

Scenario 1



version1



version2



version3

Change tracking
Version tracking

Scenario 2



Collaboration on project

- **Version control System**
- **Keep track of changes**
- **Collaboration on project**
-

- **Version control System**
- **Keep track of changes**
- **Collaboration on project**
-



git

GitHub & Git



GitHub & Git



GitHub



git

| GitHub | Git |
|--|--|
| service | Tool / software |
| Host git repository/folder/source code | Change control, version control |
| Provides GUI Interface | Provides CLI (Command Line Interface Tool) |
| Maintained on cloud/web | Installed and maintained locally |

More on Git & GitHub

GitHub

- More than 56 million users
- **Founded in 2008**
- Owned by Microsoft

Git

- Released: April 7, 2005
- Python, C, C++, Perl, Tcl
- Linus Torvalds (developer of Linux kernel) and Junio C Hamano

- Download and install git on your pc: <https://git-scm.com/>
- `git --version`

— zsh
Last login: Tue Nov 9 17:38:22 on ttys001
anisul_islam@AnisulIslamsMBP ~ % git --version
git version 2.33.0
anisul_islam@AnisulIslamsMBP ~ % git c

Google

FACEBOOK

Microsoft

LinkedIn

NETFLIX



```
anisul_islam@AnisulIslamsMBP ~ % git config --global user.name "anisul-islam"  
anisul_islam@AnisulIslamsMBP ~ % git config --global user.email "anisul2010s@yahoo.co.uk"  
anisul_islam@AnisulIslamsMBP ~ % git config --list  
credential.helper=osxkeychain  
user.name=anisul-islam  
user.email=anisul2010s@yahoo.co.uk  
anisul_islam@AnisulIslamsMBP ~ % █
```

:

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```
anisul_islam@AnisulIslamsMBP ~ % git config --global user.name "anisul-islam"
anisul_islam@AnisulIslamsMBP ~ % git config --global user.email "anisul2010s@yahoo.co.uk"
anisul_islam@AnisulIslamsMBP ~ % git config --list
credential.helper=osxkeychain
user.name=anisul-islam
user.email=anisul2010s@yahoo.co.uk
anisul_islam@AnisulIslamsMBP ~ % git config user.name "raju"
fatal: not in a git directory
anisul_islam@AnisulIslamsMBP ~ % git config --global user.name "raju"
anisul_islam@AnisulIslamsMBP ~ % git config --list
credential.helper=osxkeychain
user.name=raju
user.email=anisul2010s@yahoo.co.uk
anisul_islam@AnisulIslamsMBP ~ % git config --global user.name "anisul-islam"
anisul_islam@AnisulIslamsMBP ~ % git config --list
credential.helper=osxkeychain
user.name=anisul-islam
user.email=anisul2010s@yahoo.co.uk
anisul_islam@AnisulIslamsMBP ~ % █
```

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```
anisul_islam@AnisulIslamsMBP ~ % git config user.name "raju"  
fatal: not in a git directory  
anisul_islam@AnisulIslamsMBP ~ % git config --global user.name "raju"  
anisul_islam@AnisulIslamsMBP ~ % git config --list  
credential.helper=osxkeychain  
user.name=raju  
user.email=anisul2010s@yahoo.co.uk  
anisul_islam@AnisulIslamsMBP ~ % git config --global user.name "anisul-islam"  
anisul_islam@AnisulIslamsMBP ~ % git config --list  
credential.helper=osxkeychain  
user.name=anisul-islam  
user.email=anisul2010s@yahoo.co.uk  
anisul_islam@AnisulIslamsMBP ~ % █
```

```
anisul_islam@AnisulIslamsMBP ~ % git config user.name  
anisul-islam  
anisul_islam@AnisulIslamsMBP ~ % git config user.email  
anisul2010s@yahoo.co.uk  
anisul_islam@AnisulIslamsMBP ~ % █
```

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Working directory/
workspace

Staging area / index

Local repository

Remote
repository



Adding new files

- `ls -a`
 - `touch day1.txt`
 - open `day1.txt`
 - write something
-
- `ls -a`
 - `git status` -> displays the state of the working directory and staging area

Working directory/
workspace

Notes

- `.git`
- `day1.txt`

Staging area / index

Local repository

Favourites

Dropbox

AirDrop

Recents

Applications

Pictures

Documents

Downloads

iCloud

iCloud Drive

Tags

Red

Orange

Yellow

Desktop -- zsh -- 95x13

~/Desktop -- zsh

```
anisl_islam@AnisulIslamsMBP Desktop % mkdir notes
anisl_islam@AnisulIslamsMBP Desktop % █
```

I

Favourites

Dropbox

AirDrop

Recents

Applications

Pictures

Documents

Downloads

iCloud

iCloud Drive

Tags

Red

Orange

Yellow

notes -- zsh -- 96x13

~/Desktop/notes -- zsh

anisul_islam@AnisulIslamsMBP notes % git init

hint: Using 'master' as the name for the initial branch. This default branch name

hint: is subject to change. To configure the initial branch name to use in all

hint: of your new repositories, which will suppress this warning, call:

hint:

hint: git config --global init.defaultBranch <name>

hint:

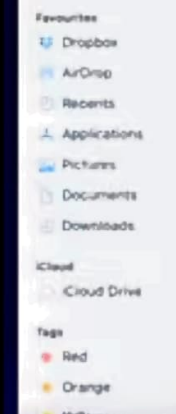
hint: Names commonly chosen instead of 'master' are 'main', 'trunk' and

hint: 'development'. The just-created branch can be renamed via this command:

hint:

hint: git branch -m <name>

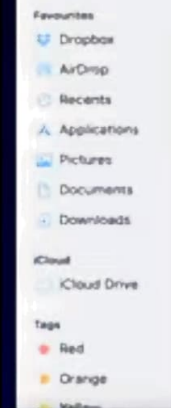
Initialized empty Git repository in /Users/anisul_islam/Desktop/notes/.git/



