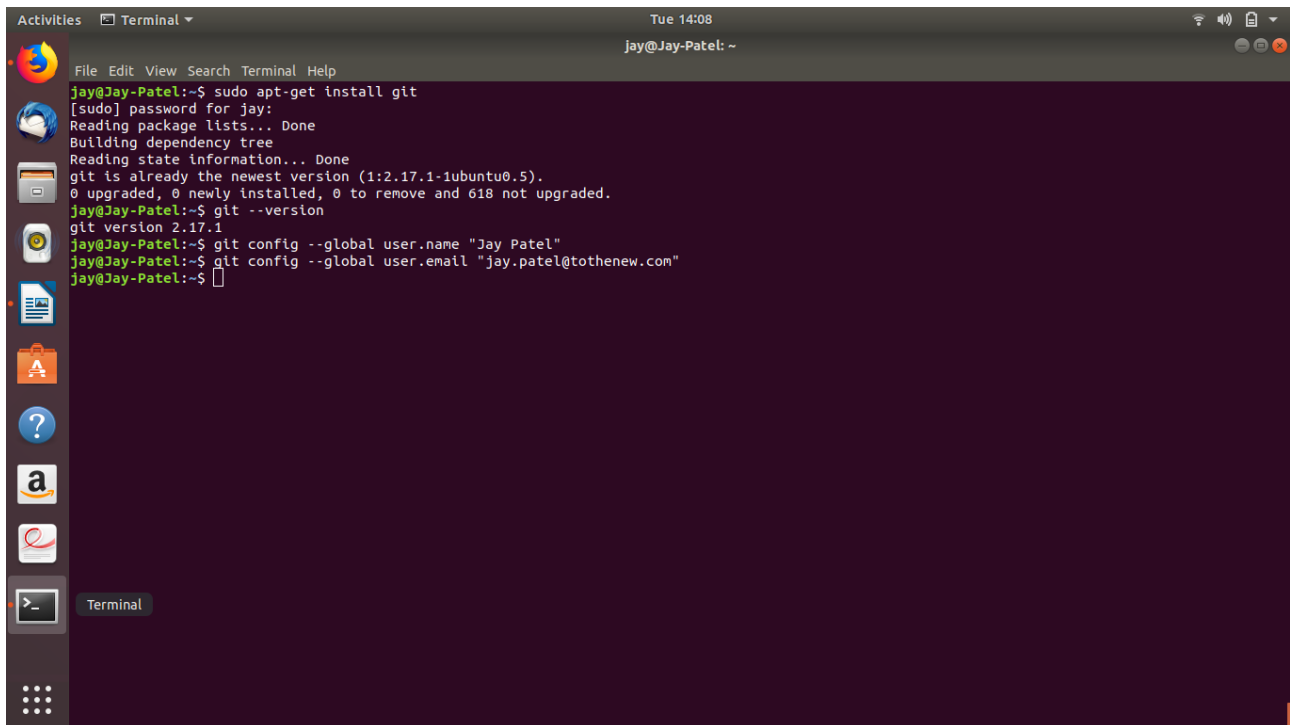


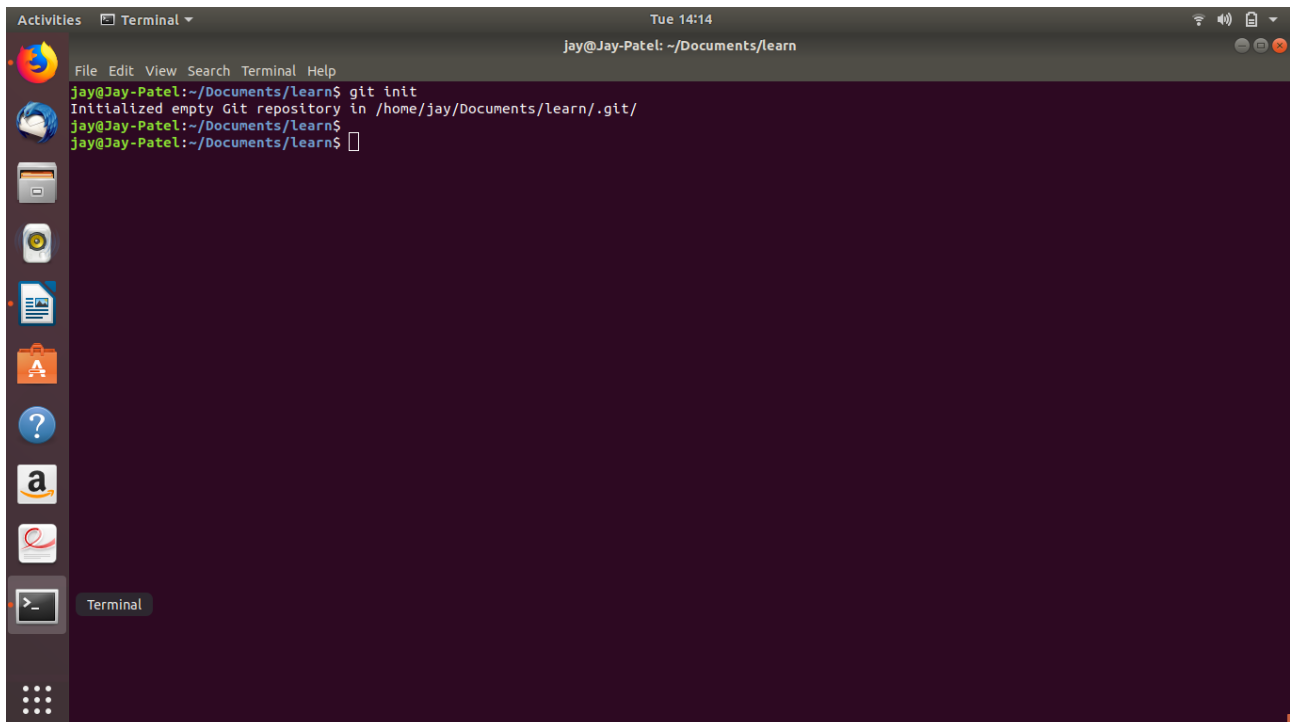
## Session : Introduction to Version Control

Exercise 1 : Git Setup <https://confluence.atlassian.com/bitbucket/set-up-git-744723531.html>

A terminal window titled 'Terminal' with a dark background and light text. The window shows the process of installing Git on a Linux system. The user runs 'sudo apt-get install git', followed by 'git --version' which shows 'git version 2.17.1'. Then, the user configures the global user name and email using 'git config --global user.name "Jay Patel"' and 'git config --global user.email "jay.patel@tothenew.com"'. The terminal output includes messages from the package manager about reading package lists, building dependency trees, and reading state information.

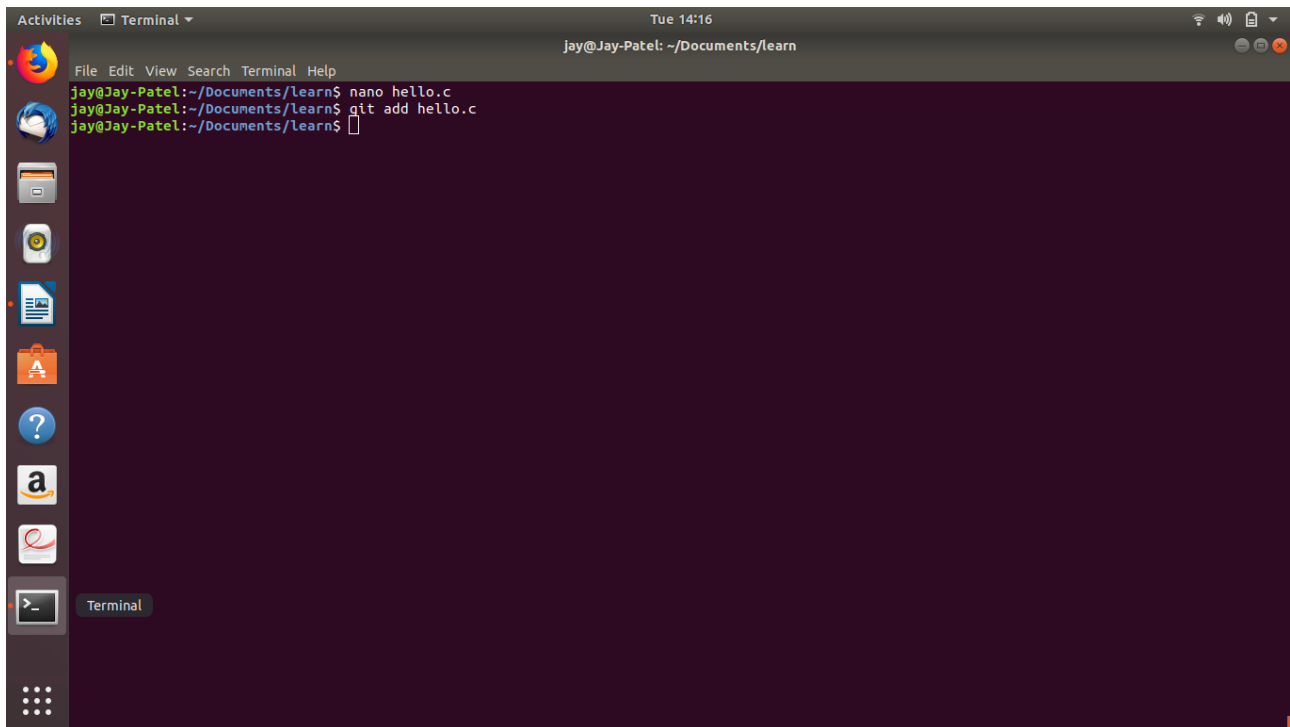
```
jay@Jay-Patel:~$ sudo apt-get install git
[sudo] password for jay:
Reading package lists... Done
Building dependency tree
Reading state information... Done
git is already the newest version (1:2.17.1-1ubuntu0.5).
0 upgraded, 0 newly installed, 0 to remove and 618 not upgraded.
jay@Jay-Patel:~$ git --version
git version 2.17.1
jay@Jay-Patel:~$ git config --global user.name "Jay Patel"
jay@Jay-Patel:~$ git config --global user.email "jay.patel@tothenew.com"
jay@Jay-Patel:~$
```

