

Git: Rebase Your Expectations

How Distributed Version Control Can Save Your Life

Josh Larson

October 20, 2017

Photo Syncing

Server



Laptop



Photo Syncing

Server



Laptop

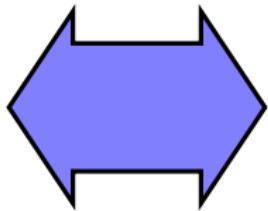


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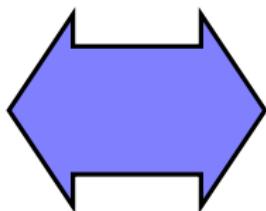


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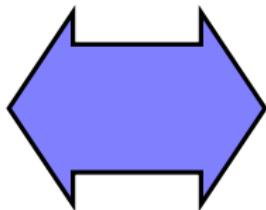


Photo Syncing

Server



Laptop

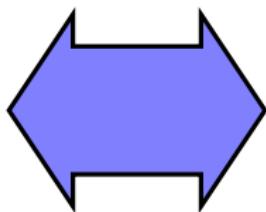


Photo Syncing

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Laptop

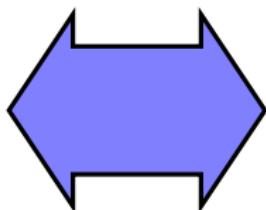


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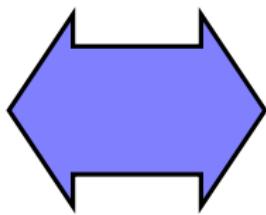


Photo Syncing

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Laptop

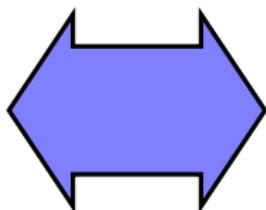


Photo Syncing

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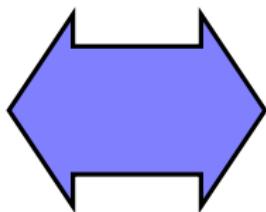


Photo Versions

- ▶ Changes

Photo Versions

- ▶ Changes

Photo Versions

- ▶ Changes
 - ▶ Add merchmart and shell

Photo Versions

- ▶ Changes
 - ▶ Add merchmart and shell



Photo Versions

- ▶ Changes
 - ▶ Add merchmart and shell
 - ▶ Add skyline



Photo Versions

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 - ▶ Add skyline



Photo Versions

- ▶ Changes
 - ▶ Add merchmart and shell
 - ▶ Add skyline
 - ▶ Remove merchmart

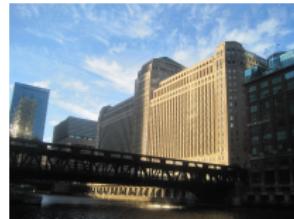


Photo Versions

- ▶ Changes
 - ▶ Add merchmart and shell
 - ▶ Add skyline
 - ▶ Remove merchmart



Photo Versions

Server



Laptop



Photo Versions

Server

- ▶ Add 2 images



Laptop

- ▶ Add 2 images



Photo Versions

Server

- ▶ Add 2 images
- ▶ Add merchmart



Laptop

- ▶ Add 2 images



Photo Versions

Server

- ▶ Add 2 images
- ▶ Add merchmart



Laptop

- ▶ Add 2 images
- ▶ Add merchmart



Photo Versions

Server

- ▶ Add 2 images
- ▶ Add merchmart



Laptop

- ▶ Add 2 images
- ▶ Add merchmart



Photo Versions

Server



Laptop



Photo Versions

Server

- ▶ Add 3 images



Laptop

- ▶ Add 3 images



Photo Versions

Server

- ▶ Add 3 images



Laptop

- ▶ Add 3 images
- ▶ Remove merchmart



Photo Versions

Server

- ▶ Add 3 images
- ▶ Remove merchmart



Laptop

- ▶ Add 3 images
- ▶ Remove merchmart



Photo Versions

Server

- ▶ Add 3 images
- ▶ Remove merchmart



Laptop

- ▶ Add 3 images
- ▶ Remove merchmart



Commits

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- ▶ a8808ba

History?