day1.txt

```
notes -- zsh -- 96x13
--Desktop/notes -- zsh

anisul_islam@AnisulIslamsMBP notes % ls -a
.      ..      .git
anisul_islam@AnisulIslamsMBP notes % touch day1.txt
anisul_islam@AnisulIslamsMBP notes % open day1.txt
anisul_islam@AnisulIslamsMBP notes % ls -a
.      ..      .git      day1.txt
anisul_islam@AnisulIslamsMBP notes %
```



```
notes --zsh -- 95x13
--Desktop/notes --zsh

anisul_islam@AnisulIslamsMBP notes % open day2.txt
anisul_islam@AnisulIslamsMBP notes % git status
On branch master

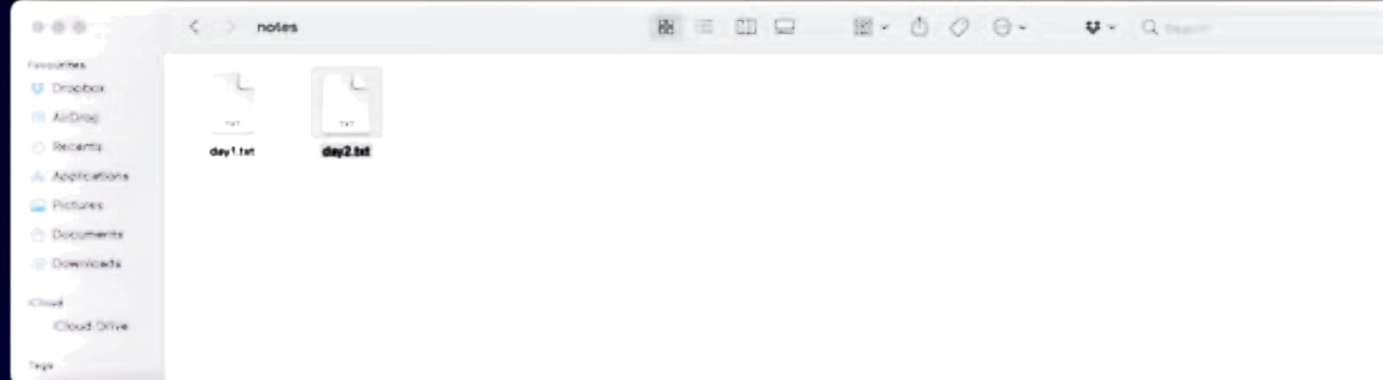
No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    day1.txt
    day2.txt

nothing added to commit but untracked files present (use "git add" to track)
```

Git staging & unstaging

- Git add filename
- Git add -A [A is shorthand for -all) stage all changed file in directory and subdirectories
- Git add . -> stage all changed file in directory but not subdirectories
- Git add *.js (directory wildcard)
- Git add **/*.js (directory & subdirectory wildcard)
- Checking the difference: git diff



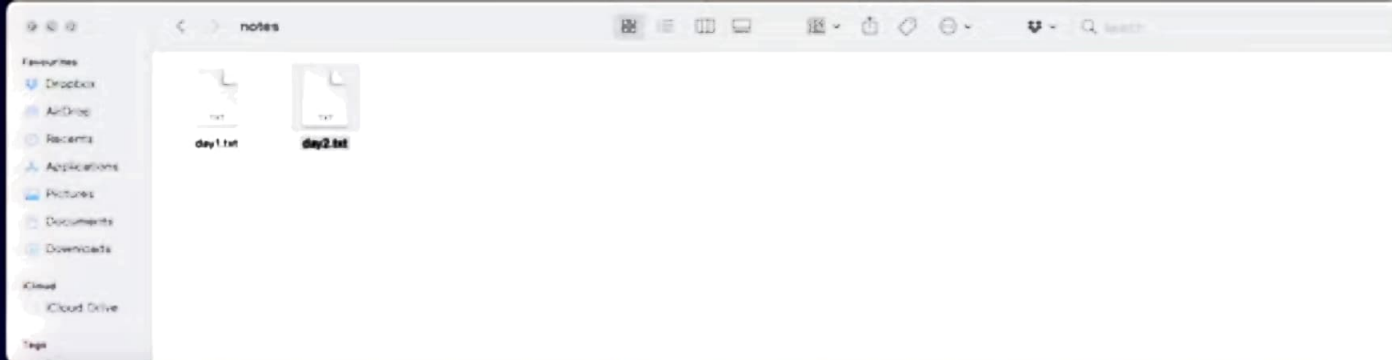
```
notes -- zsh -- 96x16
~/Desktop/notes -- zsh

anisul_islam@AnisulIslamsMBP notes % git status
On branch master

No commits yet

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        .DS_Store
        day1.txt
        day2.txt

nothing added to commit but untracked files present (use "git add" to track)
anisul_islam@AnisulIslamsMBP notes %
```



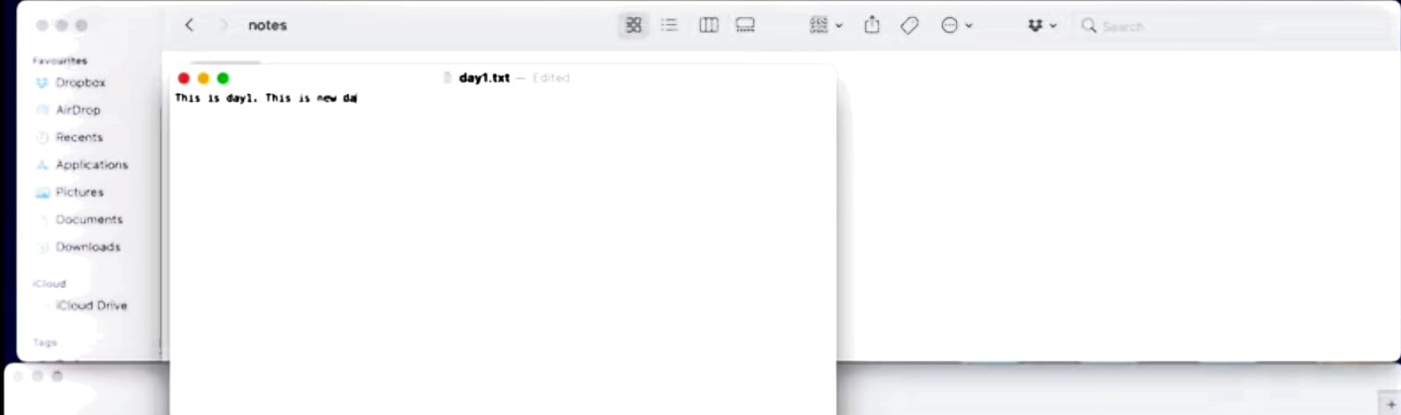
```
notes -- zsh -- 95x15
~/Desktop/notes -- zsh

anisul_islam@AnisulIslamsMBP notes % git add .
anisul_islam@AnisulIslamsMBP notes % git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
    new file:   .DS_Store
    new file:   day1.txt
    new file:   day2.txt

anisul_islam@AnisulIslamsMBP notes %
```



```
anisul_isla  
anisul_isla  
On branch master
```

