Exercise
Introduction To Version Control
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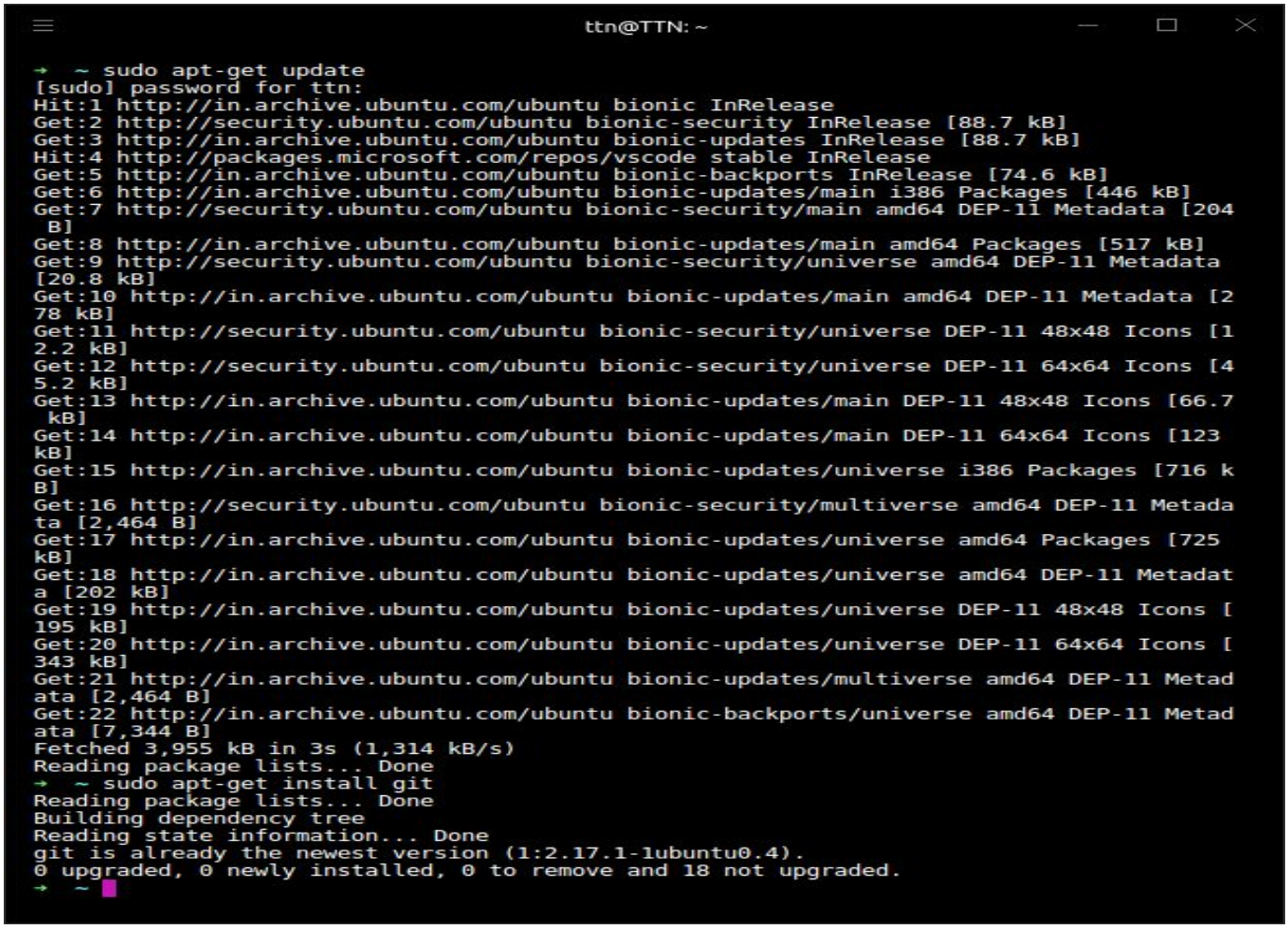
1. **Git Setup** https://confluence.atlassian.com/bitbucket/set-up-git-744723531.htm

A. Instaling git:

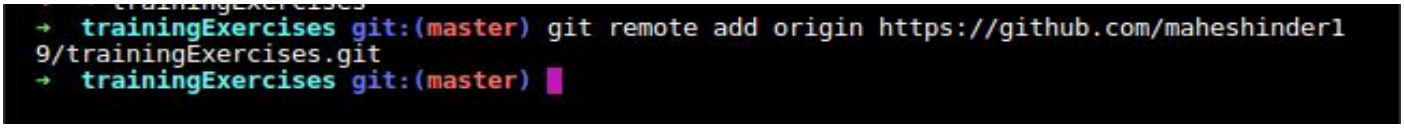
- sudo apt-get update
- sudo apt-get install git