## Exercise 2 :Initialize a Git Repository

A terminal window titled 'Terminal' with a dark background and light text. The user is in the directory ~/Documents/learn and runs 'git init'. The terminal output shows 'Initialized empty Git repository in /home/jay/Documents/learn/.git/'.

```
jay@Jay-Patel:~/Documents/learn$ git init
Initialized empty Git repository in /home/jay/Documents/learn/.git/
jay@Jay-Patel:~/Documents/learn$
```

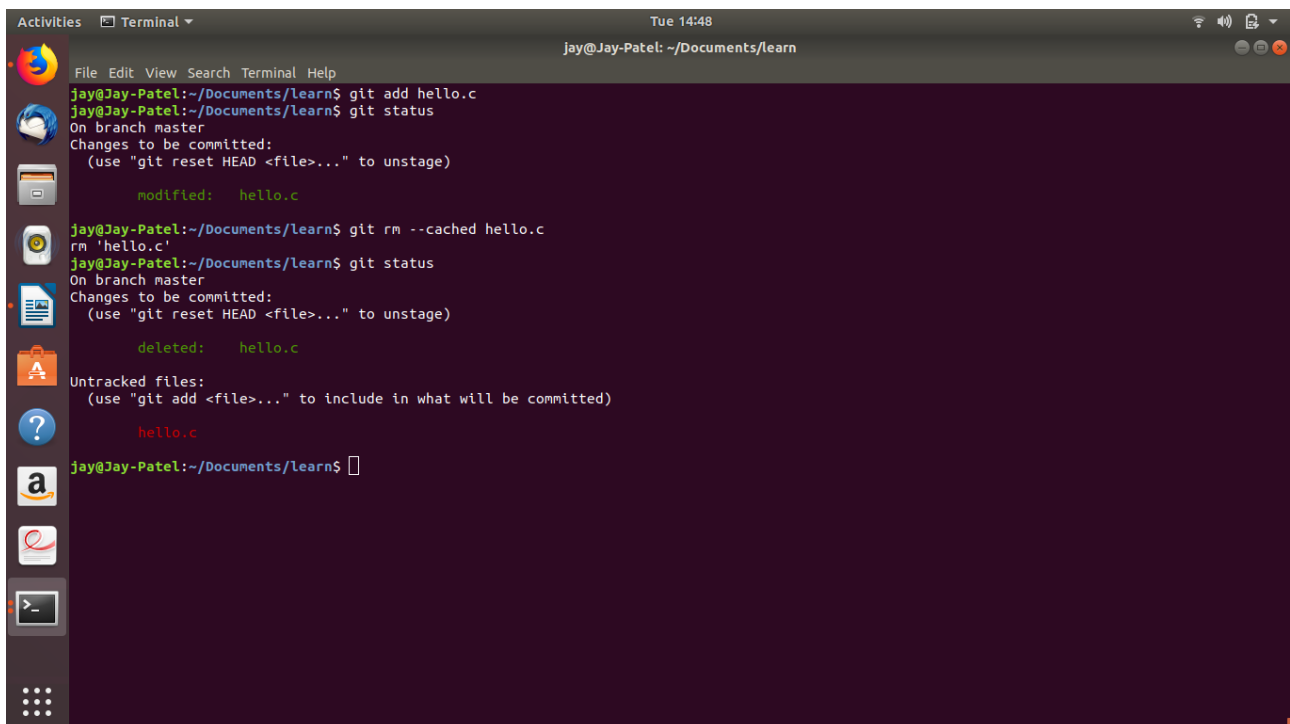
### Exercise 3 : Add files to the repository



A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Tue 14:16, jay@Jay-Patel: ~/Documents/learn). The terminal shows the following commands and output:

```
jay@Jay-Patel:~/Documents/learn$ nano hello.c
jay@Jay-Patel:~/Documents/learn$ git add hello.c
jay@Jay-Patel:~/Documents/learn$
```

### Exercise 4 :Unstage 1 file



A terminal window titled 'Terminal' with a menu bar (File, Edit, View, Search, Terminal, Help) and a status bar (Tue 14:48, jay@Jay-Patel: ~/Documents/learn). The terminal shows the following commands and output:

```
jay@Jay-Patel:~/Documents/learn$ git add hello.c
jay@Jay-Patel:~/Documents/learn$ git status
On branch master
Changes to be committed:
  (use "git reset HEAD <file>..." to unstage)

    modified:   hello.c

jay@Jay-Patel:~/Documents/learn$ git rm --cached hello.c
rm 'hello.c'
jay@Jay-Patel:~/Documents/learn$ git status
On branch master
Changes to be committed:
  (use "git reset HEAD <file>..." to unstage)

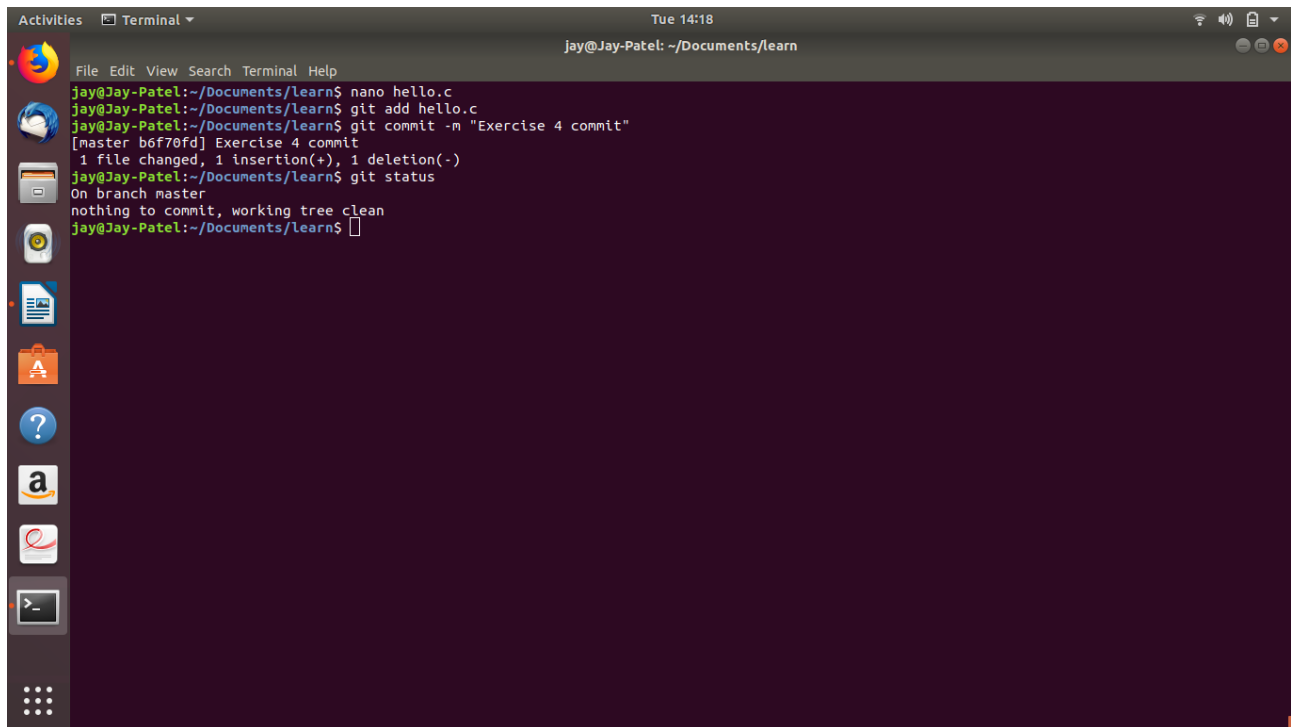
    deleted:    hello.c

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

    hello.c

jay@Jay-Patel:~/Documents/learn$
```

