then come back and re-apply them later on. Stashing is handy if you need to quickly switch context and work on something else, but you're mid-way through a code change and aren't quite ready to commit.

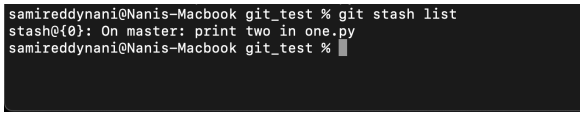
For example: If we are working on a group project and the project is divided into modules and each module has a branch. And If we want to checkout the progress of the others without committing the current changes then we can stash our current changes and checkout to the other branch. After completing that we can come back and resume our work by taking the changes from the stash to current working directory.

-> Following are the commands used in Git stash:

- To create a stash we use the command
    - **git stash push -m “message”**



- To list all the stashes that are present in the stash stack we use the command
    - **git stash list**



- To see the changes in a particular stash we use the command. We use index option to specify the stash index in the stash stack
    - **git stash show [index]**

```
samireddynani@Nanis-Macbook git_test % git stash list
stash@{0}: On master: print two in one.py
samireddynani@Nanis-Macbook git_test % git stash show 0
 one.py | 1 +
 1 file changed, 1 insertion(+)
samireddynani@Nanis-Macbook git_test %
```

- To apply back the changes from the stash to the current head/working directory we use the following command. NOTE: if we use apply it won't remove the stash from the stack
    - **git stash apply [index]**

```
samireddynani@Nanis-Macbook git_test % git status
On branch master
nothing to commit, working tree clean
samireddynani@Nanis-Macbook git_test % git stash list
stash@{0}: On master: print two in one.py
samireddynani@Nanis-Macbook git_test % git stash apply 0
On branch master
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   one.py

no changes added to commit (use "git add" and/or "git commit -a")
samireddynani@Nanis-Macbook git_test %
```

- To apply back the changes from the stash to the current head/working directory and also remove the stash from the stack we use the following command
    - **git stash pop [index]**

```
samireddynani@Nanis-Macbook git_test % git stash push -m" stash 2"
Saved working directory and index state On master:  stash 2
samireddynani@Nanis-Macbook git_test % git stash list
stash@{0}: On master: stash 2
stash@{1}: On master: print two in one.py
samireddynani@Nanis-Macbook git_test % git stash pop 0
On branch master
Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git restore <file>..." to discard changes in working directory)
        modified:   one.py

no changes added to commit (use "git add" and/or "git commit -a")
Dropped refs/stash@{0} (a72652657d445a532e419f6880a485598f79413f)
samireddynani@Nanis-Macbook git_test %
```

- To remove a particular stash from the stack we use the command
    - **git stash drop [index]**

```
samireddynani@Nanis-Macbook git_test % git stash push -m"updated one.py added line 3"
Saved working directory and index state On master: updated one.py added line 3
samireddynani@Nanis-Macbook git_test % git stash list
stash@{0}: On master: updated one.py added line 3
stash@{1}: On master: print two in one.py
samireddynani@Nanis-Macbook git_test % git stash drop 1
Dropped refs/stash@{1} (ffb10c9c62fa6da4b0f68716b5b0d85179ceb92c)
samireddynani@Nanis-Macbook git_test % git stash list
stash@{0}: On master: updated one.py added line 3
samireddynani@Nanis-Macbook git_test %
```

- To remove all stashes from the stack we use the command
    - **git stash clear [index]**

```
samireddynani@Nanis-Macbook git_test % git stash drop 1
Dropped refs/stash@{1} (ffb10c9c62fa6da4b0f68716b5b0d85179ceb92c)
samireddynani@Nanis-Macbook git_test % git stash list
stash@{0}: On master: updated one.py added line 3
samireddynani@Nanis-Macbook git_test % git stash list
stash@{0}: On master: updated one.py added line 3
samireddynani@Nanis-Macbook git_test % git stash clear
samireddynani@Nanis-Macbook git_test % git stash list
samireddynani@Nanis-Macbook git_test %
```

