Git

medowhill

Git

- Backup

- Cooperation

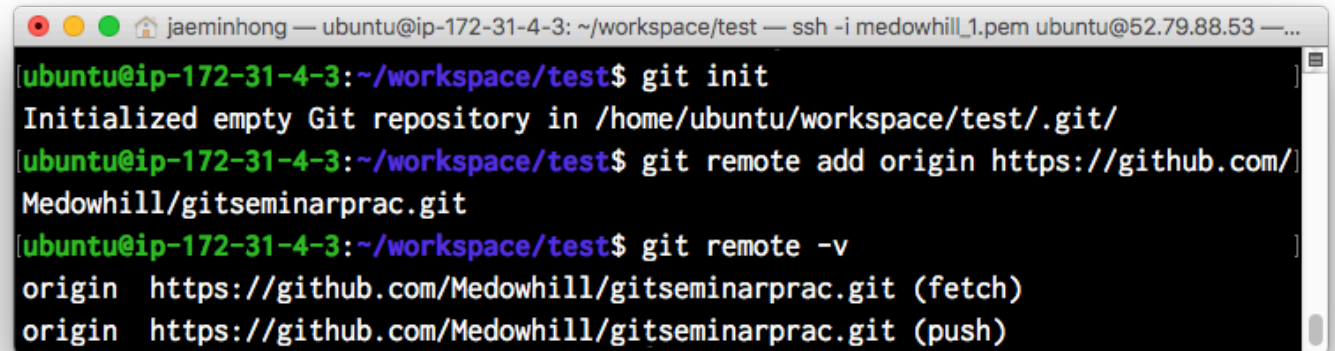# Configuration


```
[ubuntu@ip-172-31-4-3:~$ git config --global user.name "Jaemin Hong"
[ubuntu@ip-172-31-4-3:~$ git config --global user.email hjm0901@gmail.com
[ubuntu@ip-172-31-4-3:~$ git config --global core.editor vim
[ubuntu@ip-172-31-4-3:~$ git config --list
user.name=Jaemin Hong
user.email=hjm0901@gmail.com
core.editor=vim
[ubuntu@ip-172-31-4-3:~$ cat ~/.gitconfig
[user]
        name = Jaemin Hong
        email = hjm0901@gmail.com
[core]
        editor = vim
```

- /etc/gitconfig

- ~/.gitconfig

- .git/config

- $ git config --global user.name [user name]

- $ git config --global user.email [user email]

- $ git config --global core.editor [editor name]

Initialize & Remote Repository

- $ git init

- $ git remote add [name] [url]

Clone

- $ git clone [url]

Status

- $ git status


```
[ubuntu@ip-172-31-4-3:~/workspace/test$ git status
On branch master

Initial commit

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

        Hello.scala

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


Untracked	Unmodified	Modified	Staged

Add the file

Edit the file

Stage the file

Remove the file

Commit

Add

- $ git add [file]

```
[ubuntu@ip-172-31-4-3:~/workspace/test$ git add Hello.scala
[ubuntu@ip-172-31-4-3:~/workspace/test$ git status
On branch master