## Exercise 5 :Commit the file

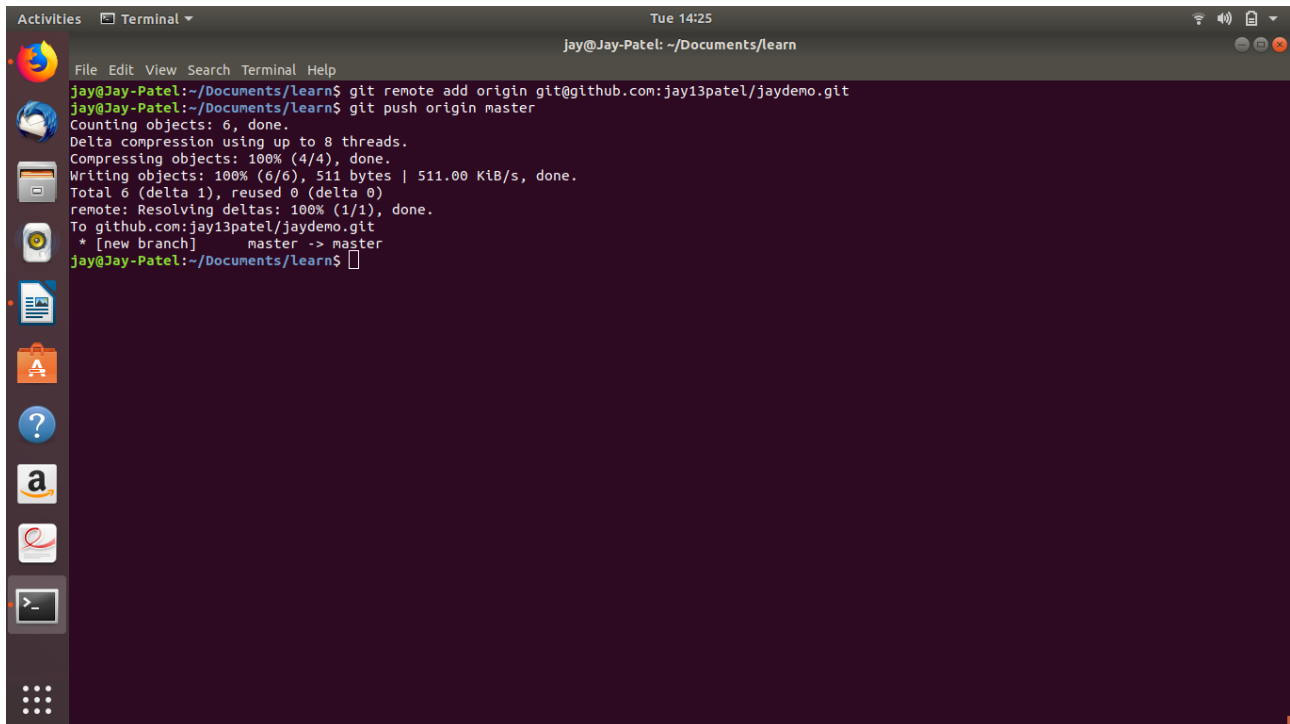


A terminal window titled "Terminal" with a dark background and light text. The window shows a series of commands and their outputs in a Linux environment. The user is in the directory ~/Documents/learn. The commands executed are: nano hello.c, git add hello.c, git commit -m "Exercise 4 commit", and git status. The output shows the commit was successful, with a message "Exercise 4 commit" and a commit hash b6f70fd. The status shows that the working tree is clean.

```
File Edit View Search Terminal Help
Tue 14:18
jay@Jay-Patel: ~/Documents/learn

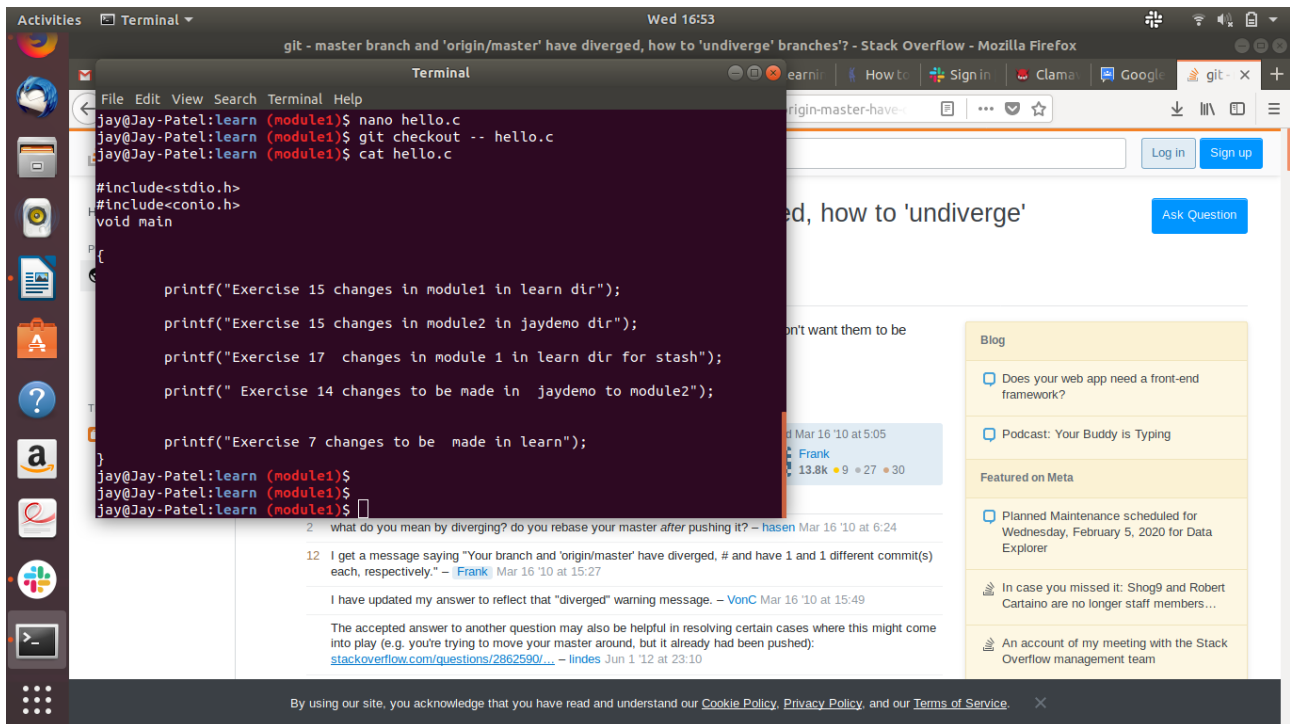
jay@Jay-Patel:~/Documents/learn$ nano hello.c
jay@Jay-Patel:~/Documents/learn$ git add hello.c
jay@Jay-Patel:~/Documents/learn$ git commit -m "Exercise 4 commit"
[master b6f70fd] Exercise 4 commit
1 file changed, 1 insertion(+), 1 deletion(-)
jay@Jay-Patel:~/Documents/learn$ git status
On branch master
nothing to commit, working tree clean
jay@Jay-Patel:~/Documents/learn$
```