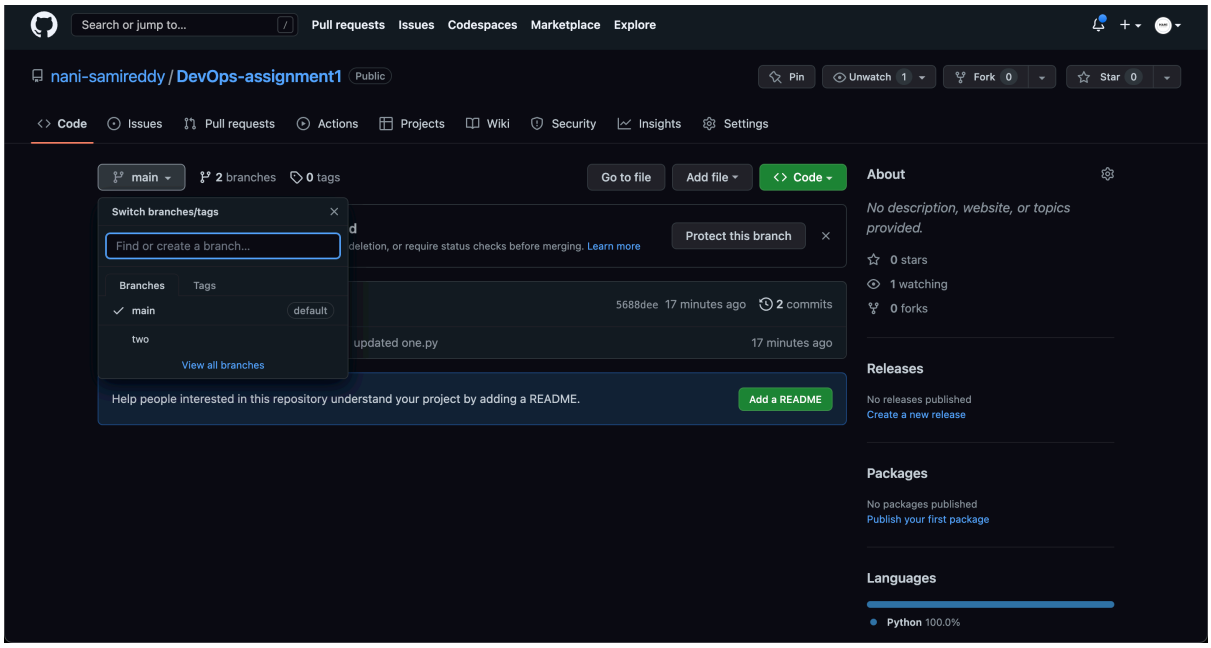
Q2. By using a sample example of your choice, use the git fetch command and also use the git merge command and describe the whole process through a screenshot with all the commands and their output in git bash.

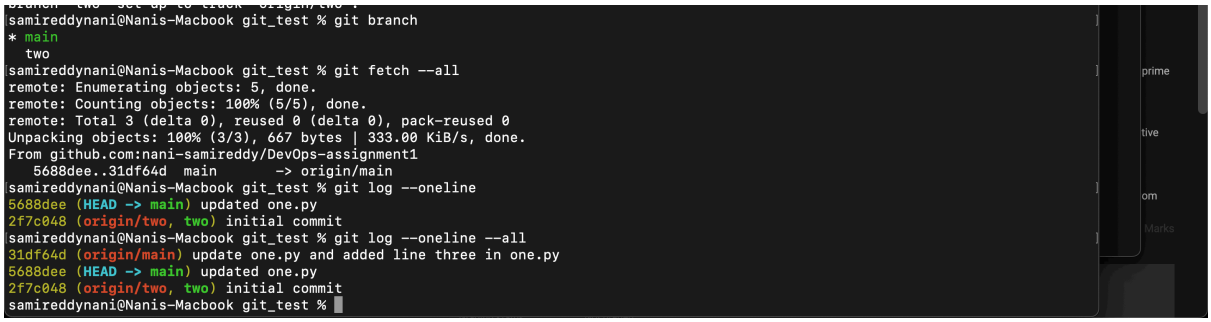
Before actually using fetch and merge first we have to know about the **git fetch** and **git merge** commands.