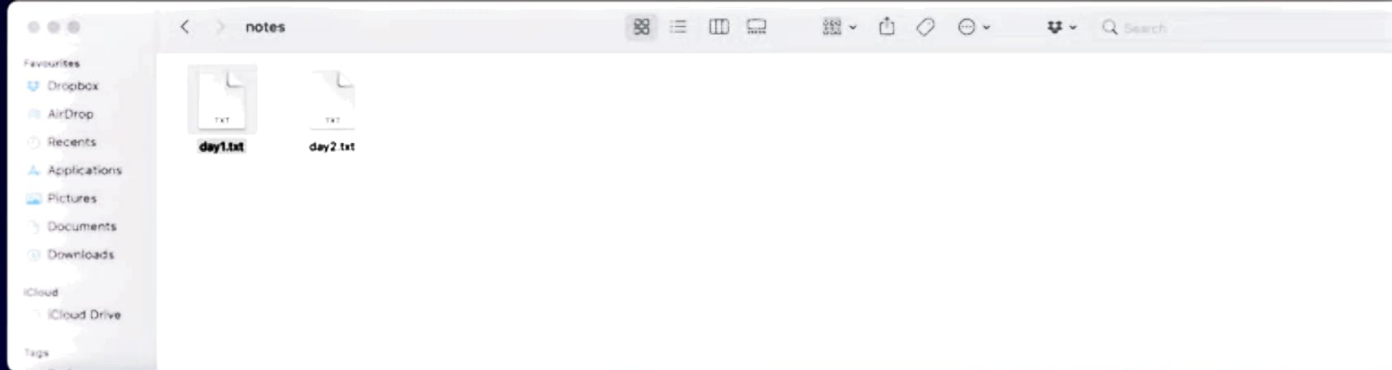
```
No commits yet
```

```
Changes to be committed:
```

```
(use "git rm --cached <file>..." to unstage)
```

```
new file:   .DS_Store  
new file:   day1.txt  
new file:   day2.txt
```

```
anisul_islam@AnisulIslamsMBP notes %
```



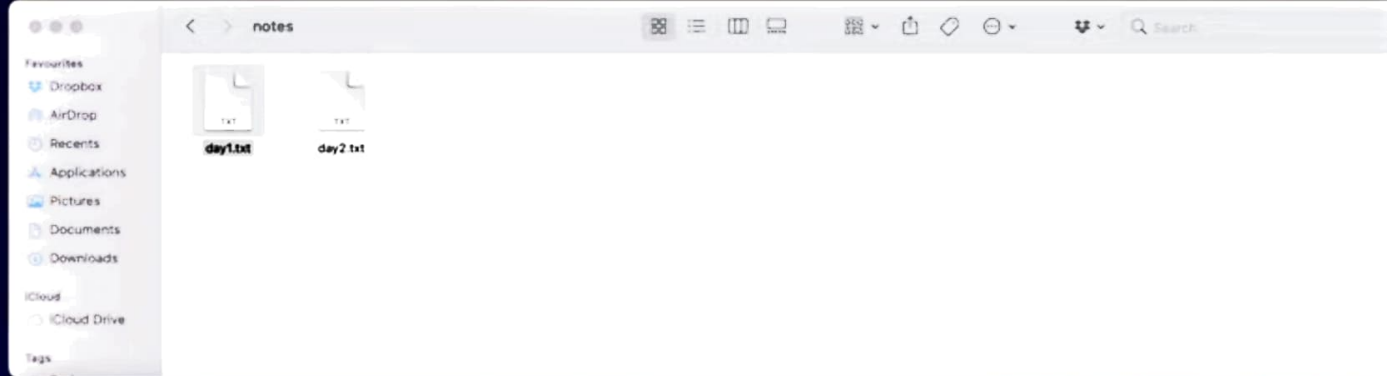
```
notes -- zsh -- 95x15
~/Desktop/notes -- zsh

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
    new file:   .DS_Store
    new file:   day1.txt
    new file:   day2.txt

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:   day1.txt

anisul_islam@AnisulIslamsMBP notes % git add day1.txt
anisul_islam@AnisulIslamsMBP notes %
```

notes — -zsh — 95x15
~/Desktop/notes — -zsh

```
anisul_islam@AnisulIslamsMBP notes % git status
```

```
On branch master
```

```
No commits yet
```

```
Changes to be committed:
```

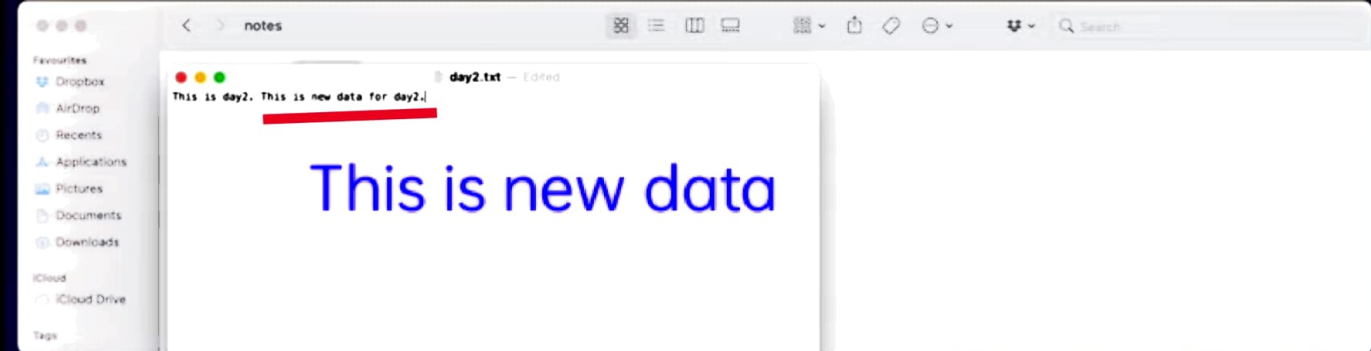
```
(use "git rm --cached <file>..." to unstage)
```

```
new file:   .DS_Store
```

```
new file:   day1.txt
```

```
new file:   day2.txt
```

```
anisul_islam@AnisulIslamsMBP notes %
```



anisul_isla

On branch m

No commits yet

Changes to be committed:

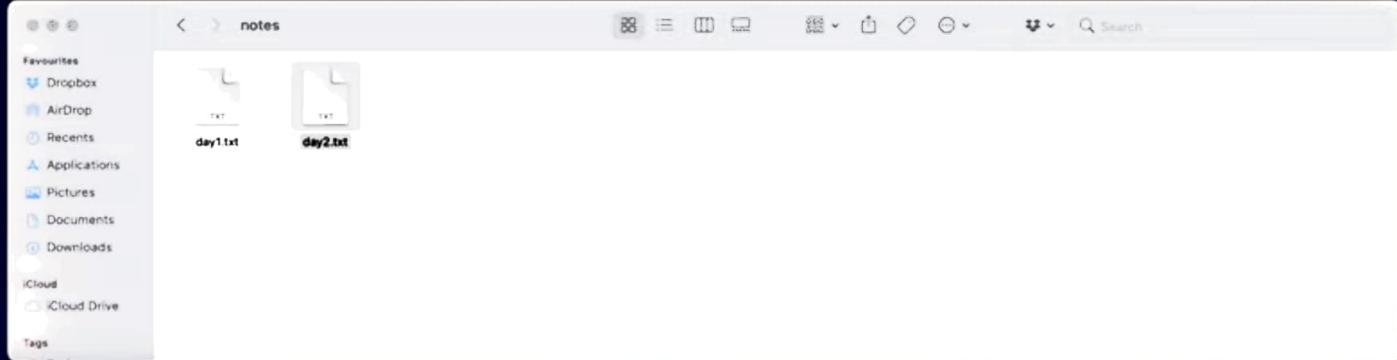
(use "git rm --cached <file>..." to unstage)

new file: .DS_Store

new file: day1.txt

new file: day2.txt

anisul_islam@AnisulIslamsMBP notes %



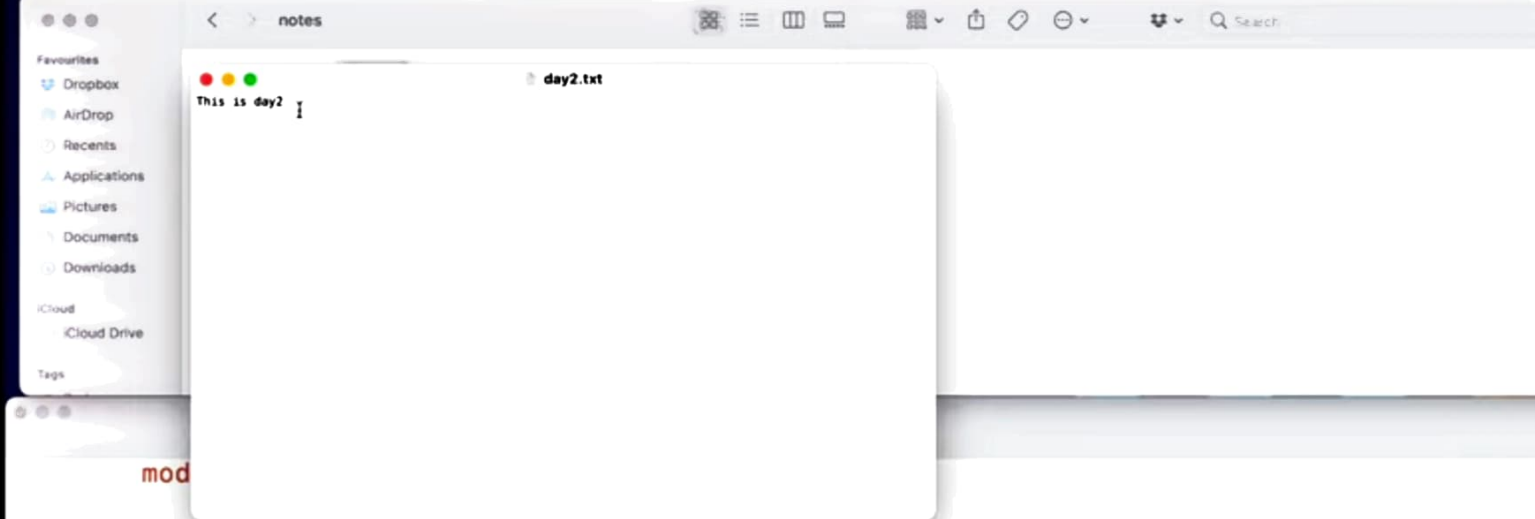
```
notes -- zsh -- 95x15
~/Desktop/notes -- zsh

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
    new file:   .DS_Store
    new file:   day1.txt
    new file:   day2.txt

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:   day2.txt

anisul_islam@AnisulIslamsMBP notes %
```



```
anisul_islam@AnisulIslamsMBP notes % git restore day2.txt
anisul_islam@AnisulIslamsMBP notes % git status
On branch master
```

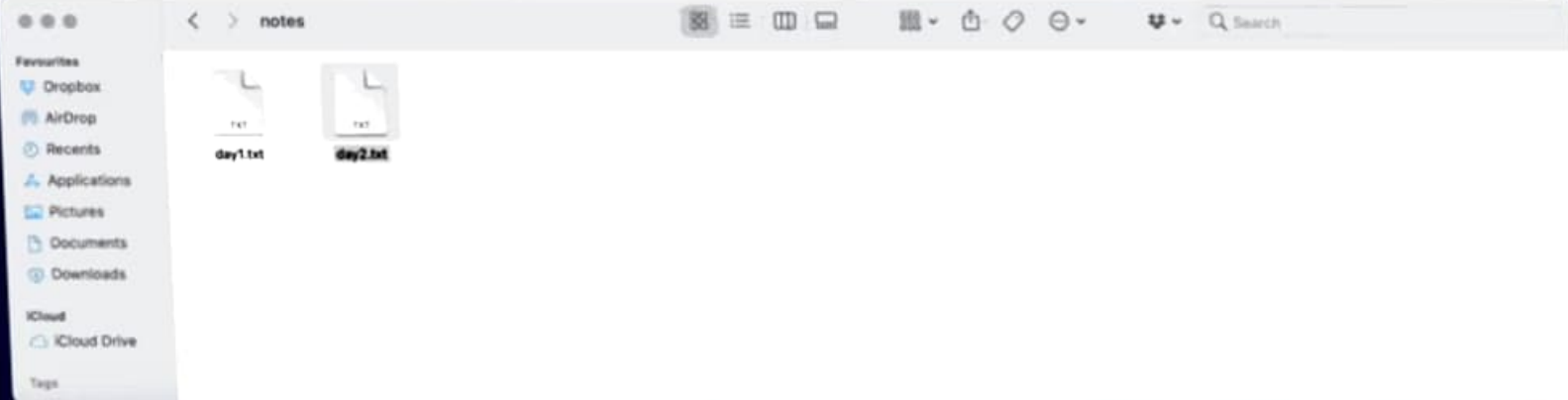
No commits yet

Changes to be committed:

(use "git rm --cached <file>..." to unstage)

```
new file:   .DS_Store
new file:   day1.txt
new file:   day2.txt
```

```
anisul_islam@AnisulIslamsMBP notes %
```



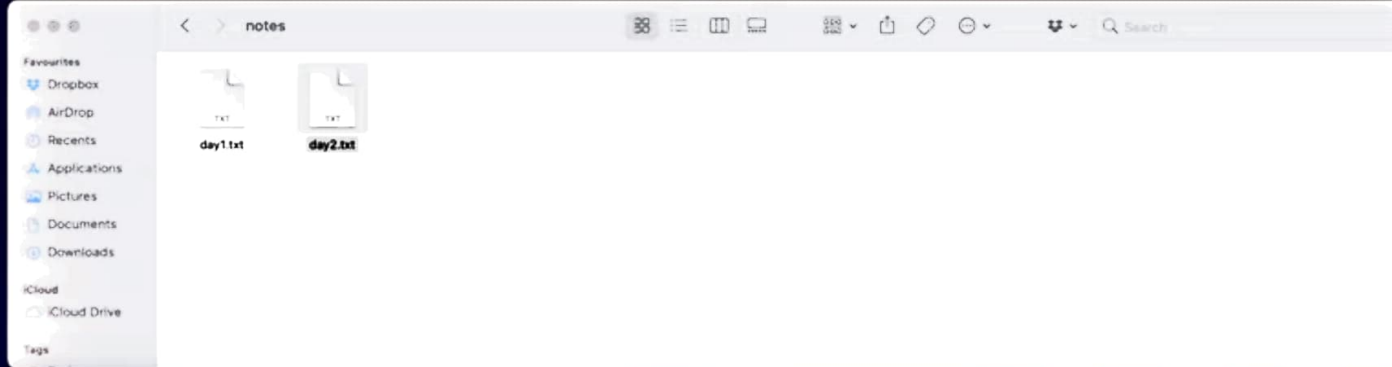
```
notes -- zsh -- 95x15
~/Desktop/notes -- zsh

anisul_islam@AnisulIslamsMBP notes % git restore day2.txt
anisul_islam@AnisulIslamsMBP notes % git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
    new file:   .DS_Store
    new file:   day1.txt
    new file:   day2.txt

anisul_islam@AnisulIslamsMBP notes % git rm --cached day2.txt
rm 'day2.txt'
anisul_islam@AnisulIslamsMBP notes %
```



```
notes -- zsh -- 95x15
~/Desktop/notes -- zsh

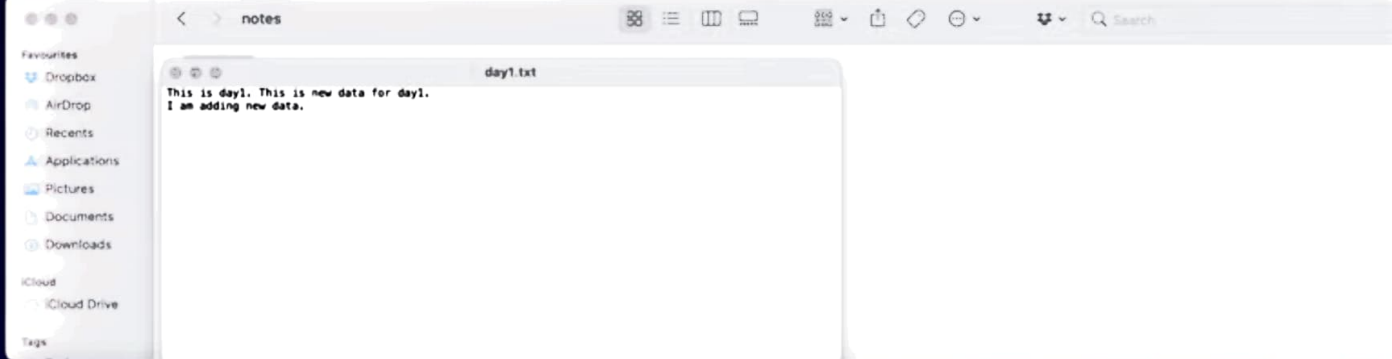
anisul_islam@AnisulIslamsMBP notes % git status
On branch master

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
        new file:   .DS_Store
        new file:   day1.txt

Untracked files:
  (use "git add <file>..." to include in what will be committed)
        day2.txt

anisul_islam@AnisulIslamsMBP notes %
```



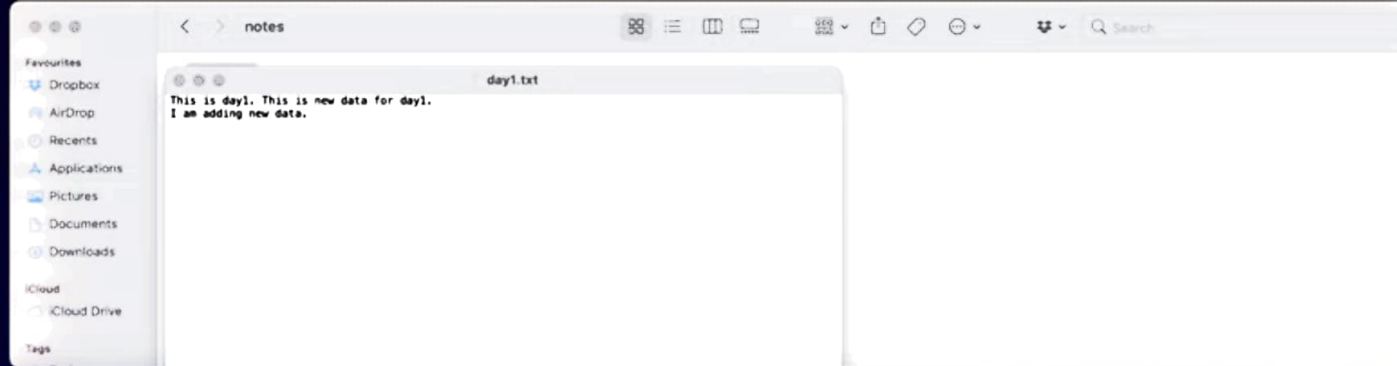
```
notes -- zsh -- 95x15
~/Desktop/notes -- zsh

No commits yet

Changes to be committed:
  (use "git rm --cached <file>..." to unstage)
    new file:   .DS_Store
    new file:   day1.txt
    new file:   day2.txt

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:   day1.txt

anisul_islam@AnisulIslamsMBP notes %
```



```
notes -- -zsh -- 95x15
~/Desktop/notes -- -zsh

anisul_islam@AnisulIslamsMBP notes % git diff
diff --git a/day1.txt b/day1.txt
index ca32195..3ade774 100644
--- a/day1.txt
+++ b/day1.txt
@@ -1,2 @@
 This is day1. This is new data for day1.
+I am adding new data.
\ No newline at end of file
anisul_islam@AnisulIslamsMBP notes %
```