## Exercise 6 :Add a remote

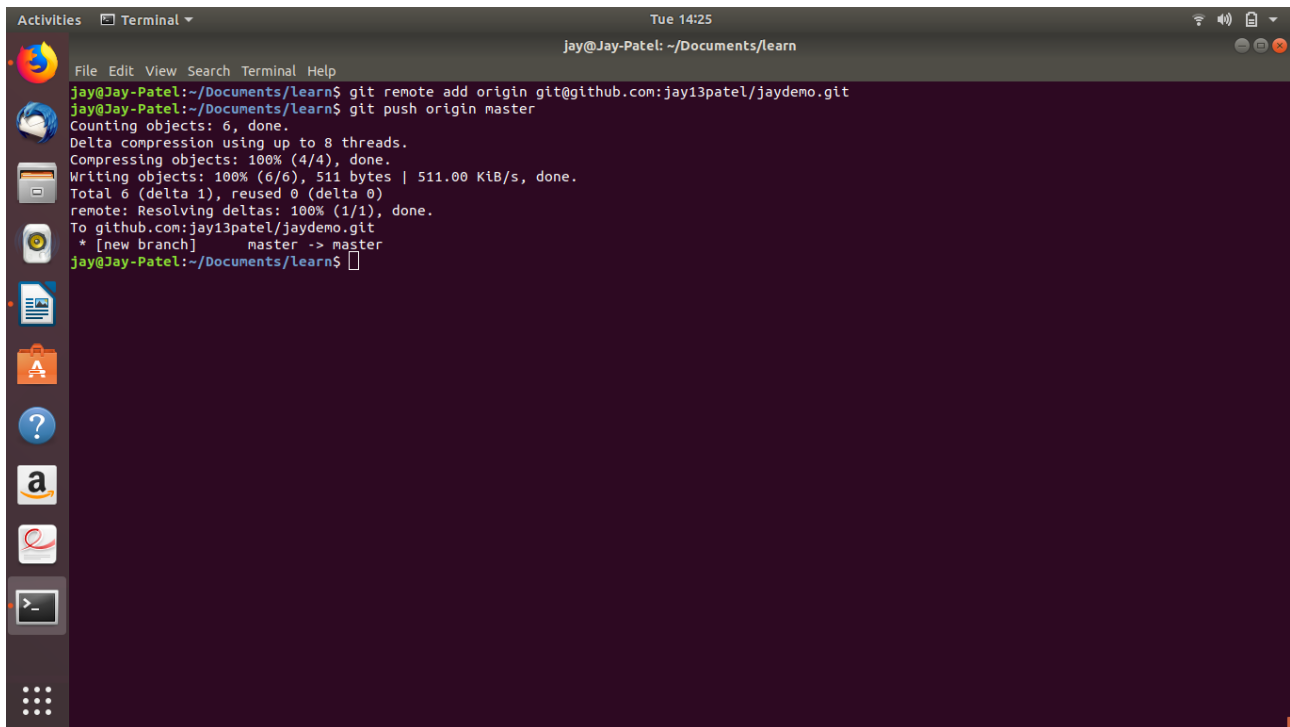
A terminal window titled "Terminal" with a dark background. The window shows the execution of two git commands. The first command is "git remote add origin git@github.com:jay13patel/jaydemo.git". The second command is "git push origin master". The output of the second command shows the progress of pushing the master branch to the remote repository, including object counting, compression, and writing. The terminal window has a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The status bar at the top shows "Tue 14:25" and "jay@Jay-Patel: ~/Documents/learn". The left sidebar of the terminal window shows various application icons.

```
jay@Jay-Patel:~/Documents/learn$ git remote add origin git@github.com:jay13patel/jaydemo.git
jay@Jay-Patel:~/Documents/learn$ git push origin master
Counting objects: 6, done.
Delta compression using up to 8 threads.
Compressing objects: 100% (4/4), done.
Writing objects: 100% (6/6), 511 bytes | 511.00 KiB/s, done.
Total 6 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), done.
To github.com:jay13patel/jaydemo.git
 * [new branch]      master -> master
jay@Jay-Patel:~/Documents/learn$
```

## Exercise 7 :Undo changes to a particular file



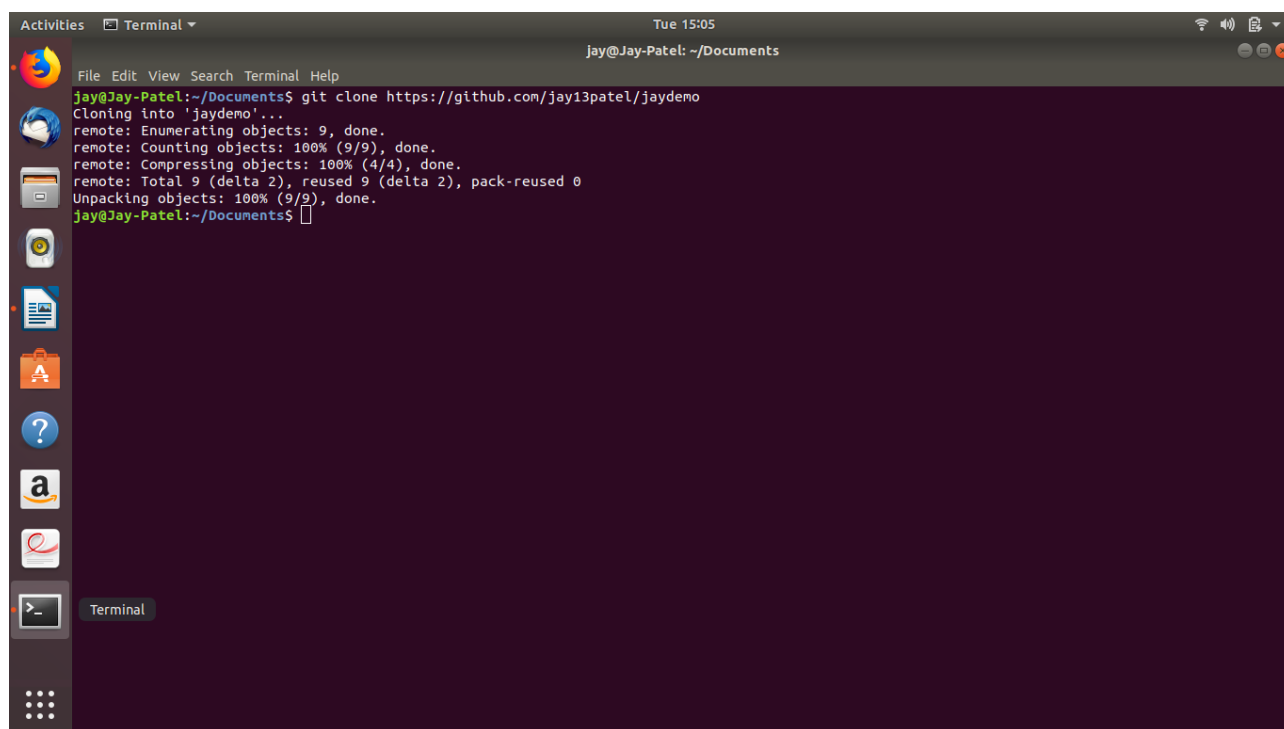
## Exercise 8 :Push changes to Github



A terminal window titled "Terminal" with a dark background and light text. The window shows the execution of git commands to push changes to a remote repository on GitHub. The user is identified as "jay@Jay-Patel" and the current directory is "~/Documents/learn". The output shows the successful addition of a remote repository and the pushing of the master branch.

```
jay@Jay-Patel: ~/Documents/learn
File Edit View Search Terminal Help
jay@Jay-Patel:~/Documents/learn$ git remote add origin git@github.com:jay13patel/jaydemo.git
jay@Jay-Patel:~/Documents/learn$ git push origin master
Counting objects: 6, done.
Delta compression using up to 8 threads.
Compressing objects: 100% (4/4), done.
Writing objects: 100% (6/6), 511 bytes | 511.00 KiB/s, done.
Total 6 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), done.
To github.com:jay13patel/jaydemo.git
 * [new branch]      master -> master
jay@Jay-Patel:~/Documents/learn$
```

## Exercise 9 : Clone the repository



The screenshot shows a terminal window titled "Terminal" with a dark purple background. The user "jay@Jay-Patel" is in the directory "~/Documents". The command executed is `git clone https://github.com/jay13patel/jaydemo`. The output shows the cloning process: "Cloning into 'jaydemo'...", "remote: Enumerating objects: 9, done.", "remote: Counting objects: 100% (9/9), done.", "remote: Compressing objects: 100% (4/4), done.", "remote: Total 9 (delta 2), reused 9 (delta 2), pack-reused 0", and "Unpacking objects: 100% (9/9), done.". The terminal window has a menu bar with "File", "Edit", "View", "Search", "Terminal", and "Help". The system status bar at the top right shows the time "Tue 15:05" and icons for network, volume, and battery. The left sidebar contains various application icons, including Firefox, Nautilus, and the Dash icon.

```
jay@Jay-Patel:~/Documents$ git clone https://github.com/jay13patel/jaydemo
Cloning into 'jaydemo'...
remote: Enumerating objects: 9, done.
remote: Counting objects: 100% (9/9), done.
remote: Compressing objects: 100% (4/4), done.
remote: Total 9 (delta 2), reused 9 (delta 2), pack-reused 0
Unpacking objects: 100% (9/9), done.
jay@Jay-Patel:~/Documents$
```