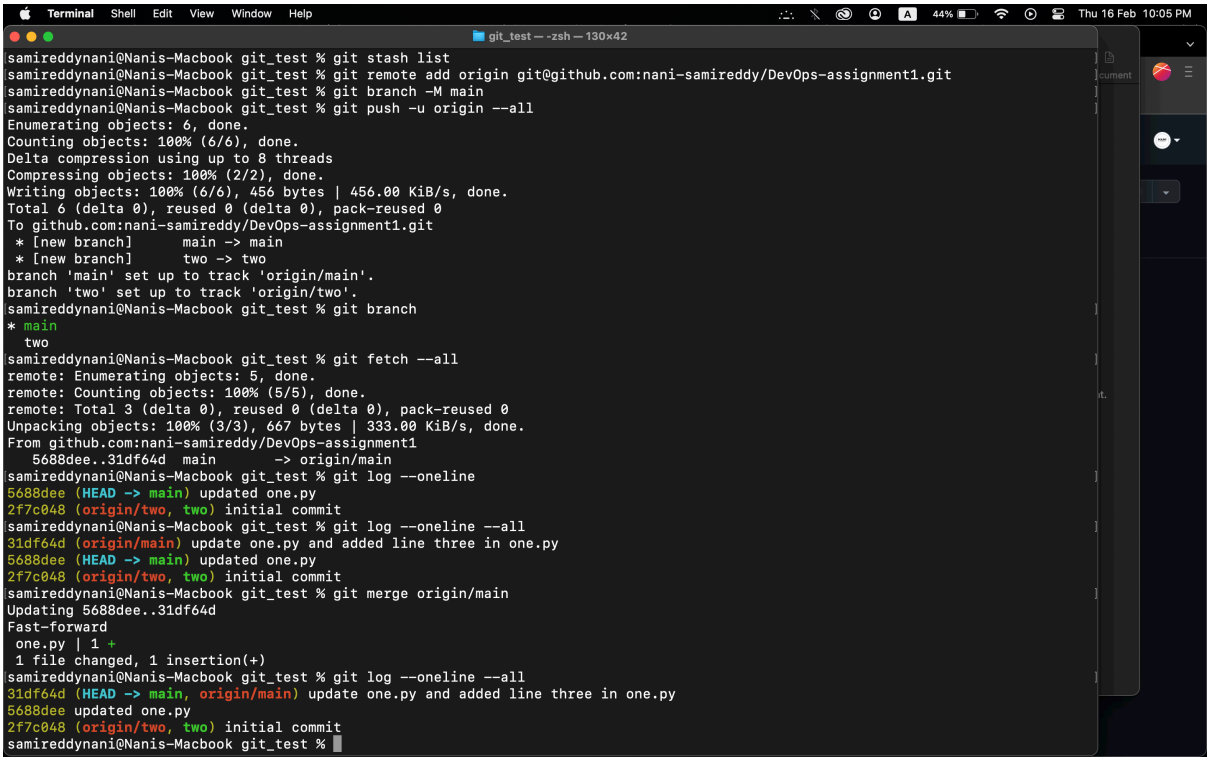
Git fetch: The git fetch command downloads commits, files, and refs from a remote repository into your local repo. Fetching is what you do when you want to see what everybody else has been working on. This makes fetching a safe way to review commits before integrating them with your local repository.

Git merge: Incorporates changes from the named commits (since the time their histories diverged from the current branch) into the current branch.

To demonstrate the usage of the git fetch and git merge we are taking the following example we have a repository that has two branches and we will update the second branch in the remote(github) by making a commit there. So we'll fetch those updated commits using **git fetch** and then merges with the main branch in the local repo.
As we know that fetch only downloads but doesn't merge those changes to the local repo. We have to do it manually.