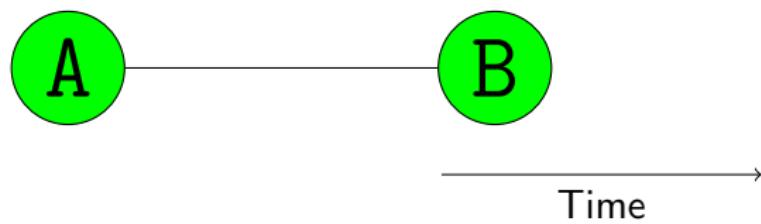
Intent

Ancestry

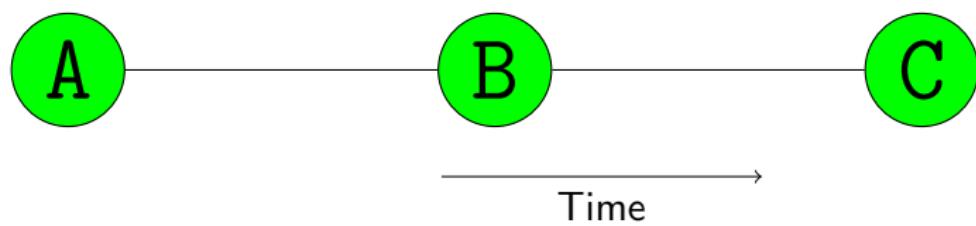
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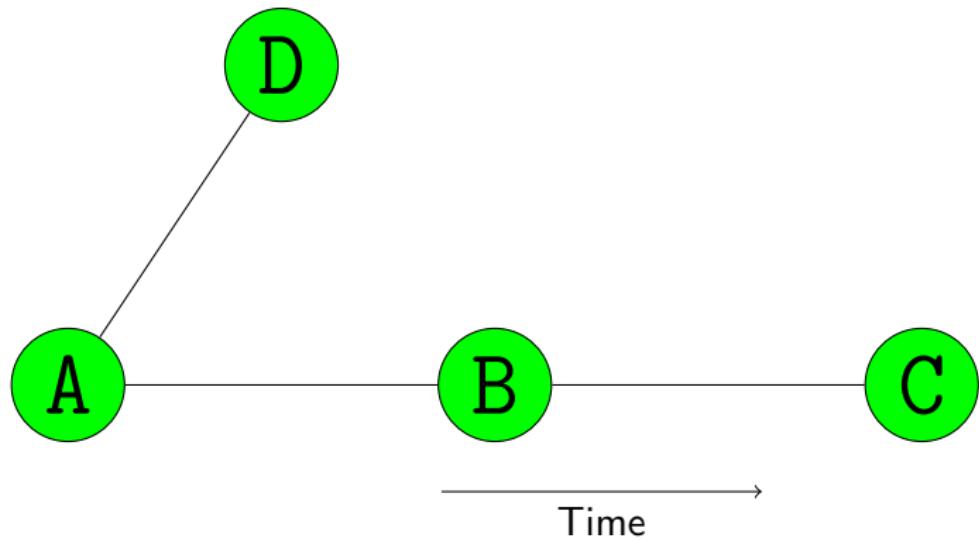
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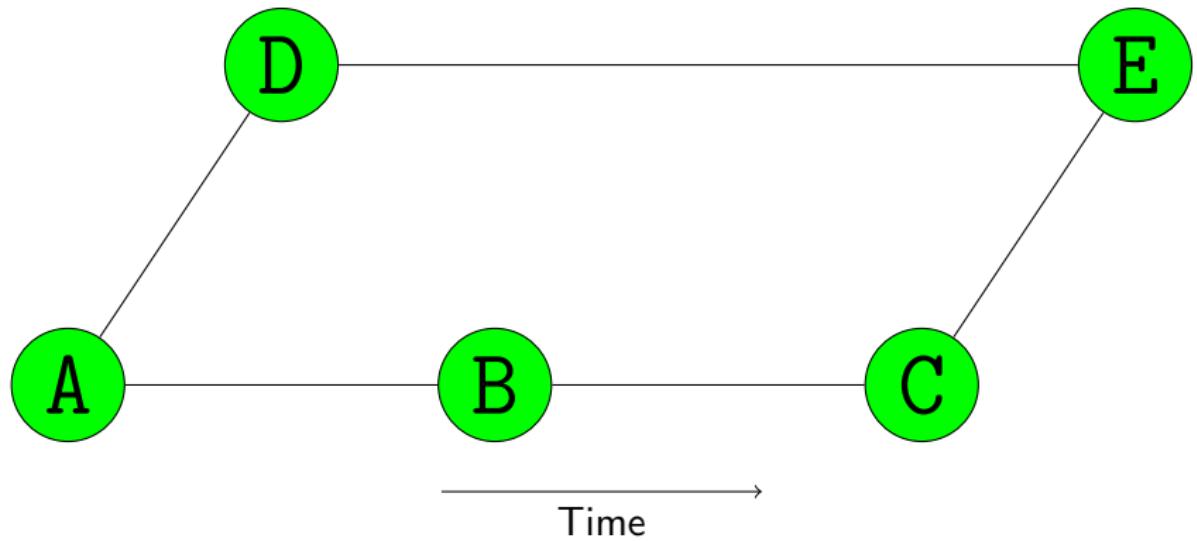
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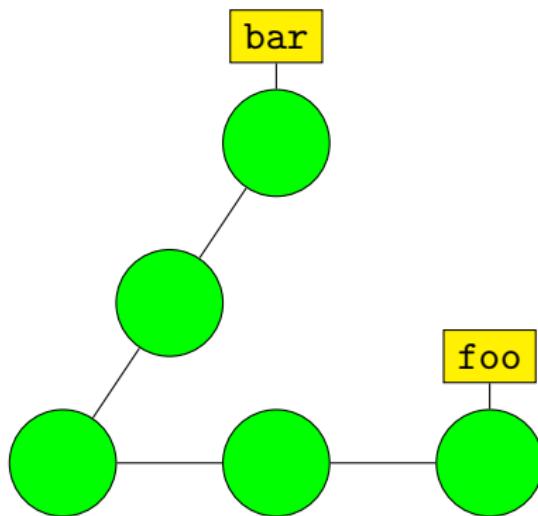
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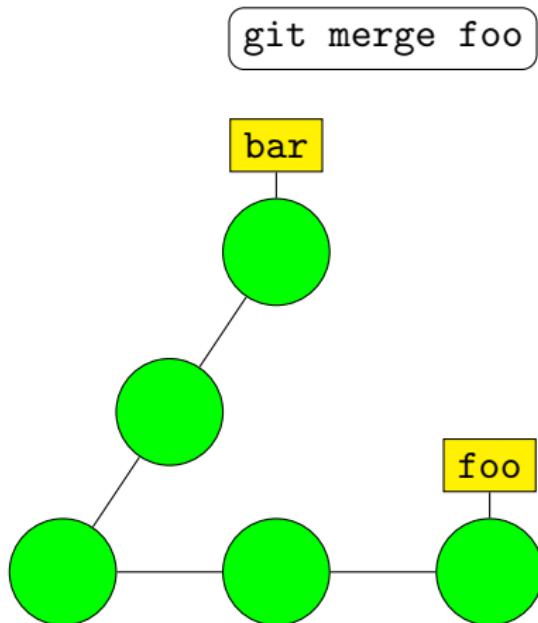
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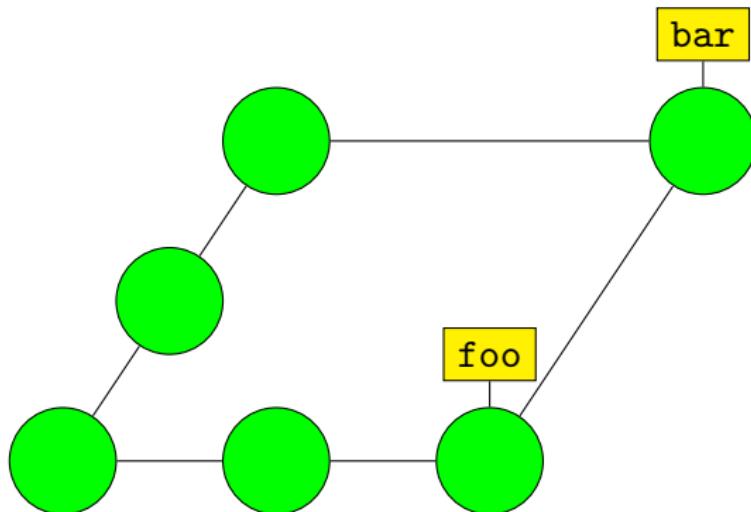
Merging