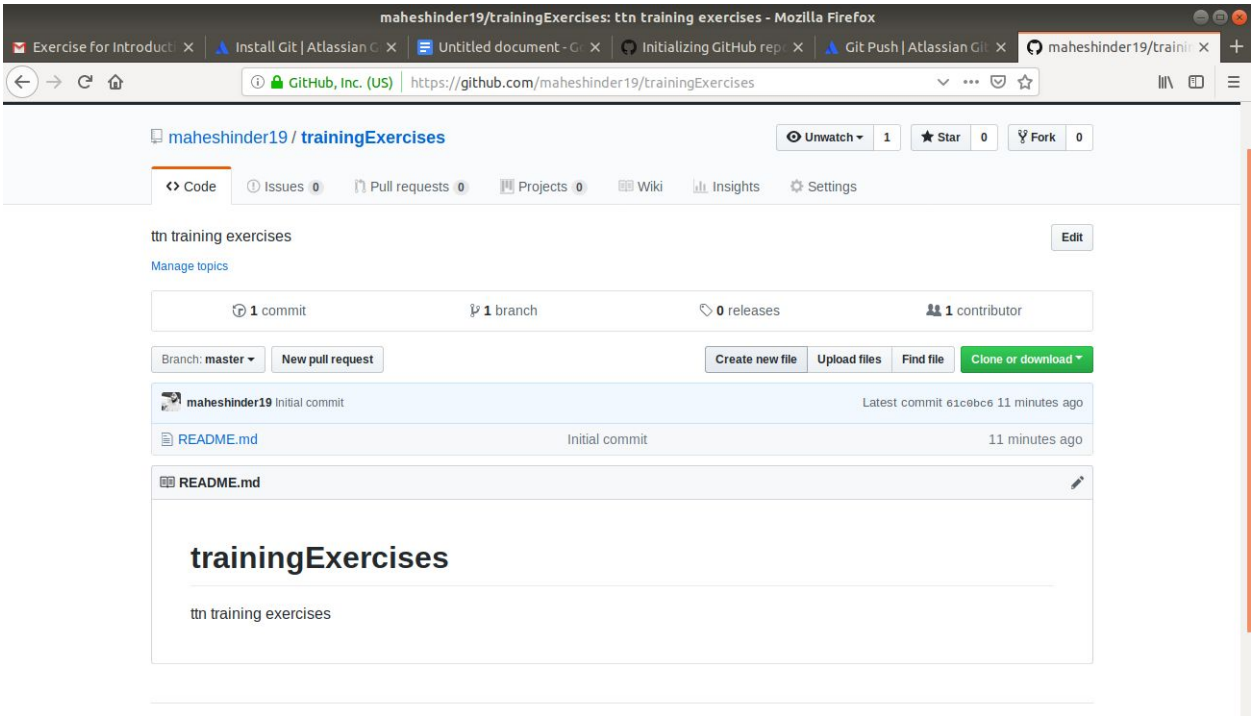
2. Initialize a Git Repository.

- We can initialise a git repo by using “git init” command from the terminal.

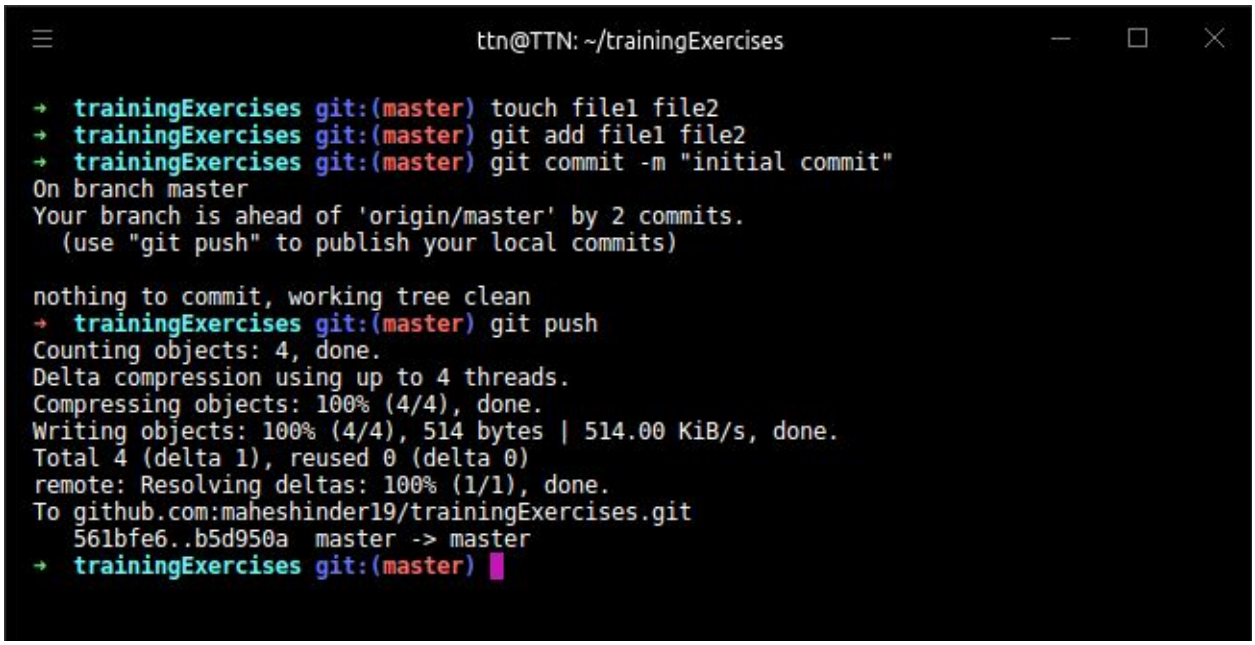
- Now by using “git remote” command, route the repository to the desired remote repository.