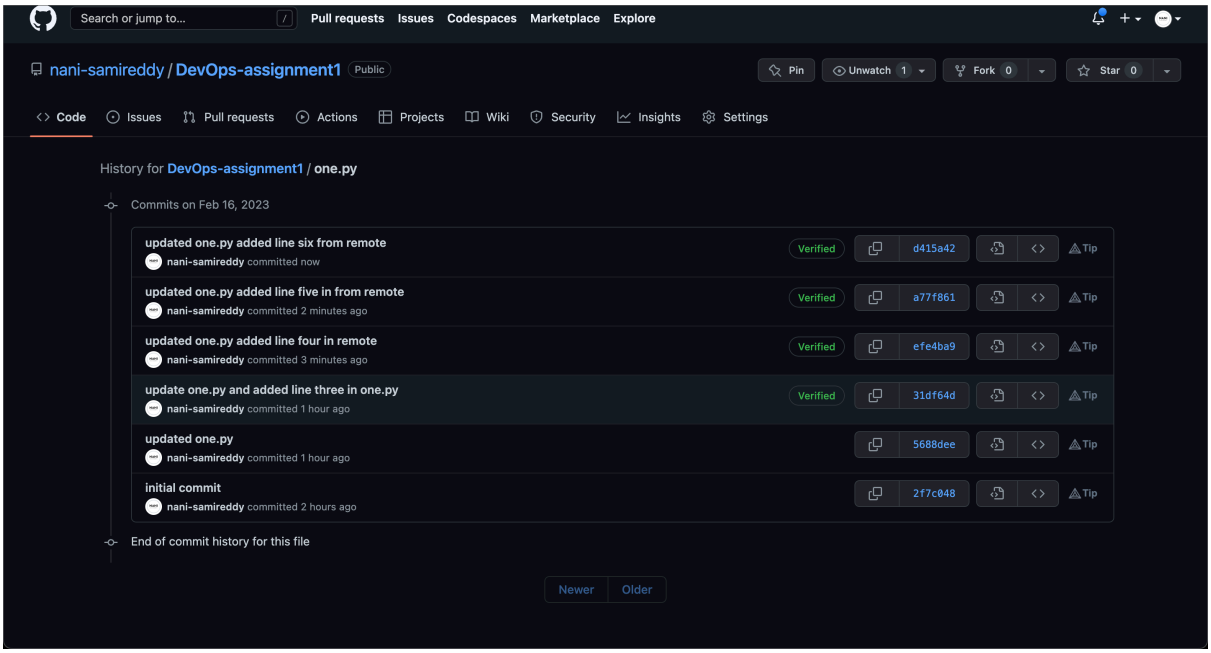

Terminal Shell Edit View Window Help
44%
Thu 16 Feb 10:05 PM
git_test — -zsh — 130×42
samireddynani@Nanis-Macbook git_test % git stash list
samireddynani@Nanis-Macbook git_test % git remote add origin git@github.com:nani-samireddy/DevOps-assignment1.git
samireddynani@Nanis-Macbook git_test % git branch -M main
samireddynani@Nanis-Macbook git_test % git push -u origin --all
Enumerating objects: 6, done.
Counting objects: 100% (6/6), done.
Delta compression using up to 8 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (6/6), 456 bytes | 456.00 KiB/s, done.
Total 6 (delta 0), reused 0 (delta 0), pack-reused 0
To github.com:nani-samireddy/DevOps-assignment1.git
* [new branch] main -> main
* [new branch] two -> two
branch 'main' set up to track 'origin/main'.
branch 'two' set up to track 'origin/two'.
samireddynani@Nanis-Macbook git_test % git branch
* main
two
samireddynani@Nanis-Macbook git_test % git fetch --all
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), 667 bytes | 333.00 KiB/s, done.
From github.com:nani-samireddy/DevOps-assignment1
5688dee..31df64d main -> origin/main
samireddynani@Nanis-Macbook git_test % git log --oneline
5688dee (HEAD -> main) updated one.py
2f7c048 (origin/two, two) initial commit
samireddynani@Nanis-Macbook git_test % git log --oneline --all
31df64d (origin/main) update one.py and added line three in one.py
5688dee (HEAD -> main) updated one.py
2f7c048 (origin/two, two) initial commit
samireddynani@Nanis-Macbook git_test % git merge origin/main
Updating 5688dee..31df64d
Fast-forward
one.py | 1 +
1 file changed, 1 insertion(+)
samireddynani@Nanis-Macbook git_test % git log --oneline --all
31df64d (HEAD -> main, origin/main) update one.py and added line three in one.py
5688dee updated one.py
2f7c048 (origin/two, two) initial commit
samireddynani@Nanis-Macbook git_test %