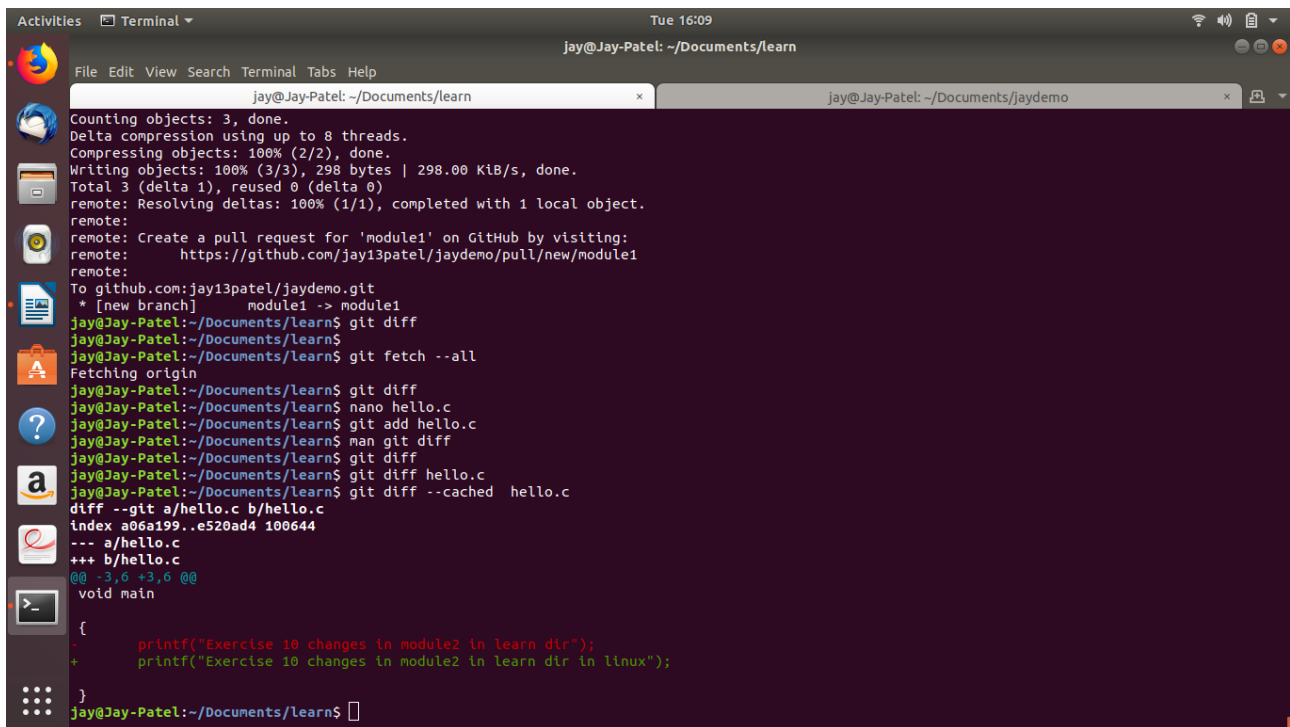
Exercise 10 :Add changes to one of the copies and pull the changes in the other.

```
Activities Terminal Tue 16:02
jay@Jay-Patel: ~/Documents/learn
File Edit View Search Terminal Tabs Help
jay@Jay-Patel: ~/Documents/learn
error: did you mean '--all' (with two dashes ?)
jay@Jay-Patel:~/Documents/learn$ git fetch --all
Fetching origin
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 0), reused 3 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), done.
From github.com:jay13patel/jaydemo
* [new branch]      module2 -> origin/module2
jay@Jay-Patel:~/Documents/learn$ cat hello.c
#include<stdio.h>
#include<conio.h>
void main
{
    printf("Exercise 7 ");
}
jay@Jay-Patel:~/Documents/learn$ git pull origin module2
From github.com:jay13patel/jaydemo
* branch            module2 -> FETCH_HEAD
Updating 432dad0..6b0ec53
Fast-forward
 hello.c | 2 +-
 1 file changed, 1 insertion(+), 1 deletion(-)
jay@Jay-Patel:~/Documents/learn$ cat hello.c
#include<stdio.h>
#include<conio.h>
void main
{
    printf("Exercise 10 changes in module2 in jaydemo dir");
}
jay@Jay-Patel:~/Documents/learn$
```

```
Activities Terminal Tue 16:02
jay@Jay-Patel: ~/Documents/jaydemo
File Edit View Search Terminal Tabs Help
jay@Jay-Patel: ~/Documents/learn
jay@Jay-Patel:~/Documents/jaydemo$ nano hello.c
jay@Jay-Patel:~/Documents/jaydemo$ git add hello.c
jay@Jay-Patel:~/Documents/jaydemo$ git commit -m "jaydemo commit exercise 10"
[jaydemo 6b0ec53] jaydemo commit exercise 10
 1 file changed, 1 insertion(+), 1 deletion(-)
jay@Jay-Patel:~/Documents/jaydemo$ git push origin module2
Username for 'https://github.com': ^C
jay@Jay-Patel:~/Documents/jaydemo$ git remote add
.git/ hello.c
jay@Jay-Patel:~/Documents/jaydemo$ git remote add origin git@github.com:jay13patel/jaydemo.git
fatal: remote origin already exists.
jay@Jay-Patel:~/Documents/jaydemo$ git push origin module2
Username for 'https://github.com': jay13patel
Password for 'https://jay13patel@github.com':
Counting objects: 3, done.
Delta compression using up to 8 threads.
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 347 bytes | 347.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0)
remote:
remote: Create a pull request for 'module2' on GitHub by visiting:
remote:   https://github.com/jay13patel/jaydemo/pull/new/module2
remote:
To https://github.com:jay13patel/jaydemo
* [new branch]      module2 -> module2
jay@Jay-Patel:~/Documents/jaydemo$ cat hello.c
#include<stdio.h>
#include<conio.h>
void main
{
    printf("Exercise 10 changes in module2 in jaydemo dir");
}
jay@Jay-Patel:~/Documents/jaydemo$
```

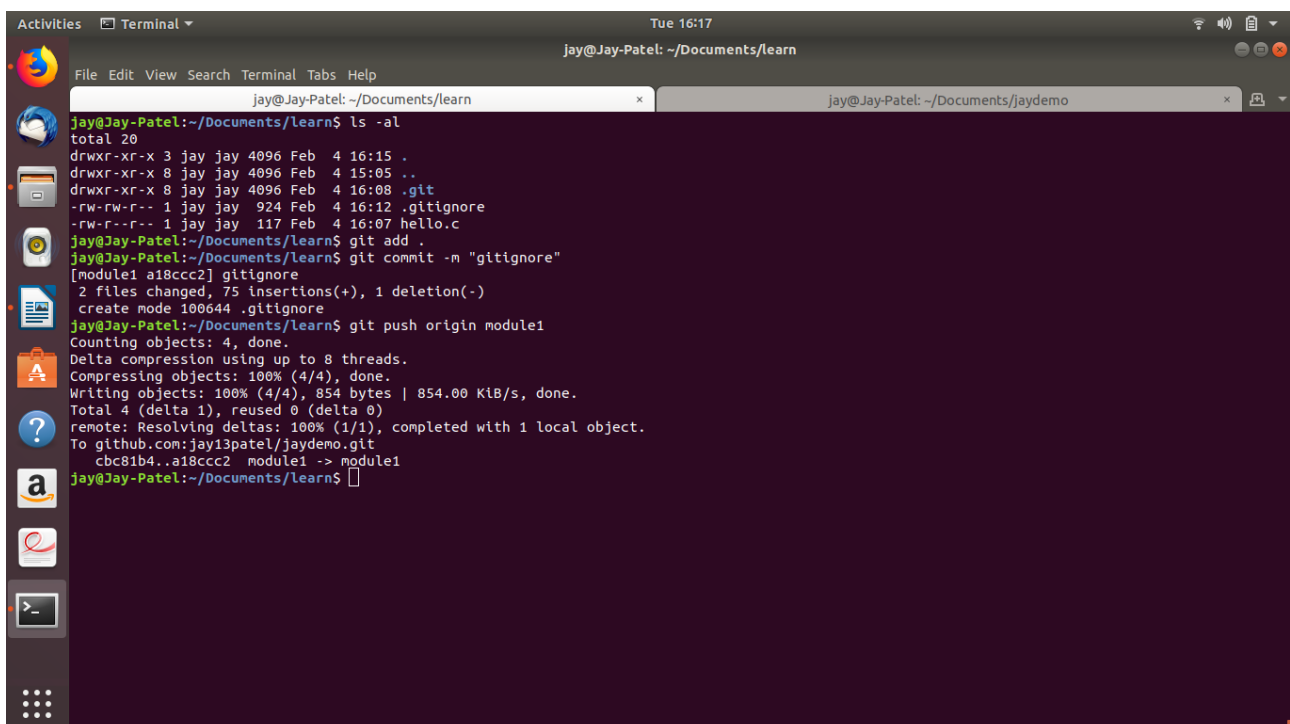


## Exercise 11: Check differences between a file and its staged version

A terminal window titled 'jay@Jay-Patel: ~/Documents/learn' showing the execution of various git commands. The user has created a new branch 'module1', fetched the latest changes, and used 'git diff' to compare the current state with the staged version of 'hello.c'. The output shows a diff between the local file and the staged version, indicating a change in the 'main' function.