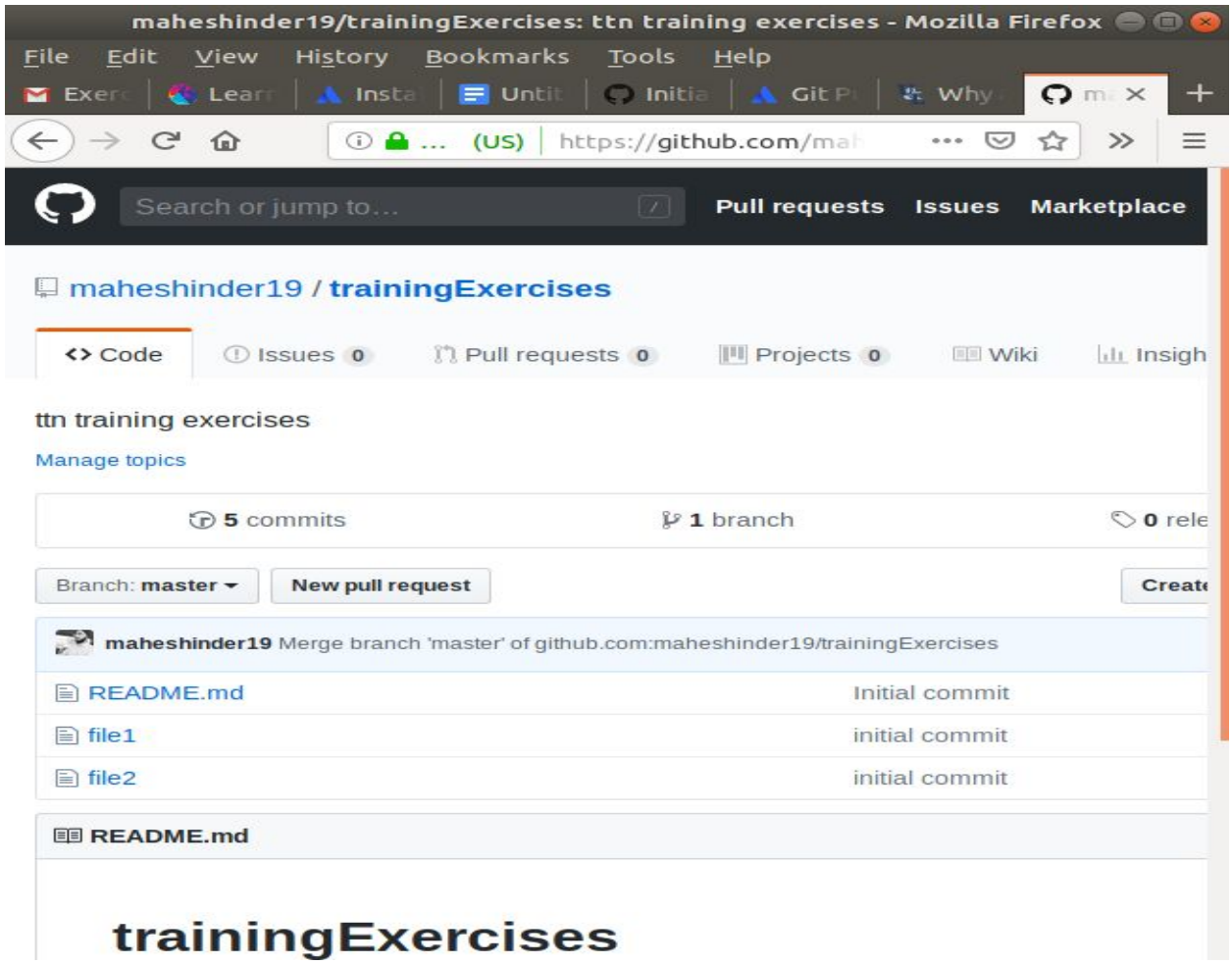


- Check the online repository.



3. Add files to the repository.



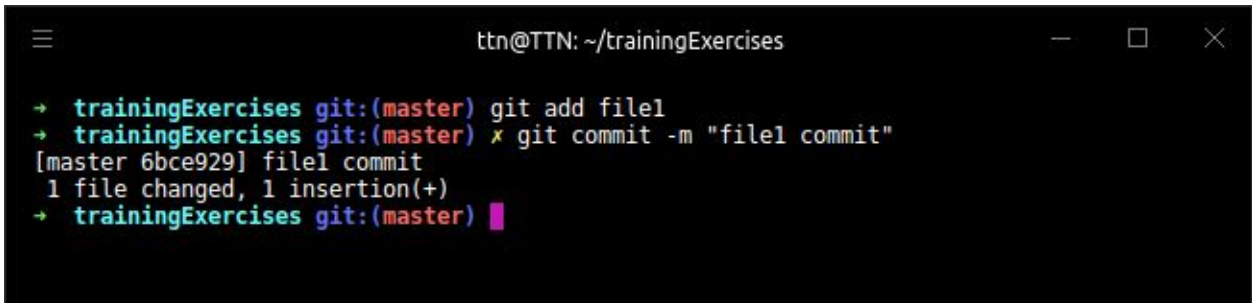


3. Unstage 1 file

A. A file can be unstaged by using the command “git --cached fileName”

4. Commit the file

A. To commit a file, a file is staged first using “git add” command and then committed using “git commit”.



5. Add a remote

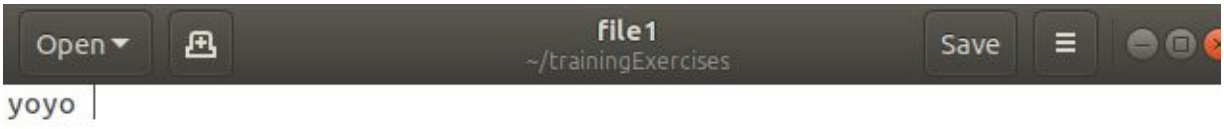
A. We can add remote by using the “git remote add/set-url” command followed by the url to the remote repo.

```
→  trainingExercises git:(master) git remote add origin https://github.com/maheshinder1
9/trainingExercises.git
→  trainingExercises git:(master)
```