Initial commit

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

        new file:   Hello.scala
```
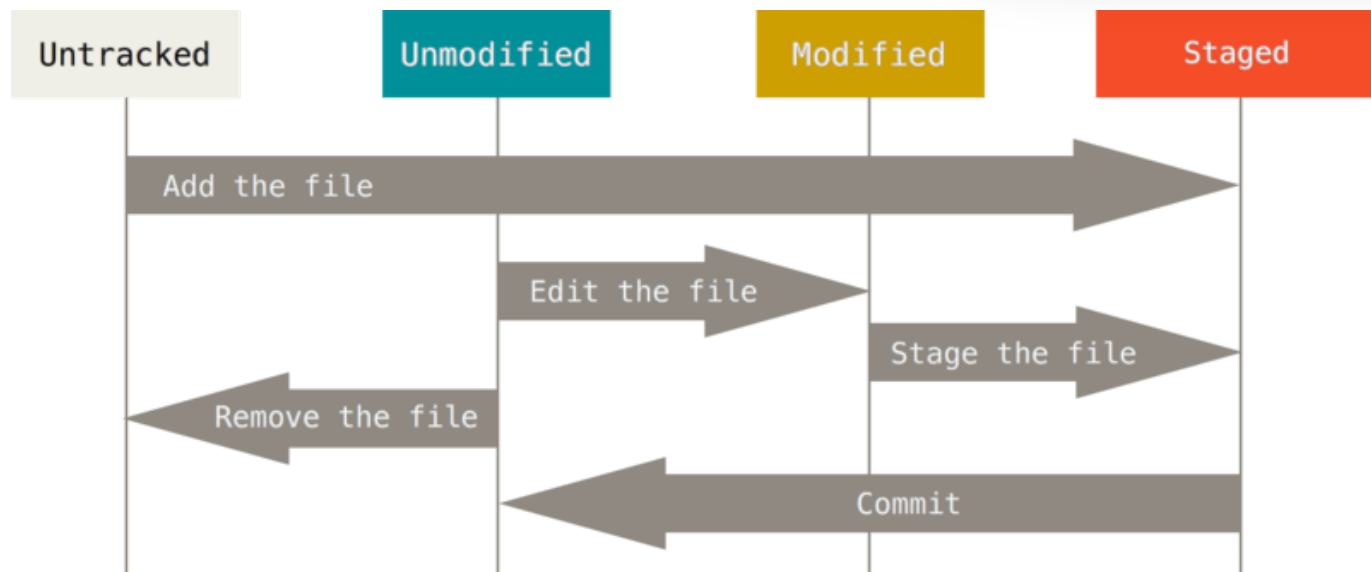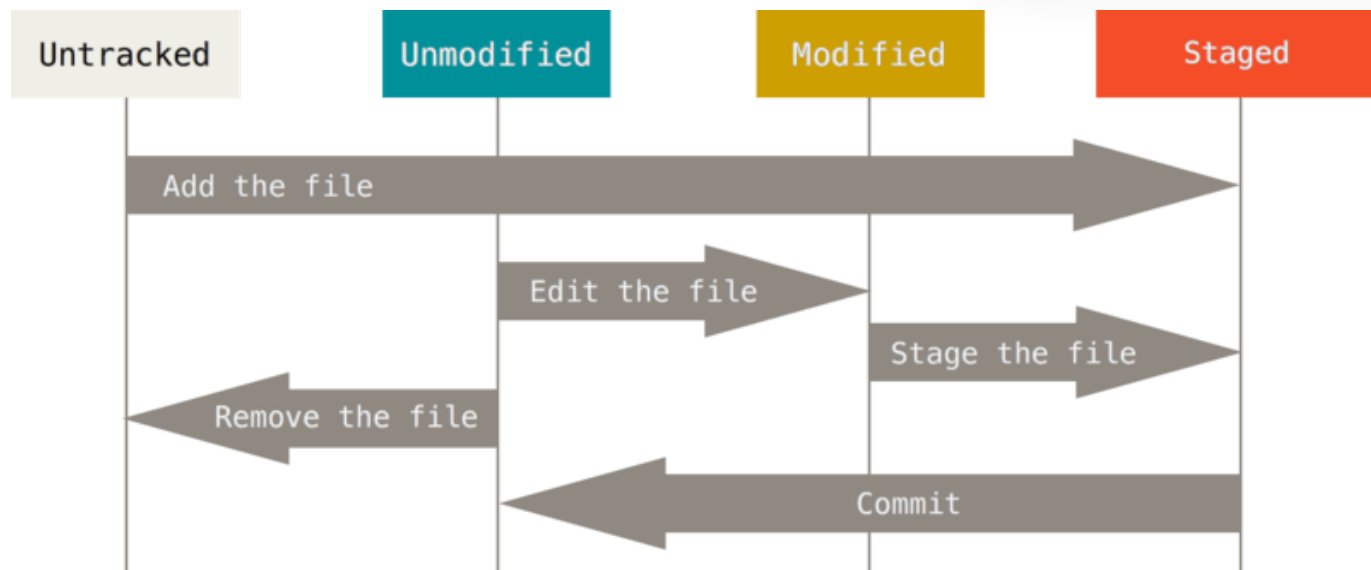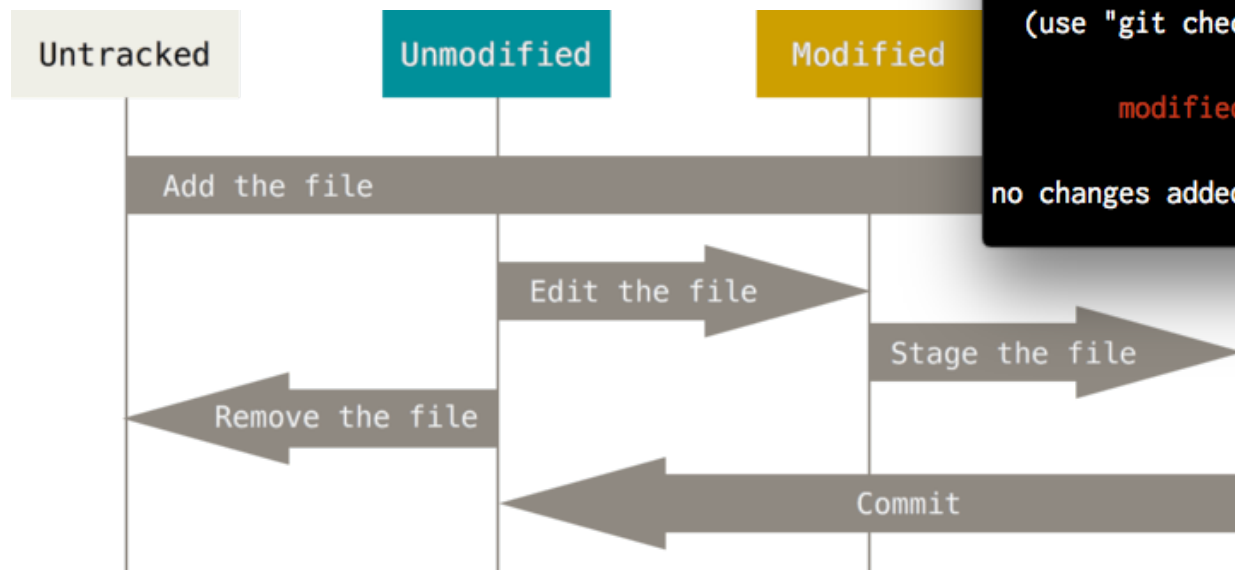
Commit

- `$ git commit`

Terminal (top window):
```
jaeminhong — ubuntu@ip-172-31-4-3: ~/workspace/test — ssh -i medowhill_1.pem ubuntu@52.79.88.53 —...
[ubuntu@ip-172-31-4-3:~/workspace/test$ git commit
[master (root-commit) db5f5a4] First commit - add Hello.scala file
 1 file changed, 5 insertions(+)
 create mode 100644 Hello.scala
[ubuntu@ip-172-31-4-3:~/workspace/test$ git status
On branch master
nothing to commit, working directory clean
```

Terminal (bottom window):
```
jaeminhong — ubuntu@ip-172-31-4-3: ~/workspace/test — ssh -i medowhill_1.pem ubuntu@52.79.88.53 —...
ubuntu@ip-172-31-4-3:~/workspace/test$ vim Hello.scala
[ubuntu@ip-172-31-4-3:~/workspace/test$ git status
On branch master
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.scala