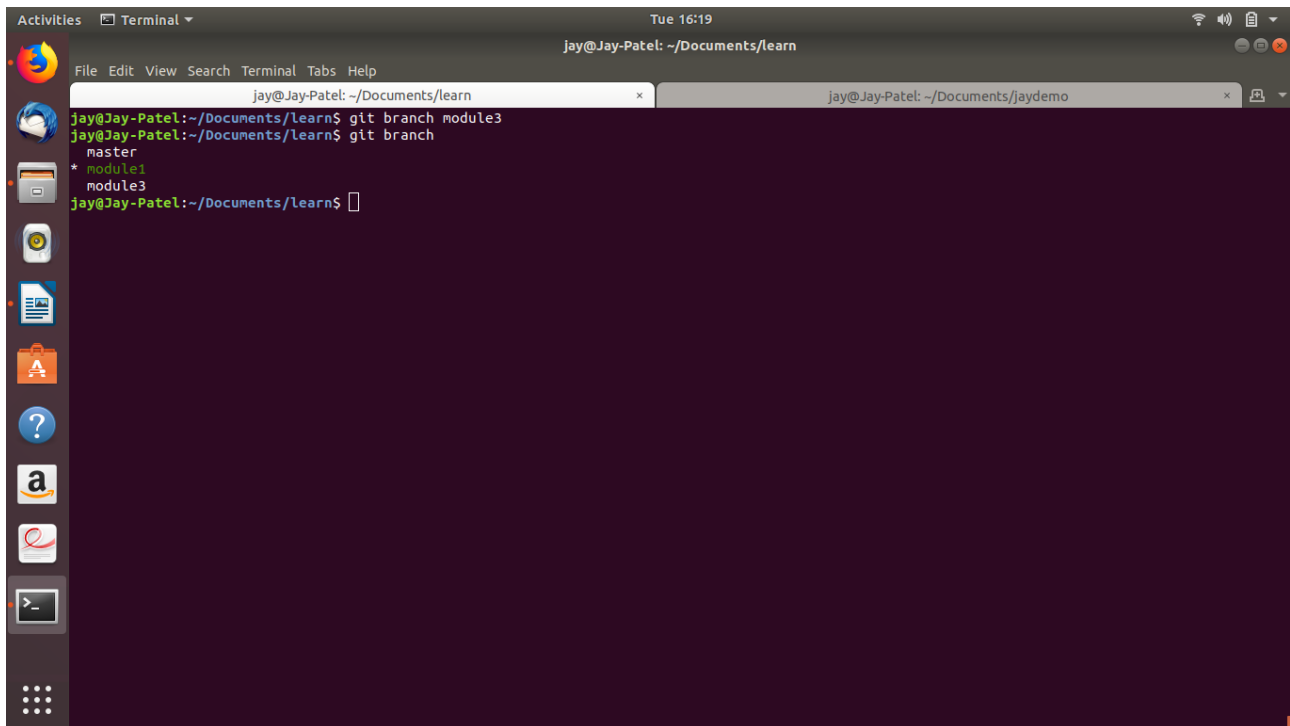
```
Counting objects: 3, done.
Delta compression using up to 8 threads.
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 298 bytes | 298.00 KiB/s, done.
Total 3 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
remote:
remote: Create a pull request for 'module1' on GitHub by visiting:
remote:   https://github.com/jay13patel/jaydemo/pull/new/module1
remote:
To github.com:jay13patel/jaydemo.git
 * [new branch]    module1 -> module1
jay@Jay-Patel:~/Documents/learn$ git diff
jay@Jay-Patel:~/Documents/learn$ git fetch --all
Fetching origin
jay@Jay-Patel:~/Documents/learn$ git diff
jay@Jay-Patel:~/Documents/learn$ nano hello.c
jay@Jay-Patel:~/Documents/learn$ git add hello.c
jay@Jay-Patel:~/Documents/learn$ man git diff
jay@Jay-Patel:~/Documents/learn$ git diff
jay@Jay-Patel:~/Documents/learn$ git diff hello.c
jay@Jay-Patel:~/Documents/learn$ git diff --cached hello.c
diff --git a/hello.c b/hello.c
index a06a199..e520ad4 100644
--- a/hello.c
+++ b/hello.c
@@ -3,6 +3,6 @@
 void main
 {
     printf("Exercise 10 changes in module2 in learn dir");
+    printf("Exercise 10 changes in module2 in learn dir in linux");
 }
```

## Exercise 12 : Ignore a few files to be checked in

A terminal window titled 'jay@Jay-Patel: ~/Documents/learn' showing the execution of 'ls -al' to list files, followed by 'git add .' to stage all files. The user then creates a '.gitignore' file and commits it with the message 'gitignore'. The output shows the commit details, including the files changed and the creation of the '.gitignore' file.

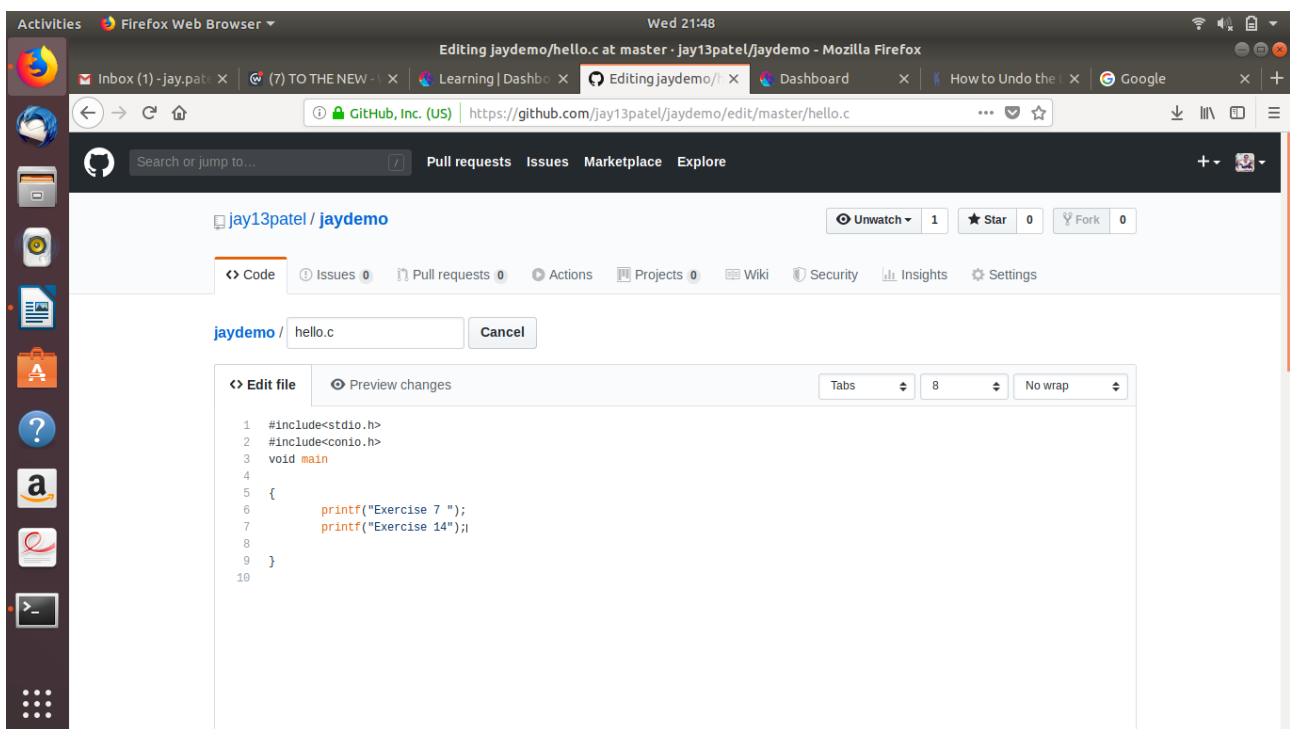
```
jay@Jay-Patel:~/Documents/learn$ ls -al
total 20
drwxr-xr-x 3 jay jay 4096 Feb  4 16:15 .
drwxr-xr-x 8 jay jay 4096 Feb  4 15:05 ..
drwxr-xr-x 8 jay jay 4096 Feb  4 16:08 .git
-rw-rw-r-- 1 jay jay  924 Feb  4 16:12 .gitignore
-rw-r--r-- 1 jay jay  117 Feb  4 16:07 hello.c
jay@Jay-Patel:~/Documents/learn$ git add .
jay@Jay-Patel:~/Documents/learn$ git commit -m "gitignore"
[module1 a18ccc2] gitignore
2 files changed, 75 insertions(+), 1 deletion(-)
create mode 100644 .gitignore
jay@Jay-Patel:~/Documents/learn$ git push origin module1
Counting objects: 4, done.
Delta compression using up to 8 threads.
Compressing objects: 100% (4/4), done.
Writing objects: 100% (4/4), 854 bytes | 854.00 KiB/s, done.
Total 4 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To github.com:jay13patel/jaydemo.git
 cbc81b4..a18ccc2 module1 -> module1
jay@Jay-Patel:~/Documents/learn$
```

### Exercise 13 : Create a new branch.

A terminal window titled 'jay@Jay-Patel: ~/Documents/learn' showing the execution of 'git branch' commands. The output lists 'master', 'module1', and 'module3'.

```
jay@Jay-Patel:~/Documents/learn$ git branch module3
jay@Jay-Patel:~/Documents/learn$ git branch
* master
  module1
  module3
jay@Jay-Patel:~/Documents/learn$
```

### Exercise 14 :Diverge them with commits

A screenshot of the GitHub web interface in a Firefox browser. It shows the 'hello.c' file in the 'jaydemo' repository, with the code content displayed in the editor.

```
1 #include<stdio.h>
2 #include<conio.h>
3 void main
4 {
5     printf("Exercise 7 ");
6     printf("Exercise 14");
7 }
8
9
10
```

Activities Terminal Wed 21:55

File Edit View Search Terminal Help

commit 03410900b77d35ffbb906e69edfbfd724a31c419  
Author: Jay Patel <jay.patel@tothenew.com>  
Date: Tue Feb 4 14:15:41 2020 +0530