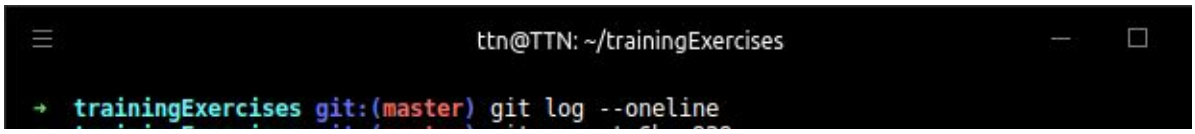
6. Undo changes to a particular file.

A. Changes in a file can be undone by using “revert” command as shown below:

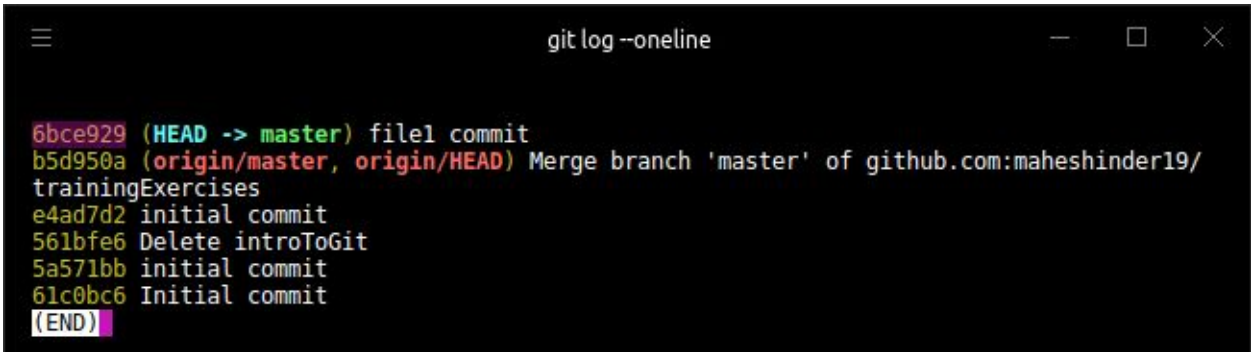
Suppose we have a file named “file1” with the last commit as follows.



We need to find the commit hashcode for the above commit to undo it.



By looking at the log we can get the informations about the commits.



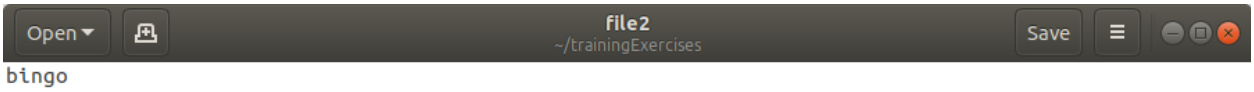
Now, to undo the changes of the commit “6bce929”, we need to use “revert”.

```
→  trainingExercises git:(master) git revert 6bce929
[master 26f1814] Revert "file1 commit"
 1 file changed, 1 deletion(-)
→  trainingExercises git:(master)
```

Changes get reflected on the file “file1”(text “yoyo” deleted).

7. Push changes to Github

- Making changes in “file2”

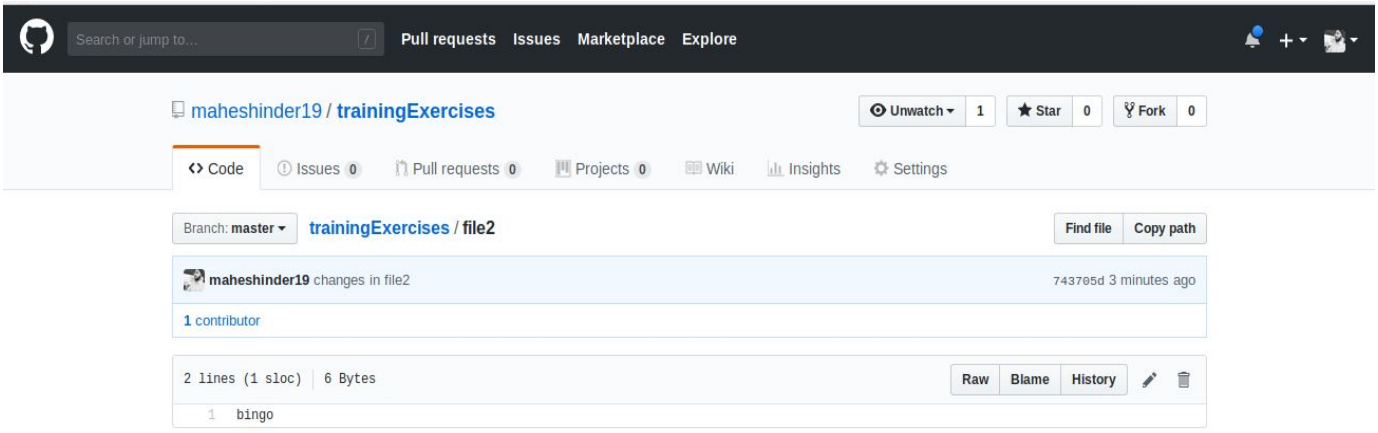


- Commiting changes and pushing to Github repo.

```
ttn@TTN: ~/trainingExercises

→  trainingExercises git:(master) ✗ git add file2
→  trainingExercises git:(master) ✗ git commit -m "changes in file2"
[master 743705d] changes in file2
 2 files changed, 2 insertions(+)
→  trainingExercises git:(master)
```