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

Diagram states: Untracked | Unmodified | Modified

- Add the file
- Edit the file
- Stage the file
- Remove the file
- Commit

.gitignore

- Specify files do not want to track

More on Add

- $ `git add -p`


```
[ubuntu@ip-172-31-4-3:~/workspace/test$ git add -p Hello.scala
diff --git a/Hello.scala b/Hello.scala
index 900e5ea..214eae1 100644
--- a/Hello.scala
+++ b/Hello.scala
@@ -1,5 +1,6 @@
 object Hello {
   def main(args: Array[String]) {
     println("Hello world!")
+    println("Hello world!")
   }
 }
[Stage this hunk [y,n,q,a,d,/,e,?]? y
```

Undo

- $ git commit --amend

- $ git reset HEAD [file]

- $ git checkout -- [file]

Difference

- $ git diff --staged [file]

- $ git diff [file]

Log & Show

- $ git log

- $ git show [commit]

Push & Pull

- $ git push [repo] [branch]

- --set-upstream

- push.default = simple

- $ git push

- credential.helper = store

- $ git pull

Making Branch

- $ git branch [branch]

- $ git checkout [branch]

- $ git checkout -b [branch]

```
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git branch
* master
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git branch iss53
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git branch
  iss53
* master
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git checkout iss53
Switched to branch 'iss53'
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git branch
* iss53
  master
```
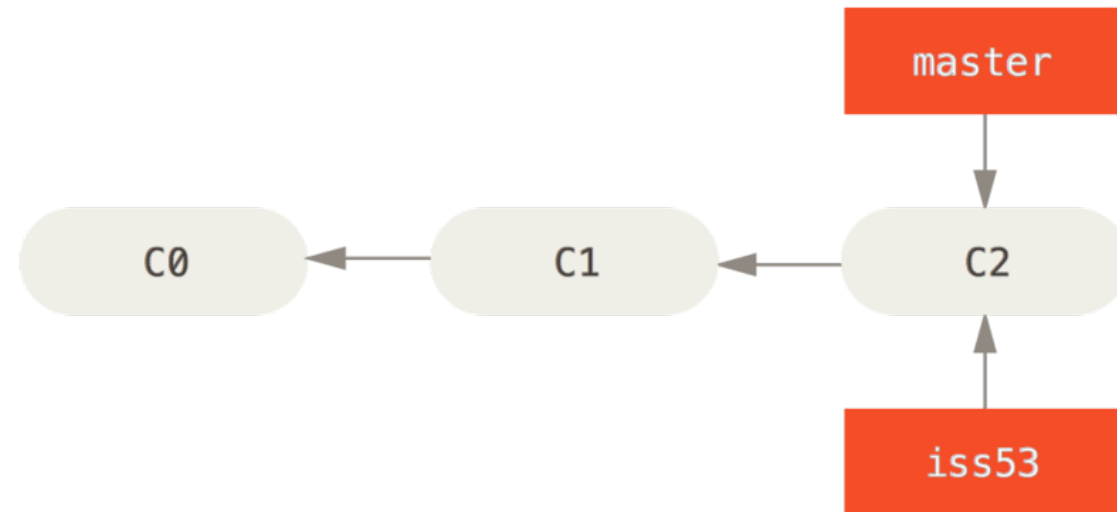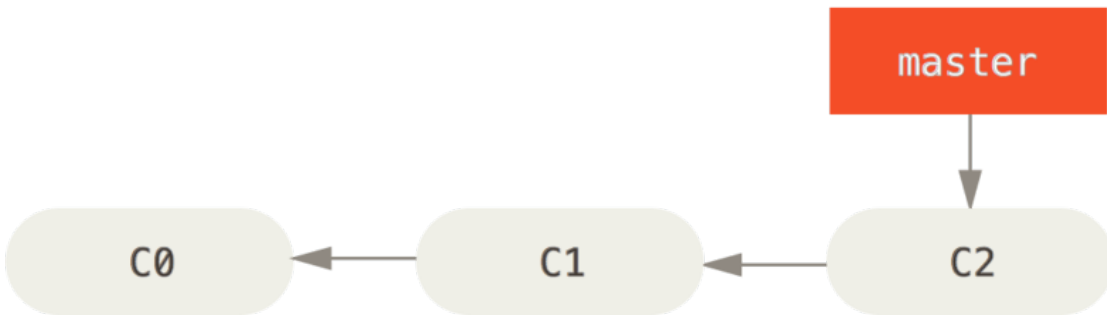
Merging Branch (Fast-Forward)