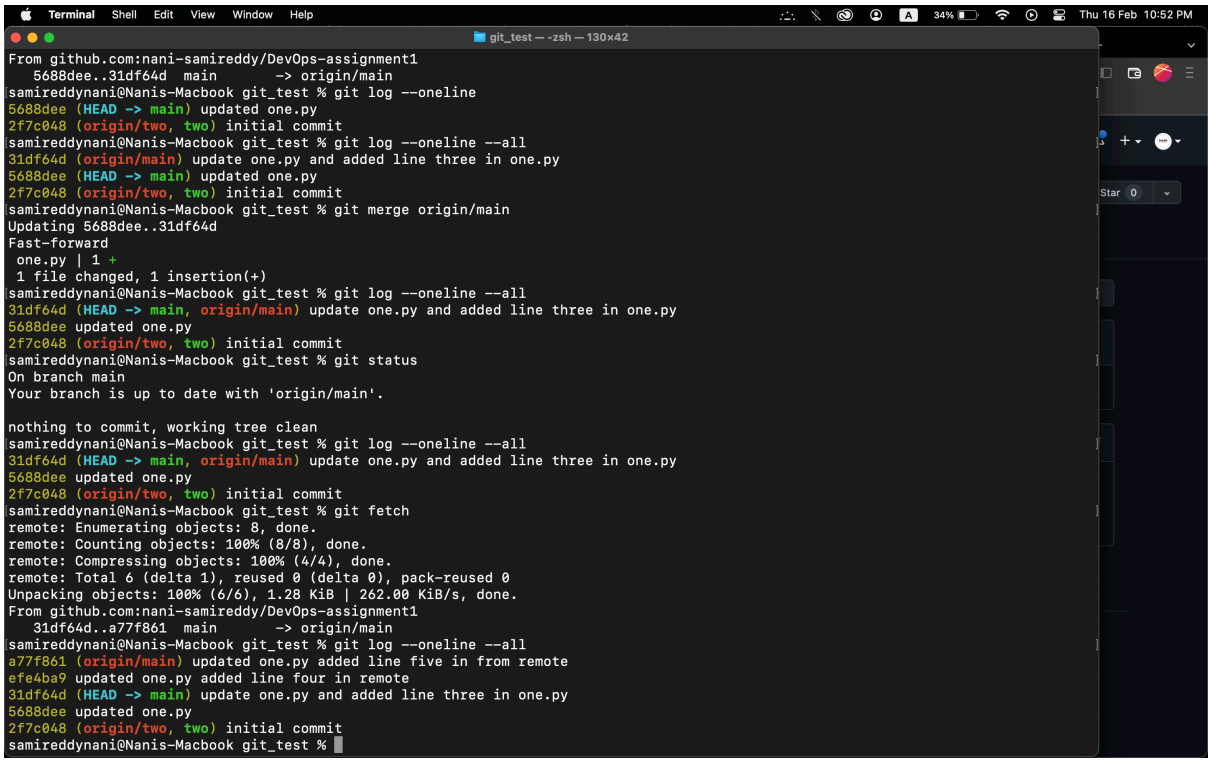
Q3. State the difference between git fetch and git pull by doing a practical example in your git bash and attach a screenshot of all the processes.