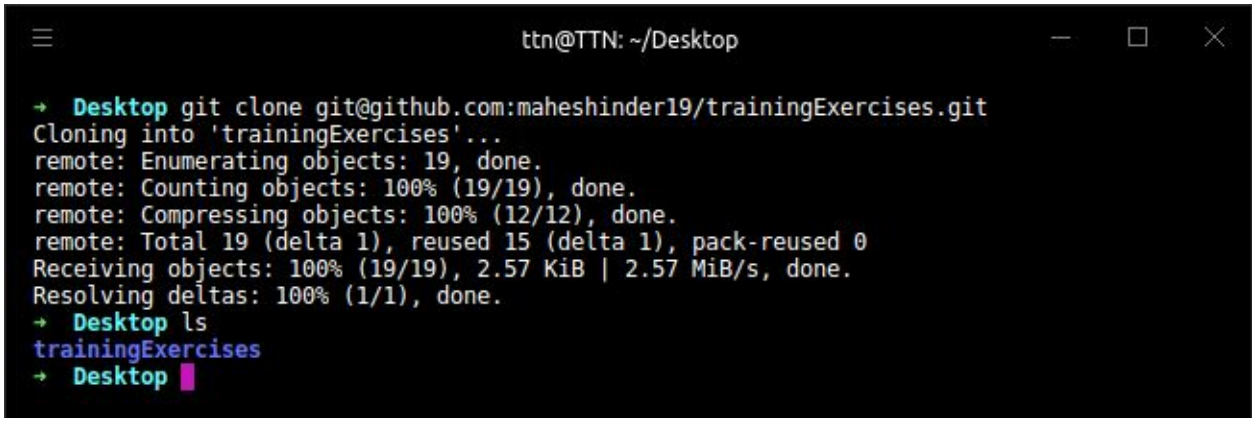
```
ttn@TTN: ~/trainingExercises

→  trainingExercises git:(master) git push origin master
Counting objects: 8, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (5/5), done.
Writing objects: 100% (8/8), 766 bytes | 766.00 KiB/s, done.
Total 8 (delta 0), reused 0 (delta 0)
To github.com:maheshinder19/trainingExercises.git
   b5d950a..743705d  master -> master
→  trainingExercises git:(master)
```

- Push successful.



