Git and You <3

(Working Title)

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What is a git and how do I get one?

Git is a version control system developed for working on the Linux Kernel.

```
git init
ls -lA
ls .git
git status
```

Tracking files

Lets add some files.

```
touch some_random_file
echo "puts 'Hello World'" > hello.rb
ruby hello.rb
git add hello.rb
git status
```

```
echo "some_random_file" >> .gitignore
git status
```

Tracking changes

Lets save this stuff.

```
git commit -m "This is the first commit"
git status
git log
```

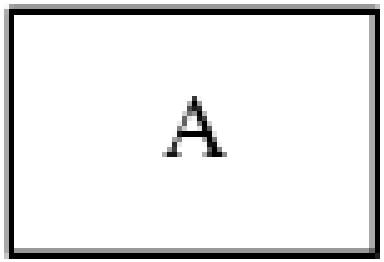
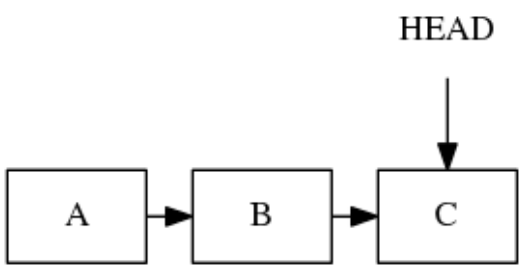


Figure: First commit

Tracking changes

Lets do some stuff.

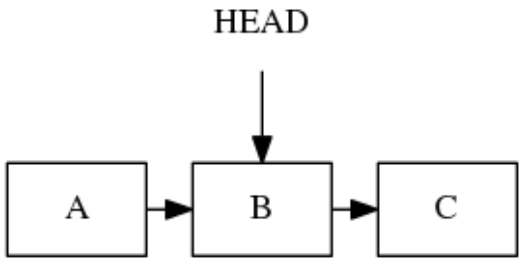
```
echo "puts 'Hello Fish'" > hello.rb
ruby hello.rb
git commit -m 'Hello Fish?'
echo 'puts "Hello " + [0x1F431].pack("U*")' > hello.rb
git commit -am 'Hello?'
ruby hello.rb
```



What is HEAD?

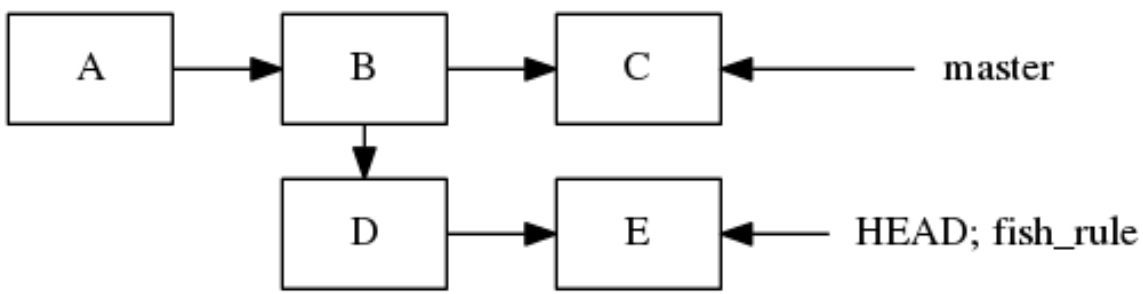
Spoiler: It's the current commit

```
git branch 'sweet_cat_branch'
git checkout HEAD~1
ruby hello.rb
```



Branching

```
git branch "fish_rule"
git checkout "fish_rule"
echo 'puts "Fish Rule"' >> hello.rb
ruby hello.rb
git commit -am "Fish are way better then cats"
echo '["Fish live in the ocean."]' >> fish_facts.json
git add fish_facts.json
git commit -am "Some fish facts"
git log
```