No commits yet

Changes to be committed:

(use "git rm --cached <file>..." to unstage)

new file: .DS_Store

new file: day1.txt

new file: day2.txt

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: day1.txt

anisul_islam@AnisulIslamsMBP notes % git add day1.txt

Working directory

Staging area

Local repository

git add

git diff

git status



- Create git folder
 - Add files
 - Add data
 - Stage the files
-
- Modify the files -> Check the differences
 - Restore the files
 - Track the modified data

Working directory

Staging area

Local repository

git add

git commit

git diff

git status

git log



commit

- For moving staging to local repo we can use following command
`git commit -m "message here"`
- Message should be clear and understandable
- Staging and committing directly: `git commit -am 'message here'`
- Git log: to see the commit history



Favourites

Dropbox

AirDrop

Recents

Applications

Pictures

Documents

Downloads



day1.txt

my-notes -- zsh -- 95x16

~/Desktop/my-notes -- zsh

```
anisul_islam@AnisulIslamsMBP my-notes % git status
On branch master
```

```
No commits yet
```

```
Changes to be committed:
```

```
(use "git rm --cached <file>..." to unstage)
```

```
new file:   day1.txt
```

```
anisul_islam@AnisulIslamsMBP my-notes % git commit -m "data1 data is added"
```

```
[master (root-commit) bf5054a] data1 data is added
```

```
1 file changed, 1 insertion(+)
```

```
create mode 100644 day1.txt
```

```
anisul_islam@AnisulIslamsMBP my-notes %
```

Favourites

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Applications

Pictures

Documents

Downloads



day1.txt

my-notes - zsh - 95x16

~/Desktop/my-notes - zsh

```
anisul_islam@AnisulIslamsMBP my-notes % git status
On branch master
nothing to commit, working tree clean
anisul_islam@AnisulIslamsMBP my-notes %
```




```
my-notes -- zsh -- 95x16
~/Desktop/my-notes -- zsh

anisul_islam@AnisulIslamsMBP my-notes % git status
On branch master
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    new file:   day2.txt

anisul_islam@AnisulIslamsMBP my-notes % git commit -m "day2 data is added"
[master 01b9759] day2 data is added
 1 file changed, 1 insertion(+)
 create mode 100644 day2.txt
anisul_islam@AnisulIslamsMBP my-notes %
```



```
my-notes -- zsh -- 95x16
~/Desktop/my-notes -- zsh

anisul_islam@AnisulIslamsMBP my-notes % git status
On branch master
nothing to commit, working tree clean
anisul_islam@AnisulIslamsMBP my-notes % git log
commit 01b97594010b0b374e3be4f0b7e6e2ca8c3d85a2 (HEAD -> master)
Author: anisul-islam <anisul2010s@yahoo.co.uk>
Date: Tue Nov 9 23:05:32 2021 +0200

    day2 data is added

commit bf5054a1de88d33158a3c81b6f499a7cb5c78f64
Author: anisul-islam <anisul2010s@yahoo.co.uk>
Date: Tue Nov 9 23:03:33 2021 +0200

    data1 data is added
anisul_islam@AnisulIslamsMBP my-notes %
```

Favourites

- Dropbox
- AirDrop
- Recents
- Applications
- Pictures
- Documents
- Downloads



day1.txt



day2.txt



day3.txt

my-notes -- zsh -- 95x16

~/Desktop/my-notes -- zsh

```
anisul_islam@AnisulIslamsMBP my-notes % touch day3.txt
```

```
anisul_islam@AnisulIslamsMBP my-notes % open day3.txt
```

```
anisul_islam@AnisulIslamsMBP my-notes % git status
```

```
On branch master
```

```
Untracked files:
```

```
  (use "git add <file>..." to include in what will be committed)
```

```
    day3.txt
```

```
nothing added to commit but untracked files present (use "git add" to track)
```

```
anisul_islam@AnisulIslamsMBP my-notes % █
```

I

Favourites

Dropbox

AirDrop

Recents

Applications

Pictures

Documents

Downloads



day1.txt



day2.txt

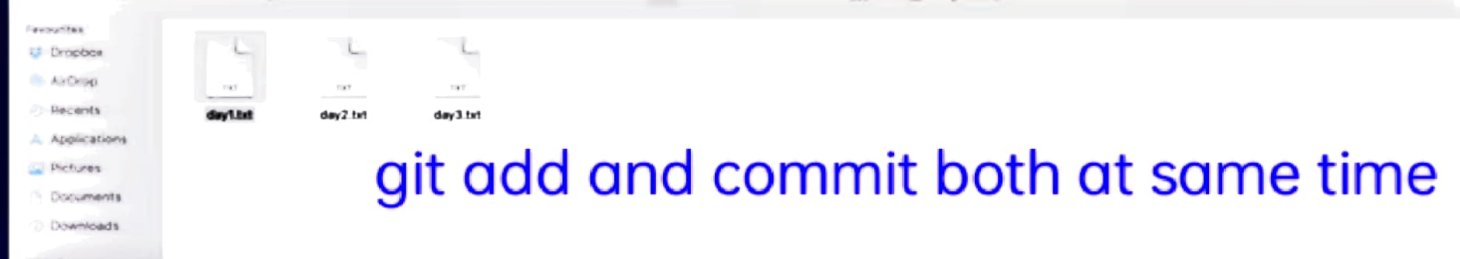


day3.txt

my-notes -- zsh -- 95x16

~/Desktop/my-notes -- zsh

```
anisul_islam@AnisulIslamsMBP my-notes % git add . && git commit -m "day3 data is added"
[master 9aa0622] day3 data is added
 1 file changed, 1 insertion(+)
 create mode 100644 day3.txt
anisul_islam@AnisulIslamsMBP my-notes %
```



```
my-notes -- zsh -- 95x16
~/Desktop/my-notes -- zsh
anisul_islam@AnisulIslamsMBP my-notes % git add . && git commit -m "day3 data is added"
[master 9aa0622] day3 data is added
 1 file changed, 1 insertion(+)
 create mode 100644 day3.txt
anisul_islam@AnisulIslamsMBP my-notes %
```