- $ git merge [branch]
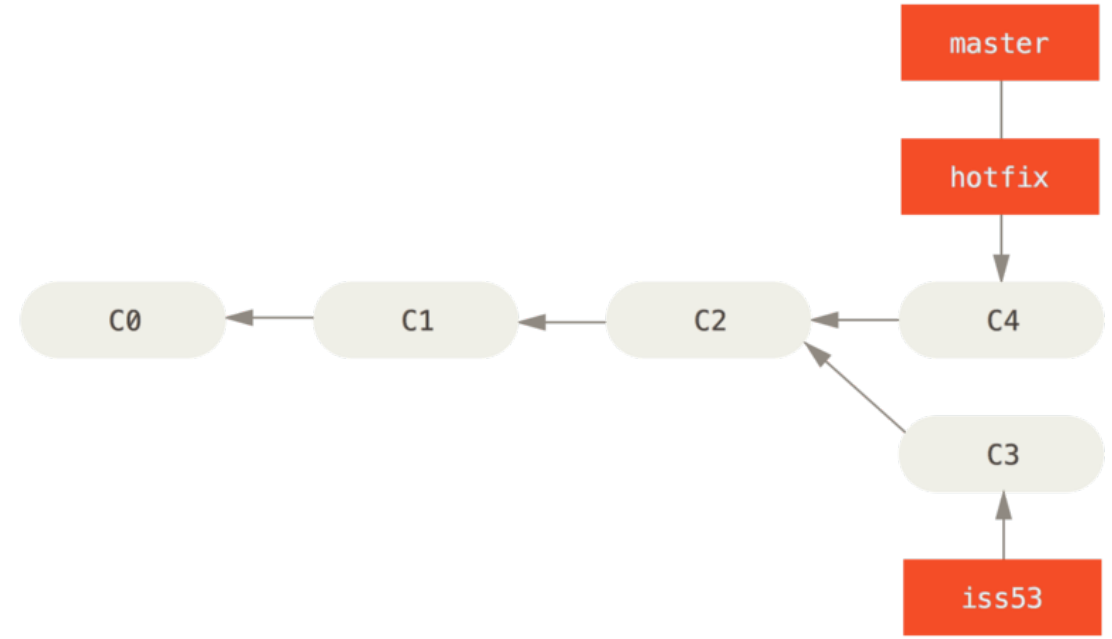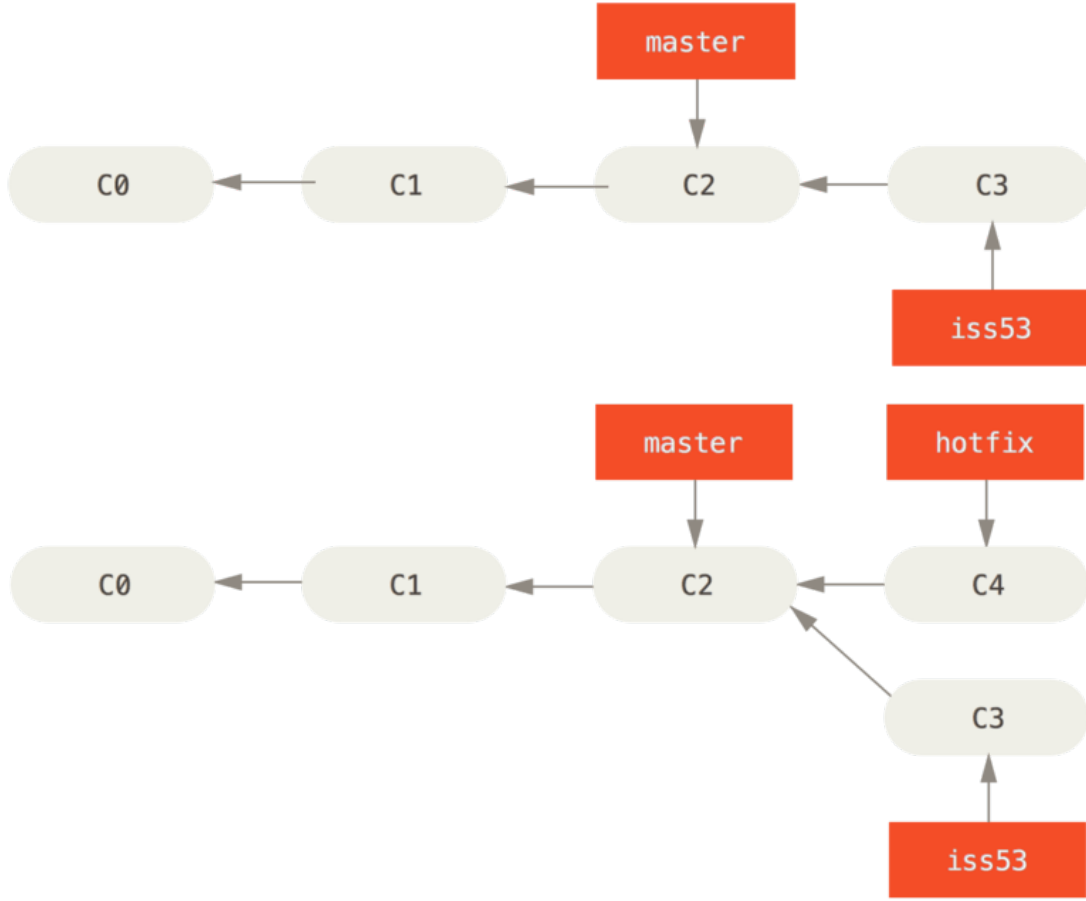

```
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git commit
[hotfix a9a6385] change hello to hi
 1 file changed, 1 insertion(+), 1 deletion(-)
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git checkout master
Switched to branch 'master'
Your branch is up-to-date with 'origin/master'.
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git merge hotfix
Updating 36b6d51..a9a6385
Fast-forward
 Hello.scala | 2 +-
 1 file changed, 1 insertion(+), 1 deletion(-)
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git log
commit a9a638567c0b60106cd5f2229b037b89e970af25
Author: Jaemin Hong <hjm0901@gmail.com>
Date:   Tue Nov 7 14:04:13 2017 +0000

    change hello to hi
```