Merging

Merging allows you to combine changes

```
git diff master
git merge master
```

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```
git diff master
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```
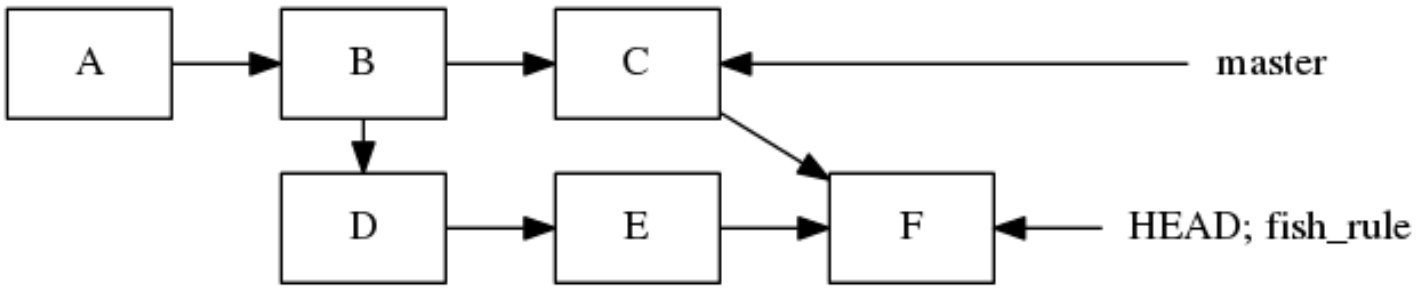
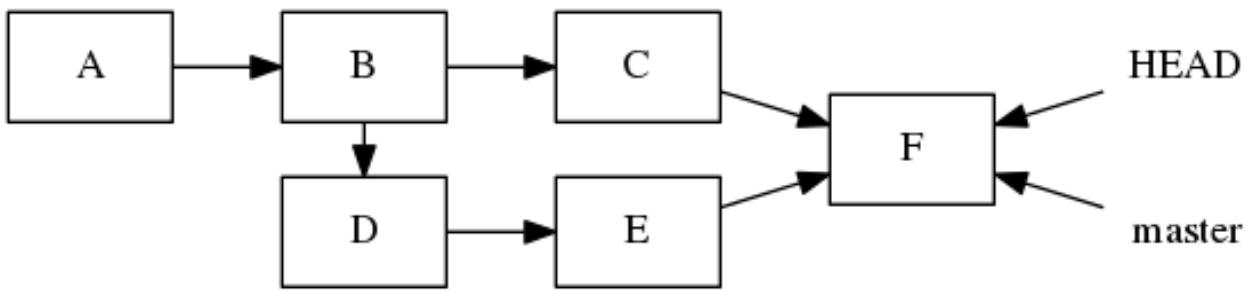

```
git status
cat hello.rb
git checkout --ours hello.rb
git status
git commit -am "Fish are better"
git status
```



Fast Forwarding

Fish are super awesome, they're going into production.

```
git checkout master
git merge fish_rule
git status
git log
```



Push and Pull

Push moves your current branch onto a remote server

```
git push
```

Pull gets (merges!) your current branch from the remote server

```
git pull
```

That's it (basically)

Figure: Sure sure, you can use git, but can you really use git?

git praise (It's really called git blame)

Credit where credit is due.

```
git config --global alias.praise blame
git praise fish_facts.json
```

- Who can I ask about this?
- How old is this code?
- What was the most recent change?

git bisect

Find out the exact commit that broke something.

```
git bisect start
git bisect bad
git checkout <known good branch>
git bisect good
```

When it works it's magical, try it out.

git diff revisited

Diff is your friend; it is way more powerful then you might know.

```
git checkout -b "cats_strike_again"
mv fish_facts.json cat_facts.json
sed 's/Fish/Cats/g' cat_facts.json
git checkout sweet_cat_branch -- hello.rb
ruby hello.rb
git commit -am "Cat 3.0 is way faster"
git commit --amend -m "Cat 3.0! fish sucks!"
```

```
git diff master@{10.minutes.ago} cats_strike_again
git diff master~4 -- hello.rb
git diff HEAD cats_strike_again
```

git log revisited

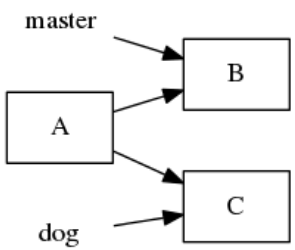
Git log also has super powers.

```
git log --author="andrewb" --pretty=full
git log -p -S "Fish"
git log --after={15.minutes.ago}
```

- Who's deleting the most code?
- What was that code I wrote last tuesday?
- Who added this feature and who uses it?