Favourites

- Dropbox
- Air Drop
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- Applications
- Pictures
- Documents
- Downloads



day1.txt



day2.txt



day3.txt

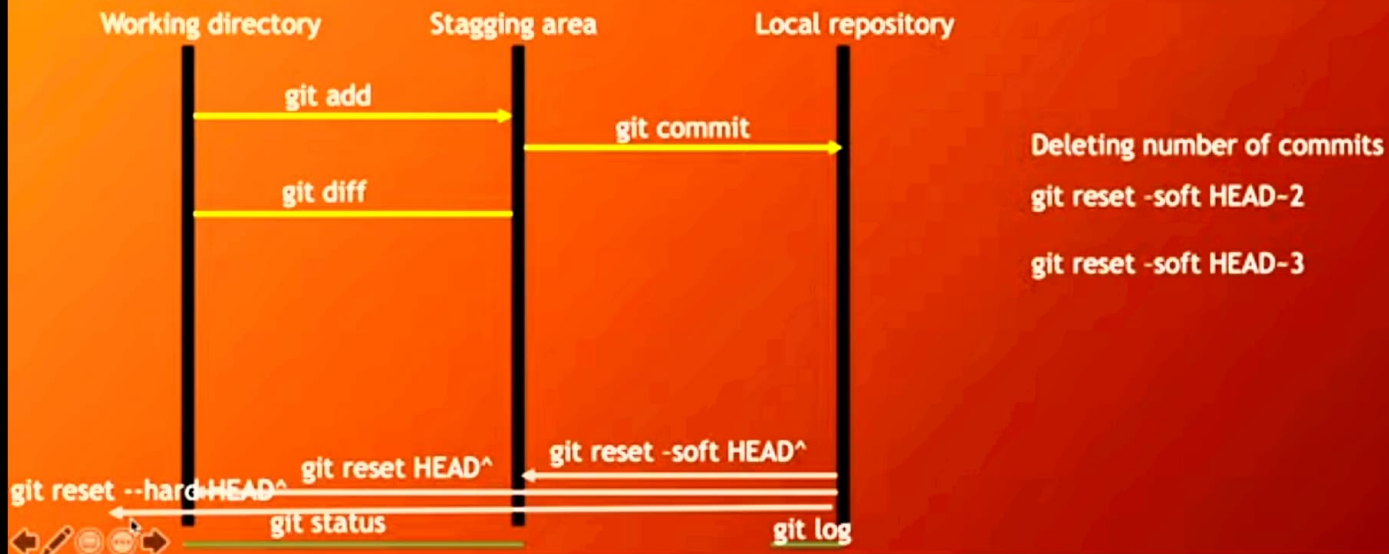
my-notes - zsh - 95x16

~/Desktop/my-notes - zsh

```
anisul_islam@AnisulIslamsMBP my-notes % git status
On branch master
nothing to commit, working tree clean
anisul_islam@AnisulIslamsMBP my-notes %
```

Uncommit

- If all you want to do is undo the act of committing, leaving everything else intact, use:
`git reset --soft HEAD^`
- If all you want to do is undo the act of committing, and also removing from the staging area:
`git reset HEAD^`
- And if you actually want to *completely* undo it, *throwing away all uncommitted changes, resetting everything to the previous commit* (as the original question asked):
`git reset --hard HEAD^`



Favourites

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Applications

Pictures

Documents

Downloads



day1.txt



day2.txt



day3.txt

my-notes -- less • git log -- 95x16

~/Desktop/my-notes -- less • git log

```
commit 9aa0622d3436a70cd4b538b244294102107b3f9f: (HEAD -> master)
```

```
Author: anisul-islam <anisul2010s@yahoo.co.uk>
```

```
Date: Tue Nov 9 23:13:00 2021 +0200
```

day3 data is added

```
commit 01b97594010b0b374e3be4f0b7e6e2ca8c3d85a2
```

```
Author: anisul-islam <anisul2010s@yahoo.co.uk>
```

```
Date: Tue Nov 9 23:05:32 2021 +0200
```

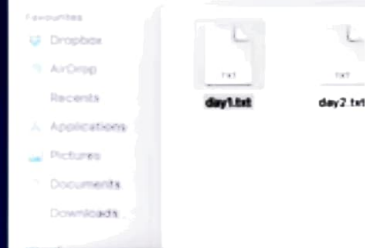
day2 data is added

```
commit bf5054a1de88d33158a3c81b6f499a7cb5c78f64
```

```
Author: anisul-islam <anisul2010s@yahoo.co.uk>
```

```
Date: Tue Nov 9 23:03:33 2021 +0200
```

```
:|
```