Deleting Branch
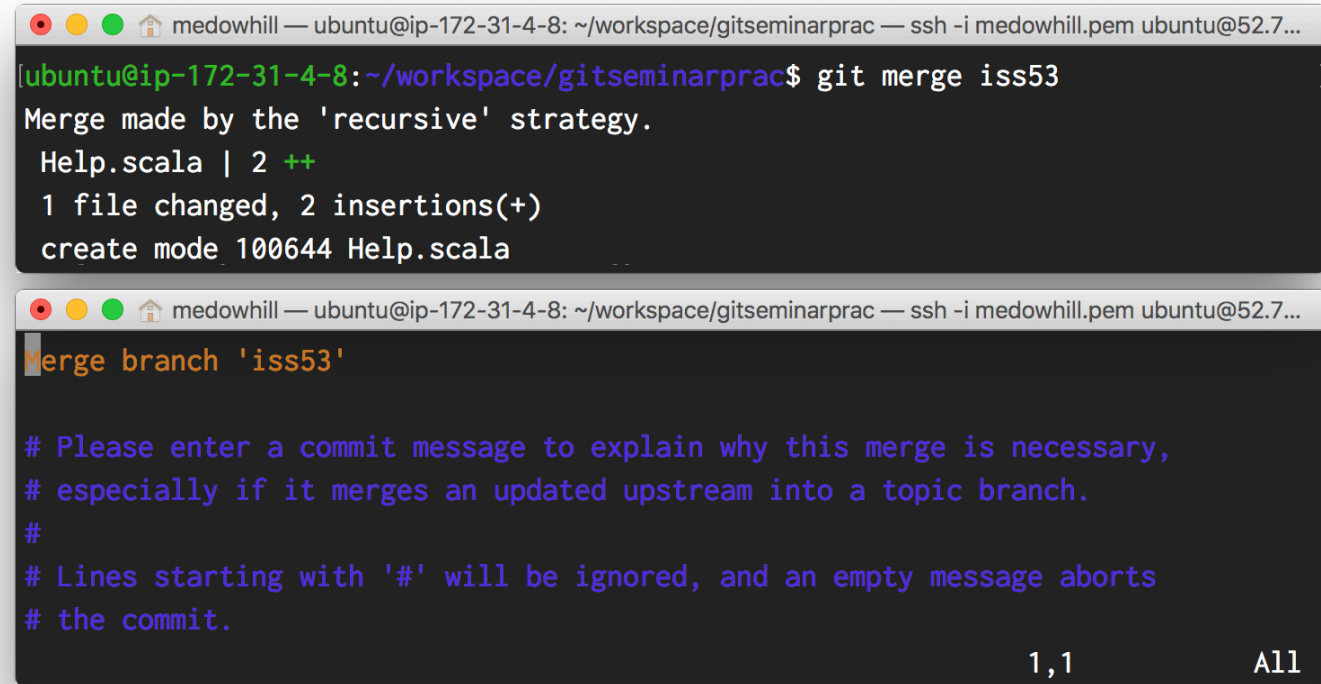
- $ git branch -d [branch]

```
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git branch
  hotfix
  iss53
* master
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git branch -d hotfix
Deleted branch hotfix (was a9a6385).
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git branch
  iss53
* master
```

Merging Branch

- $ git merge [branch]