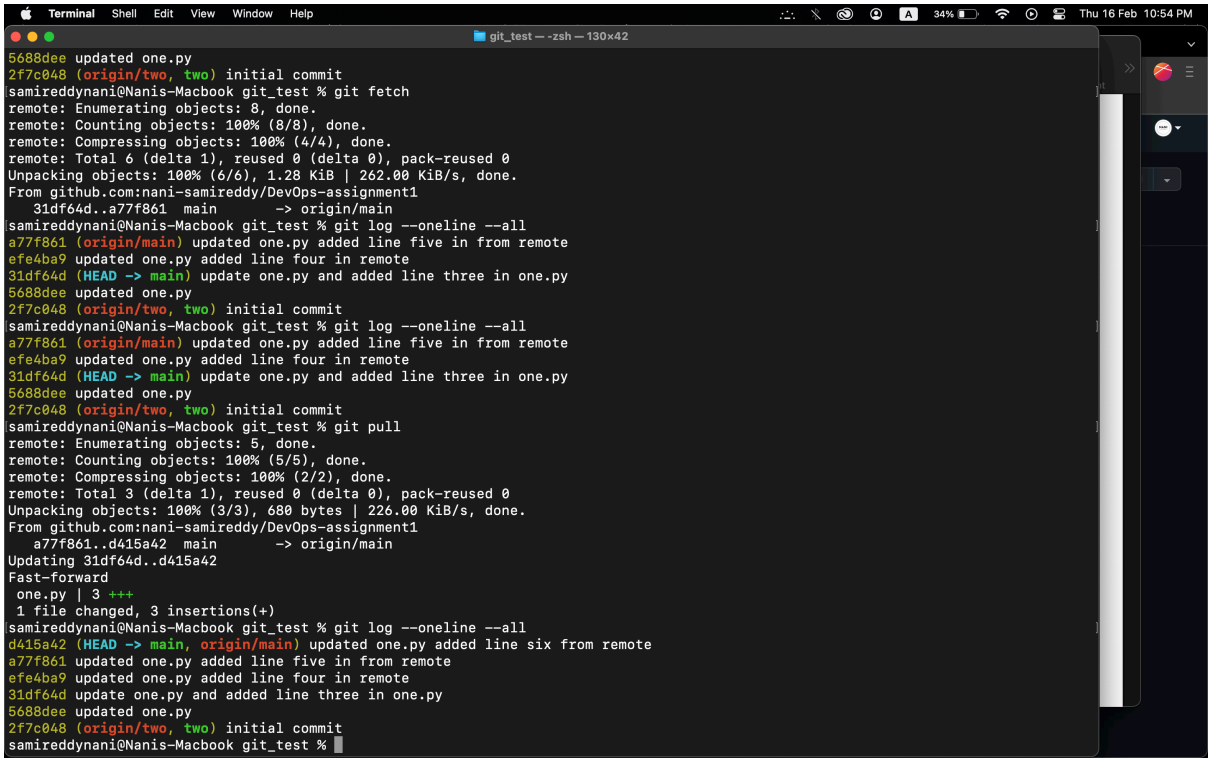
Git fetch: The git fetch command downloads commits, files, and refs from a remote repository into your local repo. Fetching is what you do when you want to see what everybody else has been working on. This makes fetching a safe way to review commits before integrating them with your local repository.

Git pul: Incorporates changes from a remote repository into the current branch. If the current branch is behind the remote, then by default it will fast-forward the current branch to match the remote.

Git pull command pulls new changes or commits from a particular branch from your central repository and updates your target branch in your local repository.
Git fetch is also used for the same purpose but it works in a slightly different way. When you perform a git fetch, it pulls all new commits from the desired branch and stores it in a new branch in your local repository.
If you want to reflect these changes in your target branch, git fetch must be followed with a git merge.
our target branch will only be updated after merging the target branch and fetched branch.
Git pull = git fetch + git merge




Terminal Shell Edit View Window Help
Thu 16 Feb 10:52 PM
git_test — -zsh — 130×42
From github.com:nani-samireddy/DevOps-assignment1
5688dee..31df64d main -> origin/main
samireddynani@Nanis-Macbook git_test % git log --oneline
5688dee (HEAD -> main) updated one.py
2f7c048 (origin/two, two) initial commit
samireddynani@Nanis-Macbook git_test % git log --oneline --all
31df64d (origin/main) update one.py and added line three in one.py
5688dee (HEAD -> main) updated one.py
2f7c048 (origin/two, two) initial commit
samireddynani@Nanis-Macbook git_test % git merge origin/main
Updating 5688dee..31df64d
Fast-forward
one.py | 1 +
1 file changed, 1 insertion(+)
samireddynani@Nanis-Macbook git_test % git log --oneline --all
31df64d (HEAD -> main, origin/main) update one.py and added line three in one.py
5688dee updated one.py
2f7c048 (origin/two, two) initial commit
samireddynani@Nanis-Macbook git_test % git status
On branch main
Your branch is up to date with 'origin/main'.
nothing to commit, working tree clean
samireddynani@Nanis-Macbook git_test % git log --oneline --all
31df64d (HEAD -> main, origin/main) update one.py and added line three in one.py
5688dee updated one.py
2f7c048 (origin/two, two) initial commit
samireddynani@Nanis-Macbook git_test % git fetch
remote: Enumerating objects: 8, done.
remote: Counting objects: 100% (8/8), done.
remote: Compressing objects: 100% (4/4), done.
remote: Total 6 (delta 1), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (6/6), 1.28 KiB | 262.00 KiB/s, done.
From github.com:nani-samireddy/DevOps-assignment1
31df64d..a77f861 main -> origin/main
samireddynani@Nanis-Macbook git_test % git log --oneline --all
a77f861 (origin/main) updated one.py added line five in from remote
efe4ba9 updated one.py added line four in remote
31df64d (HEAD -> main) update one.py and added line three in one.py
5688dee updated one.py
2f7c048 (origin/two, two) initial commit
samireddynani@Nanis-Macbook git_test %