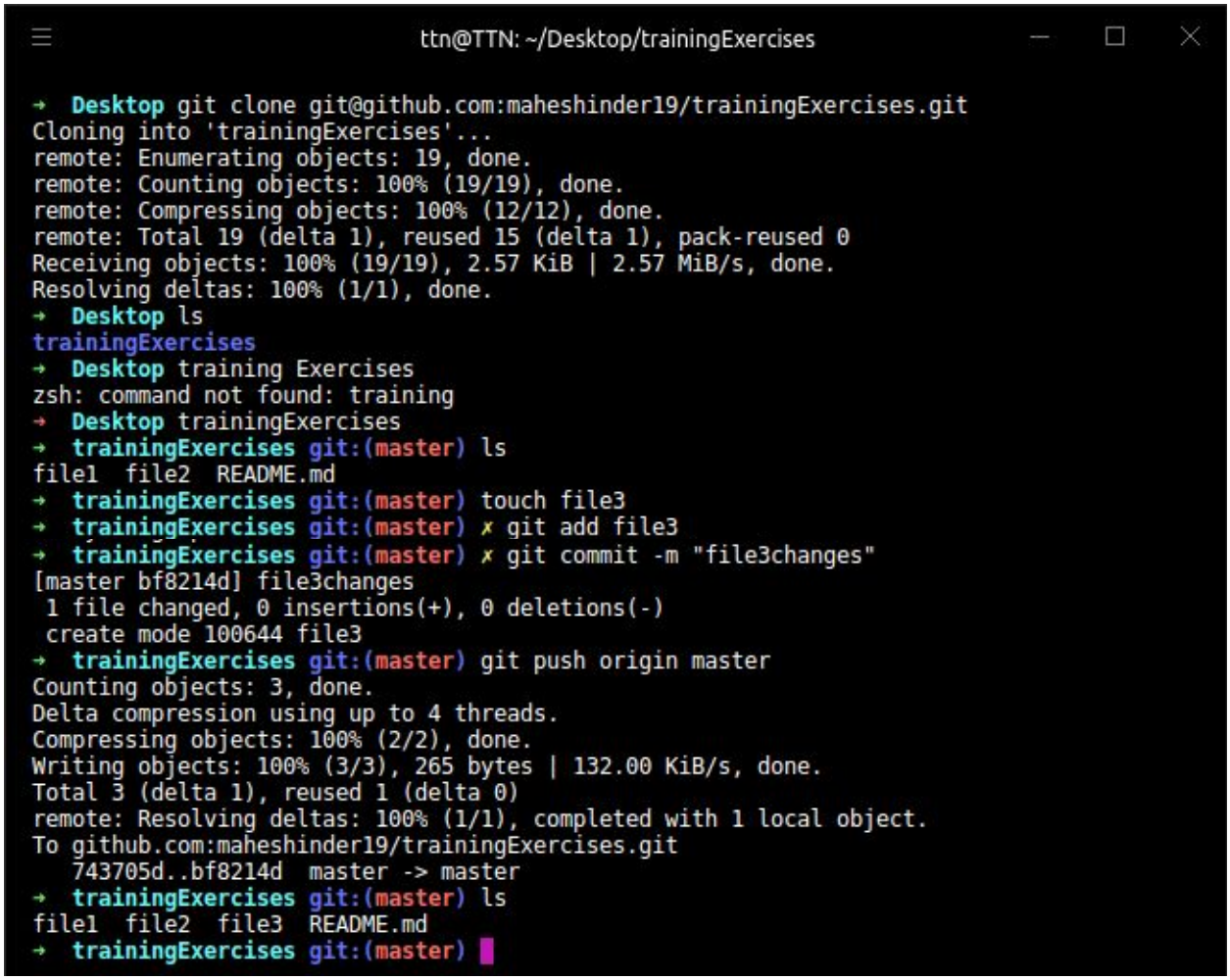
8. Clone the repository

A. One can clone any repository by using “git clone” command followed by the url of the git repo.

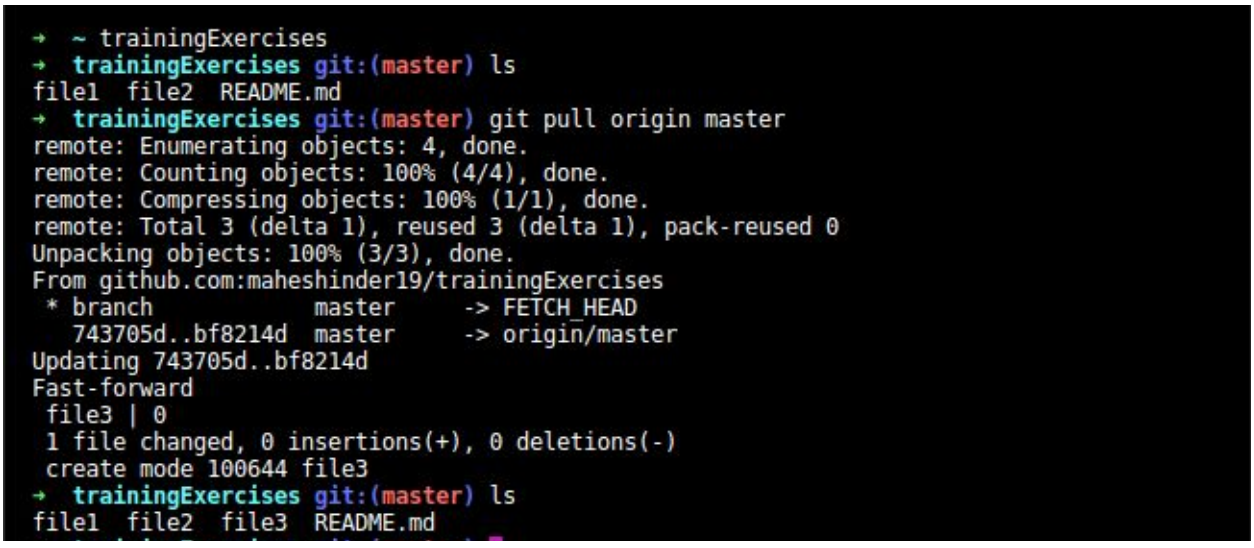


9. Add changes to one of the copies and pull the changes in the other.

- Making changes in the copy of repo in Desktop and pushing the changes.



- Changing working repo to the original one and pulling the changes.



10. Check differences between a file and its staged version

A. I have made some in changes in file and didn't stage it. Let's see the differences between the staged and unstaged version by using "git diff" command.

```
→  trainingExercises git:(master) git diff
```

```
diff --git a/file3 b/file3
index e69de29..f53ca2e 100644
--- a/file3
+++ b/file3
@@ -0,0 +1 @@
+hello i m an unstaged file.
(END)
```

Staging prepares a file to get committed. If a file is unstaged, no changes will reflect in it after the commit.

```
→  trainingExercises git:(master) ✗ git status
On branch master
Your branch is ahead of 'origin/master' by 1 commit.
  (use "git push" to publish your local commits)

Changes not staged for commit:
  (use "git add <file>..." to update what will be committed)
  (use "git checkout -- <file>..." to discard changes in working directory)

        modified:   file3

no changes added to commit (use "git add" and/or "git commit -a")
```

11. Ignore a few files to be checked in.

A. A file named "gitignore" is used to specify the names of the files that need not to be tracked by Git.

Suppose we want file4 to be untracked.

```
ttn@TTN: ~/trainingExercises

→  trainingExercises git:(master) ✗ touch file4
→  trainingExercises git:(master) ✗ vi .gitignore
```

Now adding file4 to "gitignore" file.

```
vi .gitignore

*.file4
```

Checking git status.

```
→  trainingExercises git:(master) ✗ git status
On branch master
Your branch is up to date with 'origin/master'.

Changes to be committed:
  (use "git reset HEAD <file>..." to unstage)

        modified:   file3

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

        .gitignore
        file4
```

12. Create a new branch.

A. A new branch can be created by the following command:

“git checkout -b branchName”

```
→  trainingExercises git:(master) ✗ git checkout -b develope
M       file3
Switched to a new branch 'develope'
→  trainingExercises git:(develope) ✗
```

13. Diverge them with commits.

A. Committing changes in branch “develop” (adding “file5”)

```
→  trainingExercises git:(develop) ✗ ls
file1  file2  file3  file4  README.md
→  trainingExercises git:(develop) ✗ touch file5
→  trainingExercises git:(develop) ✗ git add file5
→  trainingExercises git:(develop) ✗ git commit -m "file5 commit"
[develop 19f83b4] file5 commit
 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 file5
→  trainingExercises git:(develop) ✗ ls
file1  file2  file3  file4  file5  README.md
```

Checking “master” branch:

```
→  trainingExercises git:(develop) ✗ git checkout master
Switched to branch 'master'
Your branch is up to date with 'origin/master'.
→  trainingExercises git:(master) ✗ ls
file1  file2  file3  file4  README.md
```

As we can see both the branches differ.