Resolving Conflicts

```
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git checkout -b iss54
Switched to a new branch 'iss54'
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ vim Hello.scala
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git add Hello.scala
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git commit
[iss54 985469f] fix hi to i love
 1 file changed, 1 insertion(+), 1 deletion(-)
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git checkout master
Switched to branch 'master'
Your branch is ahead of 'origin/master' by 3 commits.
  (use "git push" to publish your local commits)
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ vim Hello.scala
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git add Hello.scala
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git commit
[master 64128b7] revert hi to hello
 1 file changed, 1 insertion(+), 1 deletion(-)
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git merge iss54
Auto-merging Hello.scala
CONFLICT (content): Merge conflict in Hello.scala
Automatic merge failed; fix conflicts and then commit the result.
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git status
On branch master
Your branch is ahead of 'origin/master' by 4 commits.
  (use "git push" to publish your local commits)
You have unmerged paths.
  (fix conflicts and run "git commit")

Unmerged paths:
  (use "git add <file>..." to mark resolution)

        both modified:   Hello.scala

no changes added to commit (use "git add" and/or "git commit -a")
```
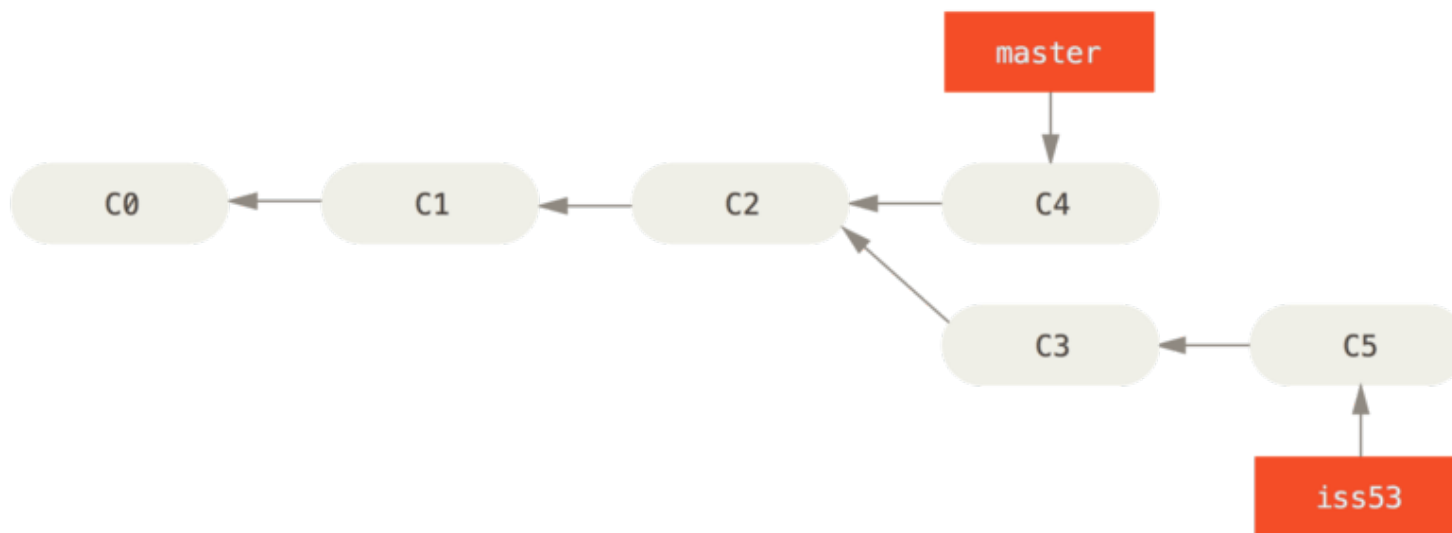
```
object Hello {
<<<<<<< HEAD
  val hello = "Hello world!"
=======
  val hello = "I love world!"
>>>>>>> iss54

  def main(args: Array[String]) {
    println(hello)
    println(hello)
    println(hello)
    println(hello)
    println(hello)
    println(hello)
  }
  def help: String = "str"
                                              1,1         Top
```

```
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ vim Hello.scala
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git add Hello.scala
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git status
On branch master
Your branch is ahead of 'origin/master' by 4 commits.
  (use "git push" to publish your local commits)
All conflicts fixed but you are still merging.
  (use "git commit" to conclude merge)

nothing to commit, working directory clean
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git commit
```

Pushing Branch


```
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git push origin iss54
[Username for 'https://github.com': Medowhill
[Password for 'https://Medowhill@github.com':
Total 0 (delta 0), reused 0 (delta 0)
To https://github.com/Medowhill/gitseminarprac.git
 * [new branch]      iss54 -> iss54
```