Exercise 3 commit

jay@Jay-Patel:learn (master)\$ git push origin master  
To github.com:jay13patel/jaydemo.git  
! [rejected] master -> master (fetch first)  
error: failed to push some refs to 'git@github.com:jay13patel/jaydemo.git'  
hint: Updates were rejected because the remote contains work that you do  
hint: not have locally. This is usually caused by another repository pushing  
hint: to the same ref. You may want to first integrate the remote changes  
hint: (e.g., 'git pull ...') before pushing again.  
hint: See the 'Note about fast-forwards' in 'git push --help' for details.

jay@Jay-Patel:learn (master)\$ git status  
On branch master  
nothing to commit, working tree clean

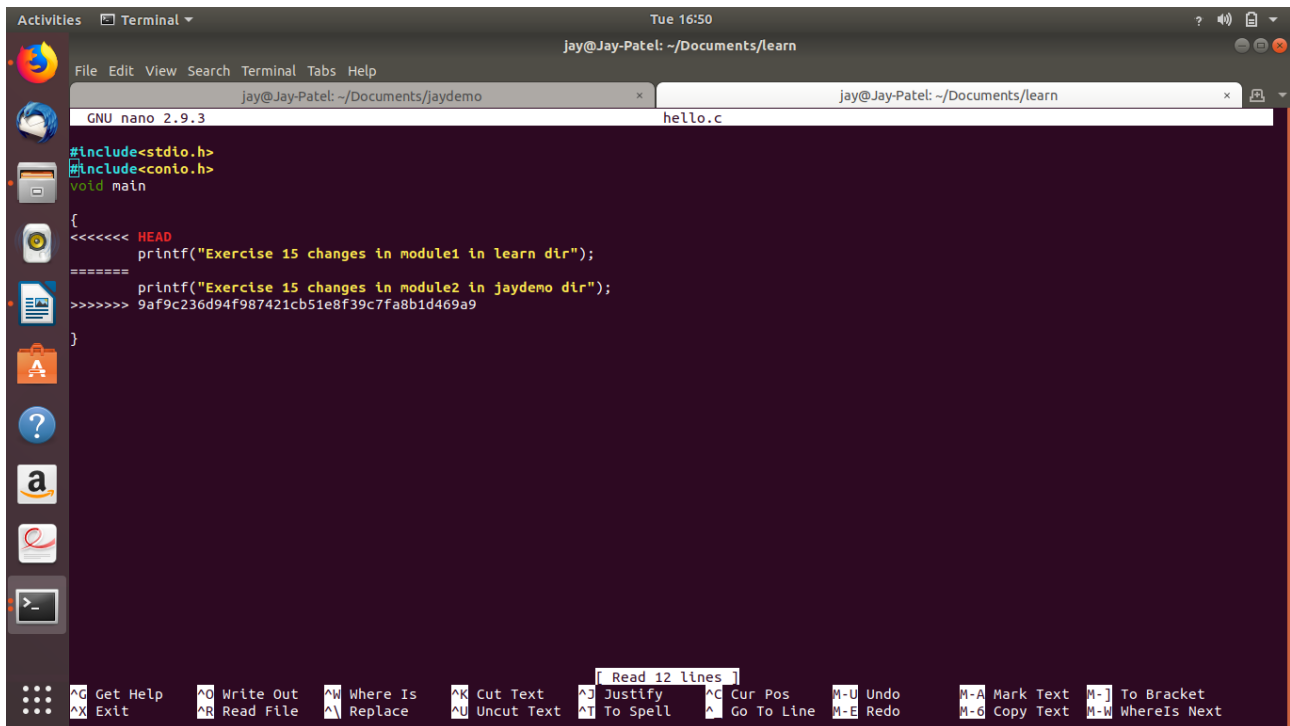
jay@Jay-Patel:learn (master)\$ git fetch --all  
Fetching origin  
remote: Enumerating objects: 5, done.  
remote: Counting objects: 100% (5/5), done.  
remote: Compressing objects: 100% (2/2), done.  
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0  
From github.com:jay13patel/jaydemo  
432dad0..52d70fd master -> origin/master

jay@Jay-Patel:learn (master)\$ git pull origin master  
From github.com:jay13patel/jaydemo  
\* branch master -> FETCH\_HEAD  
Updating 432dad0..52d70fd  
Fast-forward  
hello.c | 1 +  
1 file changed, 1 insertion(+)

jay@Jay-Patel:learn (master)\$ git status  
On branch master  
nothing to commit, working tree clean

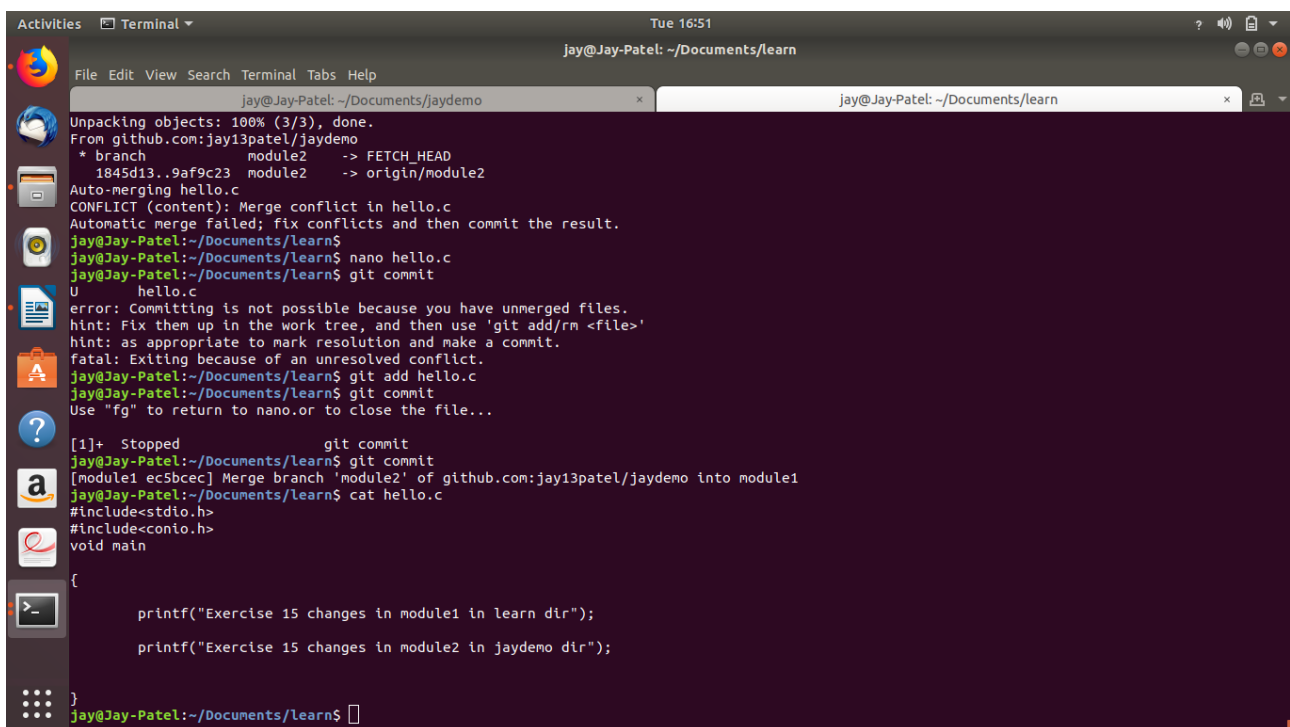
jay@Jay-Patel:learn (master)\$

Exercise 15 : Edit the same file at the same line on both branches and commit



```
File Edit View Search Terminal Tabs Help
jay@Jay-Patel: ~/Documents/jaydemo
jay@Jay-Patel: ~/Documents/learn
GNU nano 2.9.3 hello.c
#include<stdio.h>
#include<conio.h>
void main
{
<<<<<< HEAD
printf("Exercise 15 changes in module1 in learn dir");
=====
printf("Exercise 15 changes in module2 in jaydemo dir");
>>>>>> 9af9c236d94f987421cb51e8f39c7fa8b1d469a9
}
[Read 12 lines]
Get Help  Write Out  Where Is  Cut Text  Justify  Cur Pos  Undo  Mark Text  To Bracket
Exit      Read File  Replace  Uncut Text  To Spell  Go To Line  Redo  Copy Text  WhereIs Next
```