Terminal Shell Edit View Window Help
Thu 16 Feb 10:54 PM
git_test — -zsh — 130×42
5688dee updated one.py
2f7c048 (origin/two, two) initial commit
samireddynani@Nanis-Macbook git_test % git fetch
remote: Enumerating objects: 8, done.
remote: Counting objects: 100% (8/8), done.
remote: Compressing objects: 100% (4/4), done.
remote: Total 6 (delta 1), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (6/6), 1.28 KiB | 262.00 KiB/s, done.
From github.com:nani-samireddy/DevOps-assignment1
31df64d..a77f861 main -> origin/main
samireddynani@Nanis-Macbook git_test % git log --oneline --all
a77f861 (origin/main) updated one.py added line five in from remote
efe4ba9 updated one.py added line four in remote
31df64d (HEAD -> main) update one.py and added line three in one.py
5688dee updated one.py
2f7c048 (origin/two, two) initial commit
samireddynani@Nanis-Macbook git_test % git log --oneline --all
a77f861 (origin/main) updated one.py added line five in from remote
efe4ba9 updated one.py added line four in remote
31df64d (HEAD -> main) update one.py and added line three in one.py
5688dee updated one.py
2f7c048 (origin/two, two) initial commit
samireddynani@Nanis-Macbook git_test % git pull
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), 680 bytes | 226.00 KiB/s, done.
From github.com:nani-samireddy/DevOps-assignment1
a77f861..d415a42 main -> origin/main
Updating 31df64d..d415a42
Fast-forward
one.py | 3 +++
1 file changed, 3 insertions(+)
samireddynani@Nanis-Macbook git_test % git log --oneline --all
d415a42 (HEAD -> main, origin/main) updated one.py added line six from remote
a77f861 updated one.py added line five in from remote
efe4ba9 updated one.py added line four in remote
31df64d update one.py and added line three in one.py
5688dee updated one.py
2f7c048 (origin/two, two) initial commit
samireddynani@Nanis-Macbook git_test %

Q4. Try to find out about the awk command and use it while reading a file created by yourself. Also, make a bash script file and try to find out the prime number from the range 1 to 20. The whole process should be carried out and by using the history command, give the screenshot of all the processes being carried out.

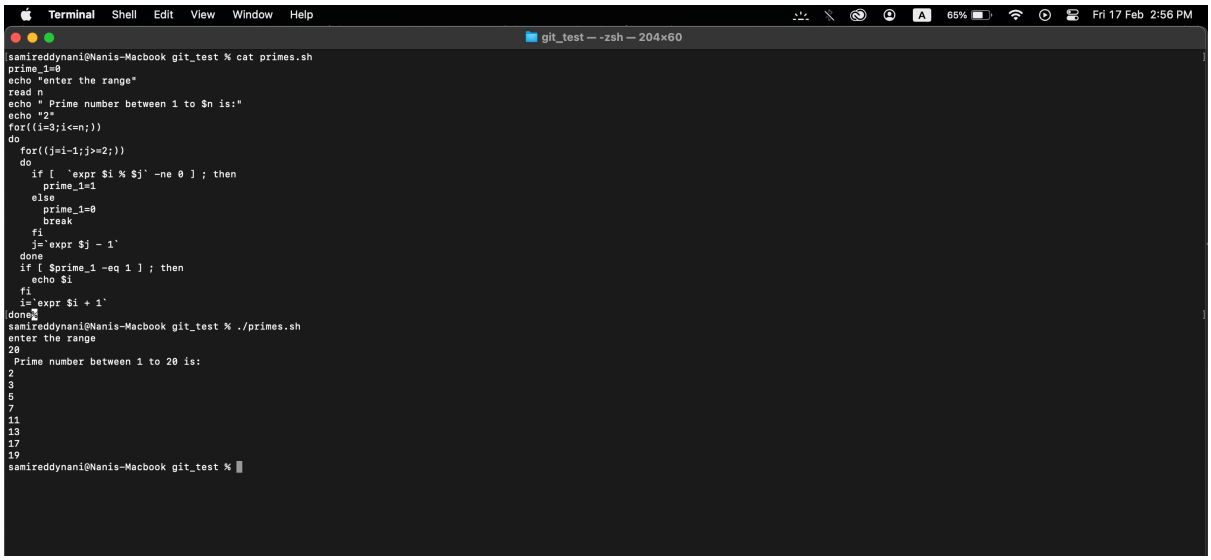
AWK: AWK is a scripting language, and it is helpful when working in the command line. It's also a widely used command for text processing.
When using awk, you are able to select data – one or more pieces of individual text – based on a pattern you provide.
For example, some of the operations you can do with awk are searching for a specific word or pattern in a piece of text given, or even select a certain line or a certain column in a file you provide.