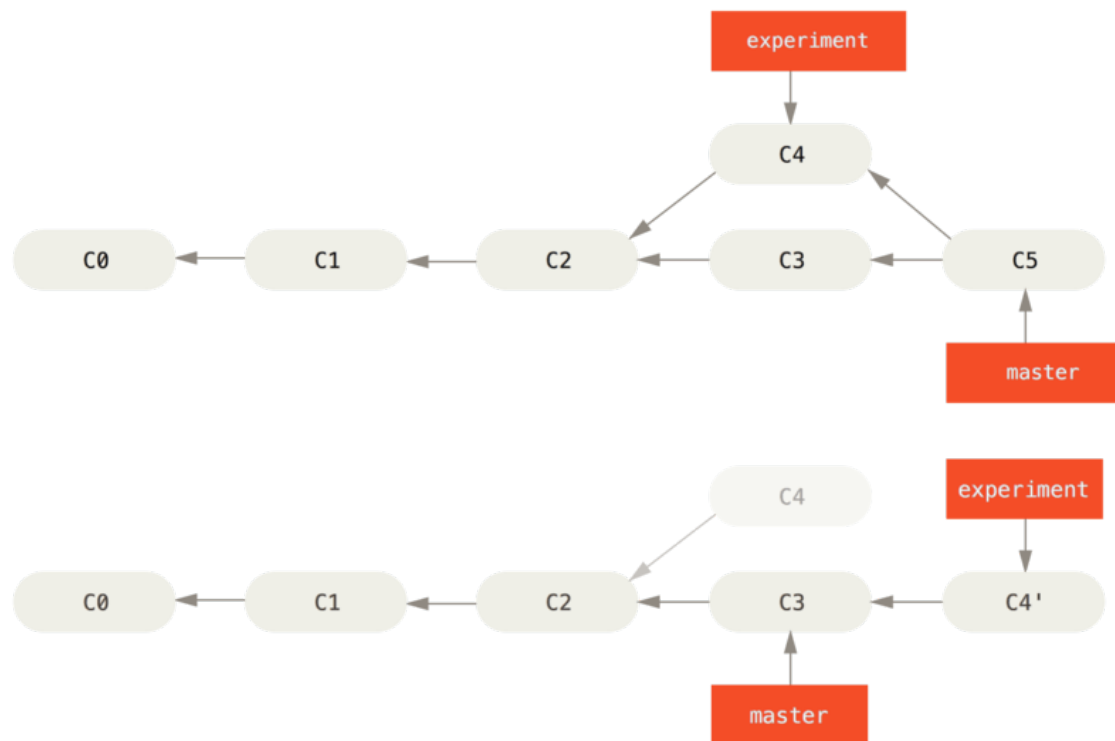• $ git push [remote] [branch]

Pull (Revisited)

- $ git pull

- $ git fetch

- $ git merge


```
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git commit
[master 8a8afce] add helper function
 1 file changed, 1 insertion(+)
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git status
On branch master
Your branch is ahead of 'origin/master' by 1 commit.
  (use "git push" to publish your local commits)
nothing to commit, working directory clean
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git push
[Username for 'https://github.com': Medowhill
[Password for 'https://Medowhill@github.com':
To https://github.com/Medowhill/gitseminarprac.git
 ! [rejected]        master -> master (fetch first)
error: failed to push some refs to 'https://github.com/Medowhill/gitseminarprac.
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.
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git fetch
remote: Counting objects: 3, done.
remote: Compressing objects: 100% (1/1), done.
remote: Total 3 (delta 1), reused 3 (delta 1), pack-reused 0
Unpacking objects: 100% (3/3), done.
From https://github.com/Medowhill/gitseminarprac
   6fcccdf..d94310b  master     -> origin/master
[ubuntu@ip-172-31-4-8:~/workspace/gitseminarprac$ git status
On branch master
Your branch and 'origin/master' have diverged,
and have 1 and 1 different commit each, respectively.
  (use "git pull" to merge the remote branch into yours)
nothing to commit, working directory clean
```

```
[ubuntu@ip-172-31-4-8:~/workspace2/gitseminarprac$ git commit
[master d94310b] add helper function return itself
 1 file changed, 1 insertion(+)
[ubuntu@ip-172-31-4-8:~/workspace2/gitseminarprac$ git push
[Username for 'https://github.com': Medowhill
[Password for 'https://Medowhill@github.com':
Counting objects: 3, done.
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 301 bytes | 0 bytes/s, done.
Total 3 (delta 1), reused 0 (delta 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/Medowhill/gitseminarprac.git
   6fcccdf..d94310b  master -> master
ubuntu@ip-172-31-4-8:~/workspace2/gitseminarprac$
```

Rebase (1/2)

- $ git pull --rebase

Rebase (2/2)

- $ git checkout [branch1]

- $ git rebase [branch0]

- $ git checkout [branch0]

- $ git merge [branch1]

Reference

- https://git-scm.com/book/ko/v2