14. Edit the same file at the same line on both branches and commit.

- Editing file5 in testing branch.

```
→  trainingExercises git:(testing) ✗ vi file5
```


```
→  trainingExercises git:(testing) ✗ git add file5
→  trainingExercises git:(testing) ✗ git commit -m "file5 updation"
[testing 957c758] file5 updation
 1 file changed, 3 insertions(+)
 create mode 100644 file5
→  trainingExercises git:(testing) ✗ git push origin testing
Counting objects: 3, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 288 bytes | 288.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
remote:
remote: Create a pull request for 'testing' on GitHub by visiting:
remote:      https://github.com/maheshinder19/trainingExercises/pull/new/testing
remote:
To github.com:maheshinder19/trainingExercises.git
 * [new branch]      testing -> testing
```

- Editing file5 in develop

```
→  trainingExercises git:(testing) ✗ git checkout develop
Switched to branch 'develop'
→  trainingExercises git:(develop) ✗ vi file5
```

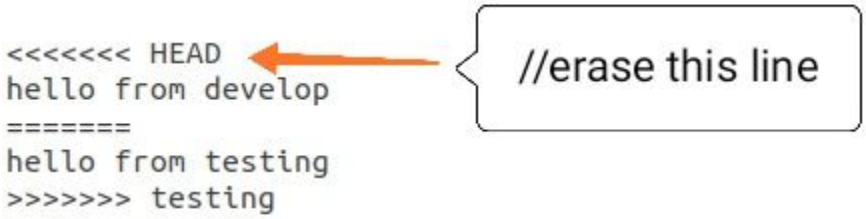

```
→  trainingExercises git:(develop) ✗ git add
Nothing specified, nothing added.
Maybe you wanted to say 'git add .'?
→  trainingExercises git:(develop) ✗ git add .
→  trainingExercises git:(develop) ✗ git commit .
Aborting commit due to empty commit message.
→  trainingExercises git:(develop) ✗ git commit -m "file5 updates"
[develop fb2ebfc] file5 updates
 3 files changed, 8 insertions(+)
 create mode 100644 .gitignore
 create mode 100644 file4
→  trainingExercises git:(develop) git push origin develop
Counting objects: 10, done.
Delta compression using up to 4 threads.
Compressing objects: 100% (6/6), done.
Writing objects: 100% (10/10), 865 bytes | 288.00 KiB/s, done.
Total 10 (delta 2), reused 0 (delta 0)
remote: Resolving deltas: 100% (2/2), done.
remote:
remote: Create a pull request for 'develop' on GitHub by visiting:
remote:      https://github.com/maheshinder19/trainingExercises/pull/new/develop
remote:
To github.com:maheshinder19/trainingExercises.git
 * [new branch]      develop -> develop
```

15. Try merging and resolve merge conflicts.

A. On merging develop and testing branches we get conflicts as the file called “file5” has same text on same line.

```
→  trainingExercises git:(develop) git merge testing
Auto-merging file5
CONFLICT (add/add): Merge conflict in file5
Automatic merge failed; fix conflicts and then commit the result.
```

To resolve the conflicts we need to look at the “file5” and erase the “HEAD”.



Pushing the changes and check if the conflict is resolved.

```
→  trainingExercises git:(develop) ✗ git add .
→  trainingExercises git:(develop) ✗ git commit -m "solving merging conflicts"
[develop 315b3f7] solving merging conflicts
→  trainingExercises git:(develop) git merge testing
Already up to date.
```

16. Stash the changes and pop them.

A. We can stash the changed if we do not want to commit them and do not want them to create any interruption in pushing.
   - Creating a file “stashdemo”.

```
→  trainingExercises git:(develop) touch stashdemo
→  trainingExercises git:(develop) ✗ git status
On branch develop
Untracked files:
  (use "git add <file>..." to include in what will be committed)

        stashdemo

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

As we can see “stashdemo” is unstaged. Let's save it in stash.

```
→  trainingExercises git:(develop) ✗ git stash save -u
Saved working directory and index state WIP on develop: 315b3f7 solving merging conflic
ts
→  trainingExercises git:(develop) git status
On branch develop
nothing to commit, working tree clean
```

- Now let’s pop it.