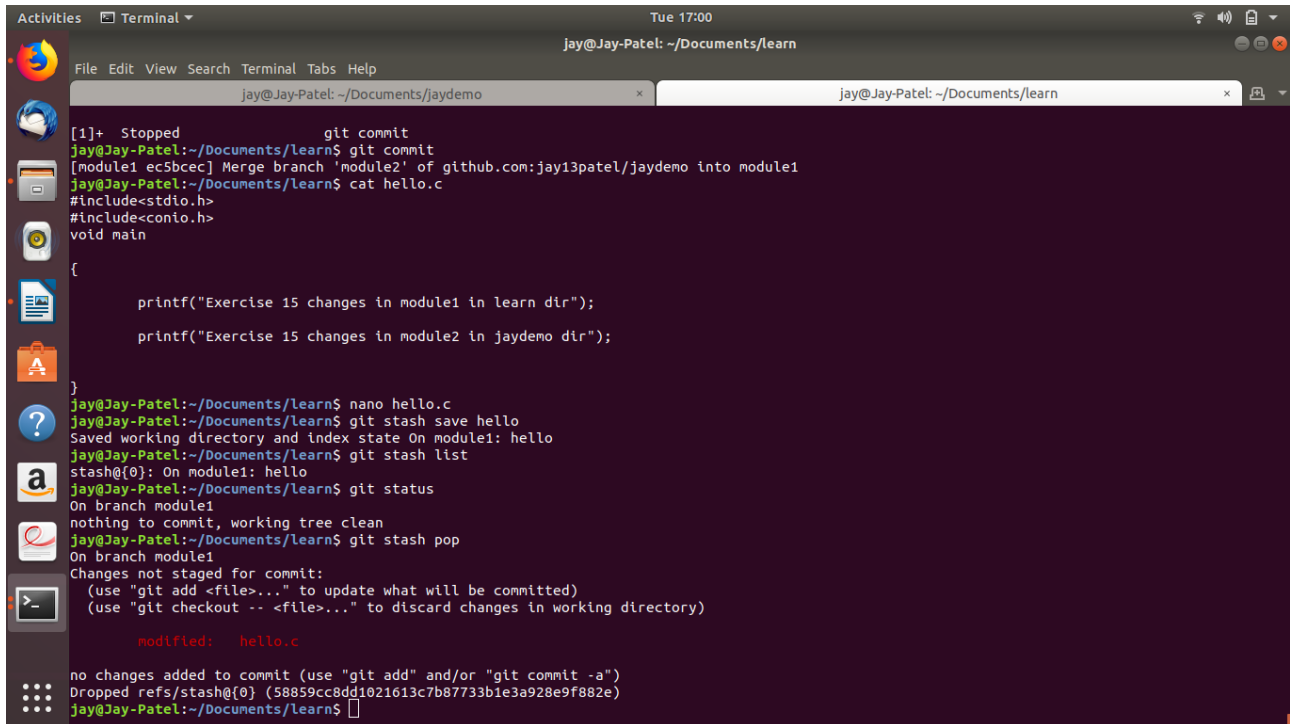
Exercise :16 Try merging and resolve merge conflicts



```
File Edit View Search Terminal Tabs Help
jay@Jay-Patel: ~/Documents/jaydemo
jay@Jay-Patel: ~/Documents/learn
Unpacking objects: 100% (3/3), done.
From github.com:jay13patel/jaydemo
* branch      module2      -> FETCH_HEAD
1845d13..9af9c23 module2 -> origin/module2
Auto-merging hello.c
CONFLICT (content): Merge conflict in hello.c
Automatic merge failed; fix conflicts and then commit the result.
jay@Jay-Patel:~/Documents/learn$ nano hello.c
jay@Jay-Patel:~/Documents/learn$ git commit
U
hello.c
error: Committing is not possible because you have unmerged files.
hint: Fix them up in the work tree, and then use 'git add/rm <file>'
hint: as appropriate to mark resolution and make a commit.
fatal: Exiting because of an unresolved conflict.
jay@Jay-Patel:~/Documents/learn$ git add hello.c
jay@Jay-Patel:~/Documents/learn$ git commit
Use "fg" to return to nano.or to close the file...
[1]+  Stopped                  git commit
jay@Jay-Patel:~/Documents/learn$ git commit
[module1 ec5bcec] Merge branch 'module2' of github.com:jay13patel/jaydemo into module1
jay@Jay-Patel:~/Documents/learn$ cat hello.c
#include<stdio.h>
#include<conio.h>
void main
{
printf("Exercise 15 changes in module1 in learn dir");

printf("Exercise 15 changes in module2 in jaydemo dir");
}
jay@Jay-Patel:~/Documents/learn$
```

## Exercise 17 : Stash the changes and pop them



The screenshot shows a terminal window with the following content:

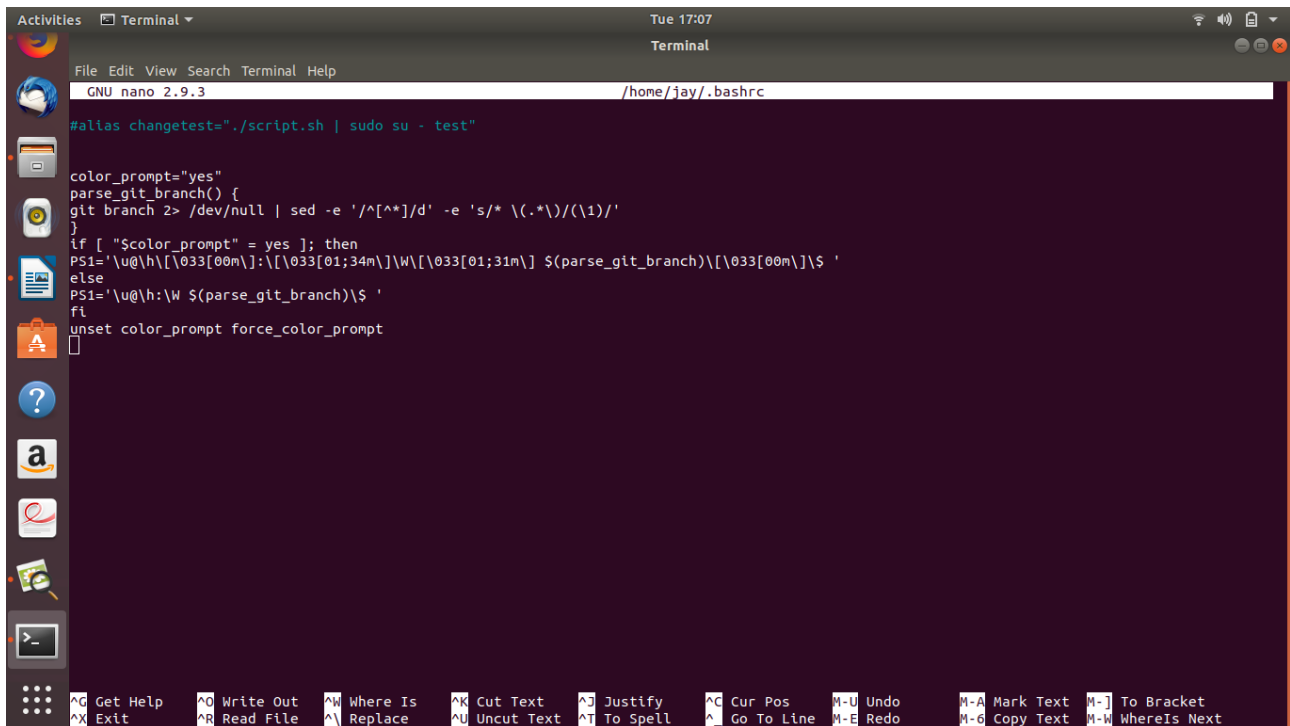
```
Activities Terminal Tue 17:00
jay@Jay-Patel: ~/Documents/learn
File Edit View Search Terminal Tabs Help
jay@Jay-Patel: ~/Documents/jaydemo x jay@Jay-Patel: ~/Documents/learn x
[1]+ Stopped git commit
jay@Jay-Patel:~/Documents/learn$ git commit
[module1 ec5bcec] Merge branch 'module2' of github.com:jay13patel/jaydemo into module1
jay@Jay-Patel:~/Documents/learn$ cat hello.c
#include<stdio.h>
#include<conio.h>
void main
{
    printf("Exercise 15 changes in module1 in learn dir");
    printf("Exercise 15 changes in module2 in jaydemo dir");
}
jay@Jay-Patel:~/Documents/learn$ nano hello.c
jay@Jay-Patel:~/Documents/learn$ git stash save hello
Saved working directory and index state On module1: hello
jay@Jay-Patel:~/Documents/learn$ git stash list
stash@{0}: On module1: hello
jay@Jay-Patel:~/Documents/learn$ git status
On branch module1
nothing to commit, working tree clean
jay@Jay-Patel:~/Documents/learn$ git stash pop
On branch module1
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:   hello.c

no changes added to commit (use "git add" and/or "git commit -a")
Dropped refs/stash@{0} (58859cc8dd1021613c7b87733b1e3a928e9f882e)
jay@Jay-Patel:~/Documents/learn$
```

Exercise 18 : 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
```



The screenshot shows a terminal window with the nano text editor open, editing the file `/home/jay/.bashrc`. The code being added is as follows:

```
#alias changetest="./script.sh | sudo su - test"  
  
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
```

The terminal window has a dark background and a light-colored border. The nano editor's status bar at the bottom shows various keyboard shortcuts for navigation and editing.