Syntax: awk options 'selection _criteria {action }' input-file > output-file

Let's do an example by Create a file called data.txt as follows

```
samireddynani@Nanis-Macbook git_test % nano data.txt
samireddynani@Nanis-Macbook git_test % cat data.txt
ID    NAME   AGE
1     Nani   20
2     Nano   21
3     Nancy  22
4     Chinna 18
samireddynani@Nanis-Macbook git_test % awk '{print($0)}'
^C
samireddynani@Nanis-Macbook git_test % awk '{print($0)}' data.txt
ID    NAME   AGE
1     Nani   20
2     Nano   21
3     Nancy  22
4     Chinna 18
samireddynani@Nanis-Macbook git_test % awk '{print($2)}' data.txt
NAME
Nani
Nano
Nancy
Chinna
samireddynani@Nanis-Macbook git_test % awk '/c/  {print($2)}' data.txt
Nancy
samireddynani@Nanis-Macbook git_test % awk '/c/  {print($1,$2)}' data.txt
3 Nancy
samireddynani@Nanis-Macbook git_test %
```

Shell program to find the primes numbers between two numbers(1,20)



History command: history command keeps a list of all the other commands that have been run from that terminal session, then allows you to replay or reuse those commands instead of retyping them.

-> To display all the history of commands we use

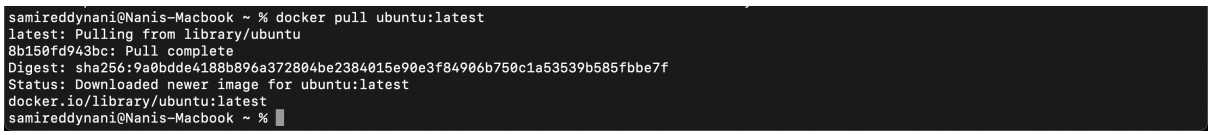
-> To display most n recent commands of the history of commands we use

—> To remove the complete history of executed command, run the below command:

Q5. Set up a container and run a Ubuntu operating system. For this purpose, you can make use of the docker hub and run the container in interactive mode.

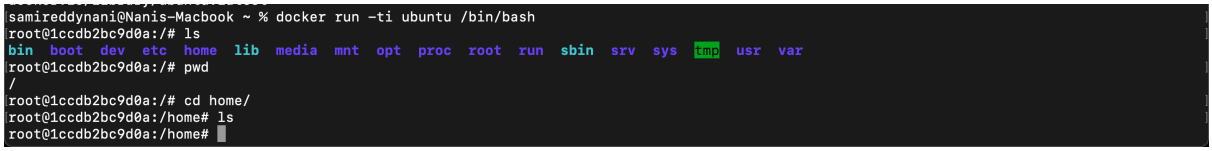
Docker containers are the light weight environments that contains everything that our applications needs to run.
This time we want to setup a container of Ubuntu OS. So now we have to pull the Ubuntu Container Base Image from the Docker hub using the command:

docker pull ubuntu:latest



Now we got our Container image and we have to run to initiate the container for that we use the command

docker run -ti ubuntu /bin/bash



As we can see in the above screenshot we are running the in the above command the options -ti Implies to the interactive terminal mode that allows us to interact with Ubuntu.