```
→  trainingExercises git:(develop) git stash pop
Already up to date!
On branch develop
Untracked files:
  (use "git add <file>..." to include in what will be committed)

        stashdemo

nothing added to commit but untracked files present (use "git add" to track)
Dropped refs/stash@{0} (d90c9517f0e2139d372a6205cfbc91a41f095762)
```

File “stashdemo” is again unstaged for changes to be made.

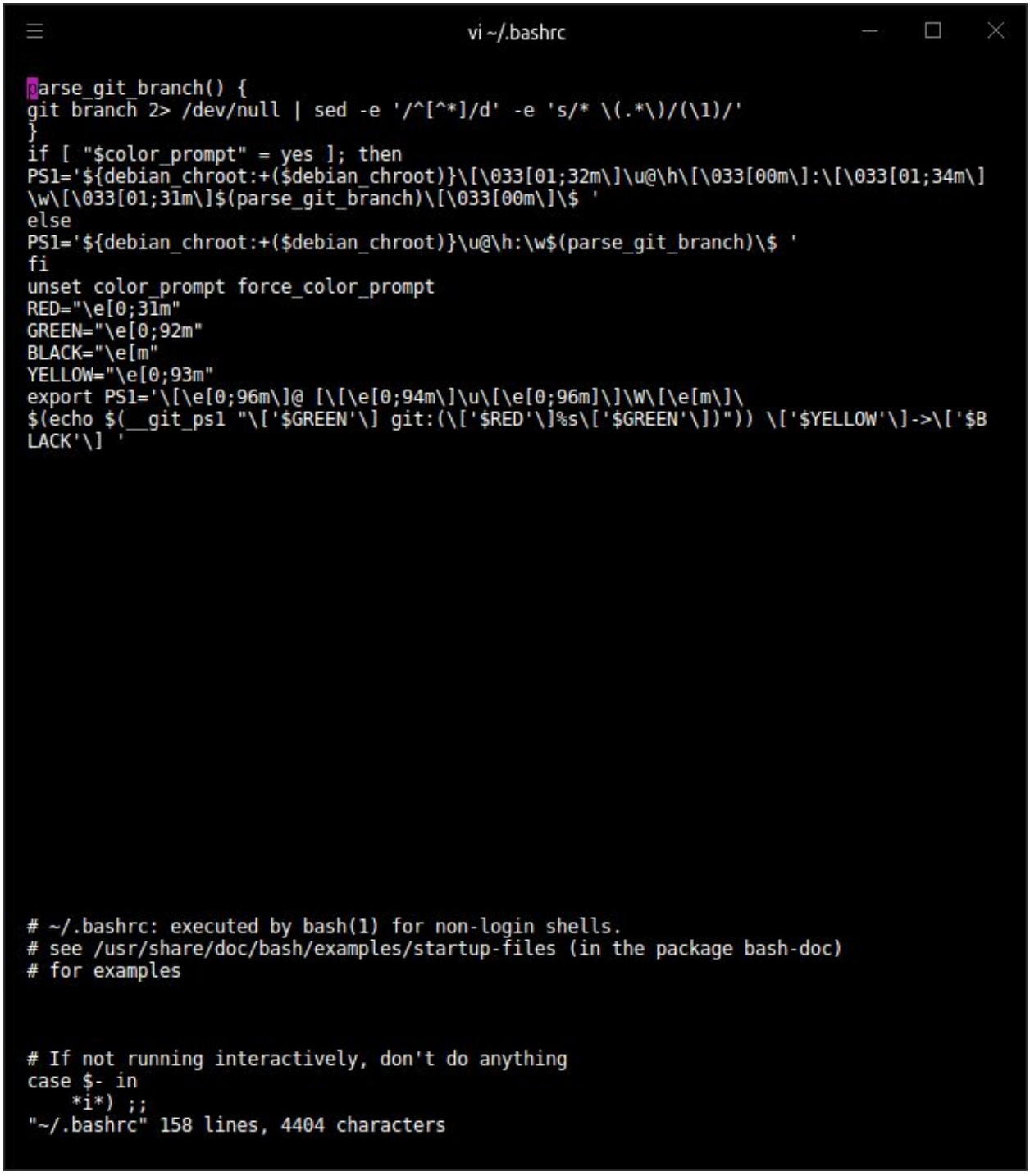
17. Add the following code to your .bashrc file : color_prompt="yes"

```
parse_git_branch() {
git branch 2> /dev/null | sed -e '/^[^*]/d' -e 's/* \(.*\)/(\1)/'
}
if [ "$color_prompt" = yes ]; then
PS1='\u@\h\[\033[00m\]:\[\033[01;34m\]\W\[\033[01;31m\]
$(parse_git_branch)\[\033[00m\]\$ '
else
PS1='\u@\h:\W $(parse_git_branch)\$ '
fi
unset color_prompt force_color_prompt
```

A. Opening bashrc using vi.

```
→  ~ vi ~/.bashrc
```

Adding code.


vi ~/.bashrc
parse_git_branch() {
git branch 2> /dev/null | sed -e '/^[^*]/d' -e 's/* \(.*\)/(\1)/'
}
if ["$color_prompt" = yes]; then
PS1='${debian_chroot:+($debian_chroot)}\[\033[01;32m\]\u@\h\[\033[00m\]:\[\033[01;34m\]
\w\[\033[01;31m\]$(parse_git_branch)\[\033[00m\]\$ '
else
PS1='${debian_chroot:+($debian_chroot)}\u@\h:\w$(parse_git_branch)\$ '
fi
unset color_prompt force_color_prompt
RED="\e[0;31m"
GREEN="\e[0;92m"
BLACK="\e[m"
YELLOW="\e[0;93m"
export PS1='\[\e[0;96m\]@ [\[\e[0;94m\]\u\[\e[0;96m]\]\W\[\e[m\]\
$(echo $(__git_ps1 "\['$GREEN'\] git:(\['$RED'\]%s\['$GREEN'\])")) \['$YELLOW'\]->\['$B
LACK'\] '
~/.bashrc: executed by bash(1) for non-login shells.
see /usr/share/doc/bash/examples/startup-files (in the package bash-doc)
for examples
If not running interactively, don't do anything
case $- in
i) ;;
"~/.bashrc" 158 lines, 4404 characters