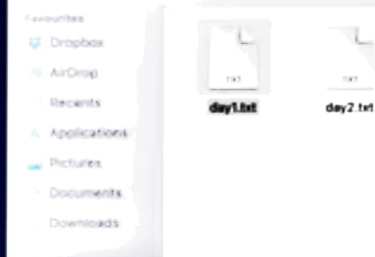
```
my-notes -- zsh -- 95x16
~(Desktop)my-notes -- zsh

anisul_islam@AnisulIslamsMBP my-notes % git reset --hard HEAD^
HEAD is now at 01b9759 day2 data is added
anisul_islam@AnisulIslamsMBP my-notes % git log
commit 01b97594010b0b374e3be4f0b7e6e2ca8c3d85a2 (HEAD -> master)
Author: anisul-islam <anisul2010s@yahoo.co.uk>
Date: Tue Nov 9 23:05:32 2021 +0200

    day2 data is added

commit bf5054a1de88d33158a3c81b6f499a7cb5c78f64
Author: anisul-islam <anisul2010s@yahoo.co.uk>
Date: Tue Nov 9 23:03:33 2021 +0200

    data1 data is added
anisul_islam@AnisulIslamsMBP my-notes %
```



```
my-notes -- zsh -- 95x16
~/Desktop/my-notes -- zsh

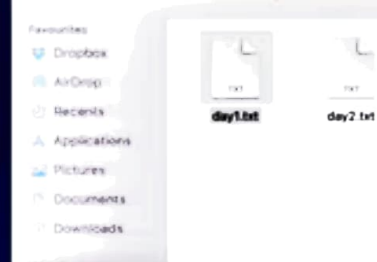
anisul_islam@AnisulIslamsMBP my-notes % git reset --hard HEAD^
HEAD is now at 01b9759 day2 data is added
anisul_islam@AnisulIslamsMBP my-notes % git log
commit 01b97594010b0b374e3be4f0b7e6e2ca8c3d85a2 (HEAD -> master)
Author: anisul-islam <anisul2010s@yahoo.co.uk>
Date: Tue Nov 9 23:05:32 2021 +0200

    day2 data is added

commit bf5054a1de88d33158a3c81b6f499a7cb5c78f64
Author: anisul-islam <anisul2010s@yahoo.co.uk>
Date: Tue Nov 9 23:03:33 2021 +0200

    data1 data is added

anisul_islam@AnisulIslamsMBP my-notes % git reset --soft HEAD^
anisul_islam@AnisulIslamsMBP my-notes %
```



my-notes --zsh -- 95x16
~/Desktop/my-notes --zsh

```
anisul_islam@AnisulIslamsMBP my-notes % git status
```

On branch master

Changes to be committed:

(use "git restore --staged <file>..." to unstage)

new file: day2.txt

```
anisul_islam@AnisulIslamsMBP my-notes % git log
```

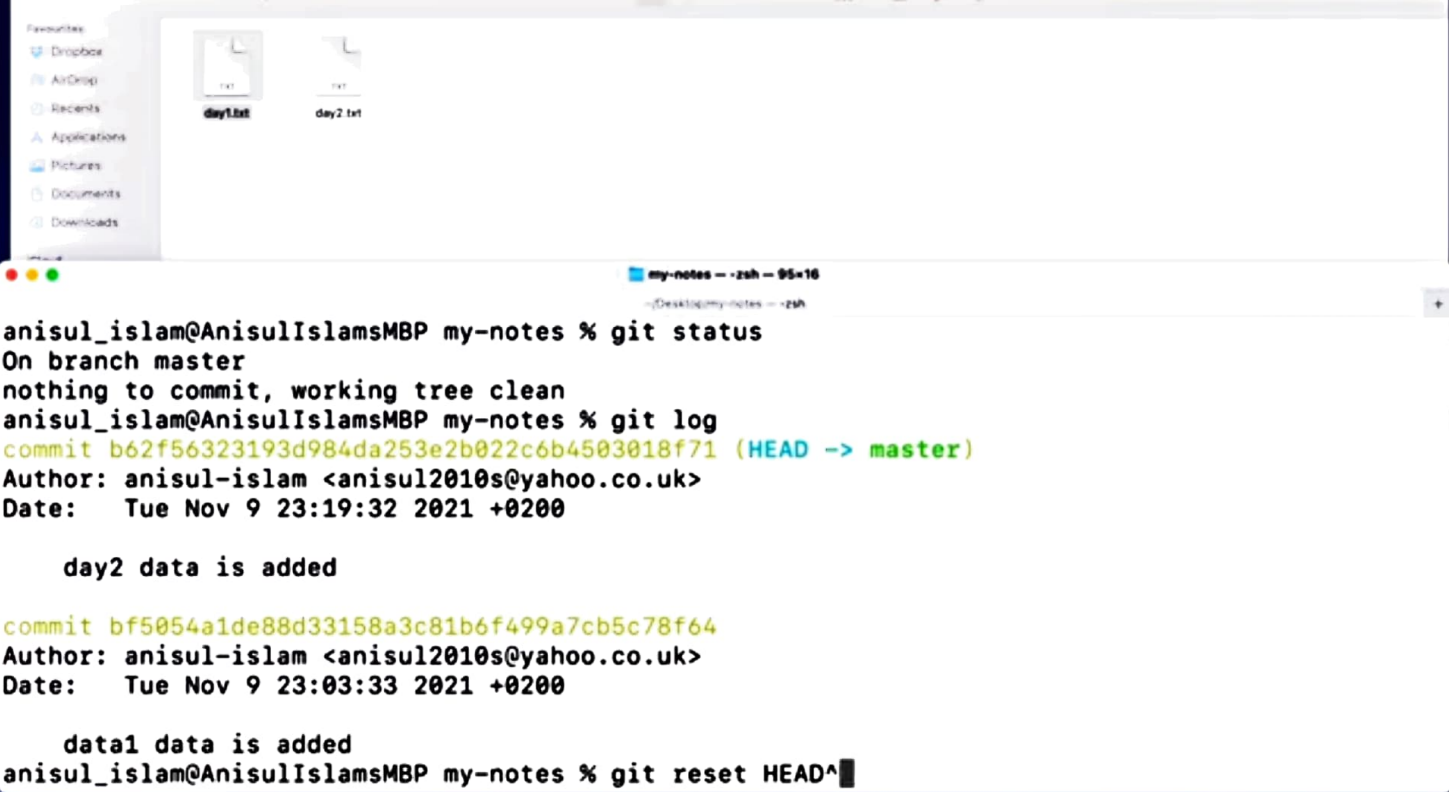
commit bf5054a1de88d33158a3c81b6f499a7cb5c78f64 (HEAD -> master)

Author: anisul-islam <anisul2010s@yahoo.co.uk>

Date: Tue Nov 9 23:03:33 2021 +0200

data1 data is added

```
anisul_islam@AnisulIslamsMBP my-notes % git commit -m "day2 data is added"
```



Favourites

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day1.txt



day2.txt

my-notes -- zsh -- 95x16

~/Desktop/my-notes -- zsh

```
anisul_islam@AnisulIslamsMBP my-notes % git status
```

```
On branch master
```

```
Untracked files:
```

```
(use "git add <file>..." to include in what will be committed)
```

```
    day2.txt
```

```
nothing added to commit but untracked files present (use "git add" to track)
```

```
anisul_islam@AnisulIslamsMBP my-notes %
```