git rebase

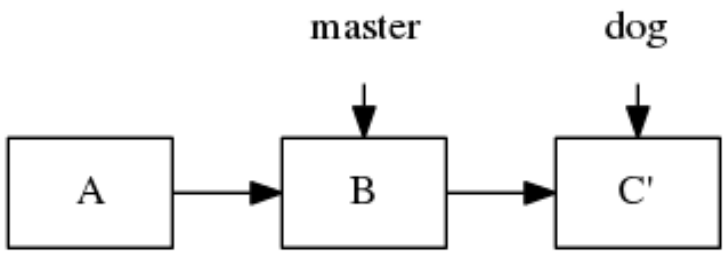
```
git checkout master
git branch dog
touch foo
git add foo
git commit -m "Added foo"
git checkout dog
ls
touch woof
git add woof
git commit -m "Added woof"
```



git rebase

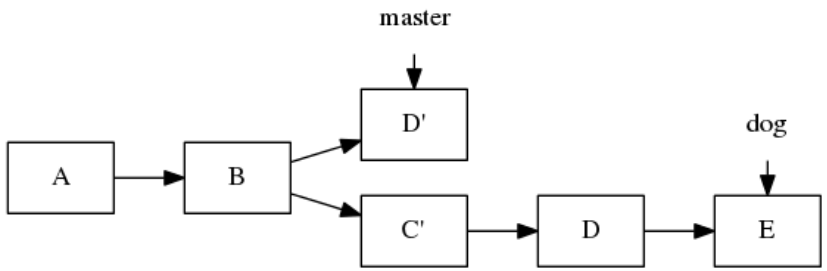
Subtly different from a merge! Can be used to produce a git history with no merge conflict commits.

```
git rebase master
```



git cherrypick

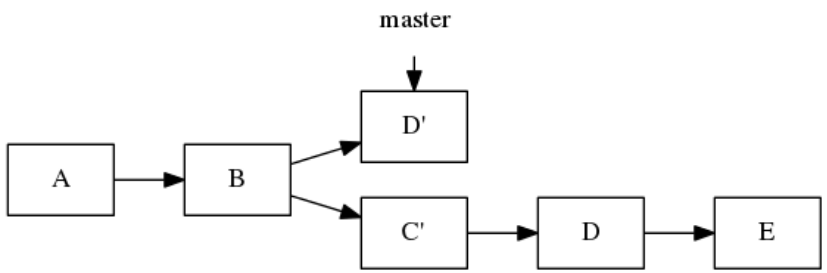
```
touch good_file
git commit -am "good commit"
touch bad_file
git commit -am "bad commit"
git checkout master
git cherry-pick <find the good one>
ls
```



Losing your work with delete

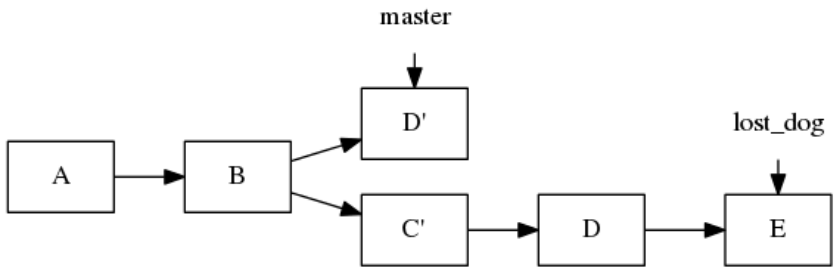
If you never do the likes of this, you're not trying hard enough.

```
git branch -D dog
git branch
git status
git checkout master
git status
```



Reflog to the rescue!

```
git reflog
git checkout <lost commit>
git branch lost_dog
```



Losing your work with reset

```
touch the_file
git add the_file
git reset --hard
ls
```

It's gone. Really gone.

```
git checkout -- .
```

So what?

- Commit frequently and never lose your work again
- Use descriptive commit messages and never forget what you were doing
- Merge master often, work on fast moving projects
- Work from any machine with an internet connection
- Navigate code smarter and find bugs faster
- Code metadata, exactly what, when, why, and who
- Stop time, go work on something else, and pick it right back up again

Other nifty git stuff

You can google this stuff, or I can talk about it now:

- hooks
- git stash
- git file structure
- tig