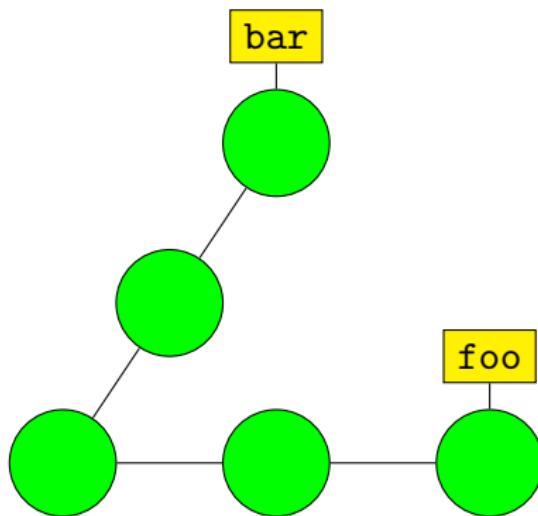
Merging



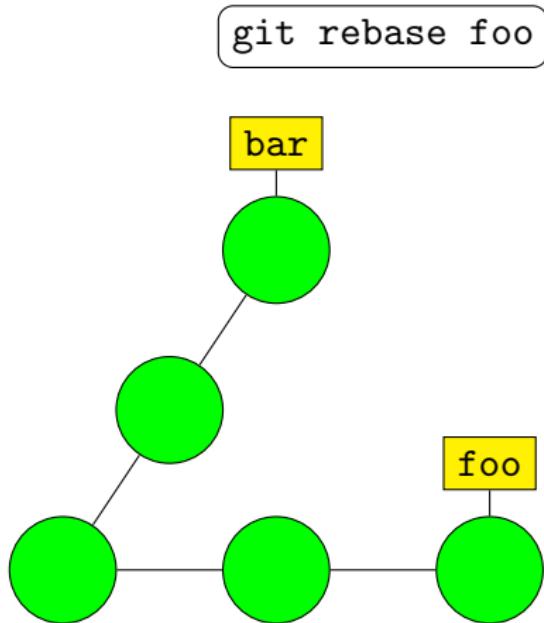
Merging



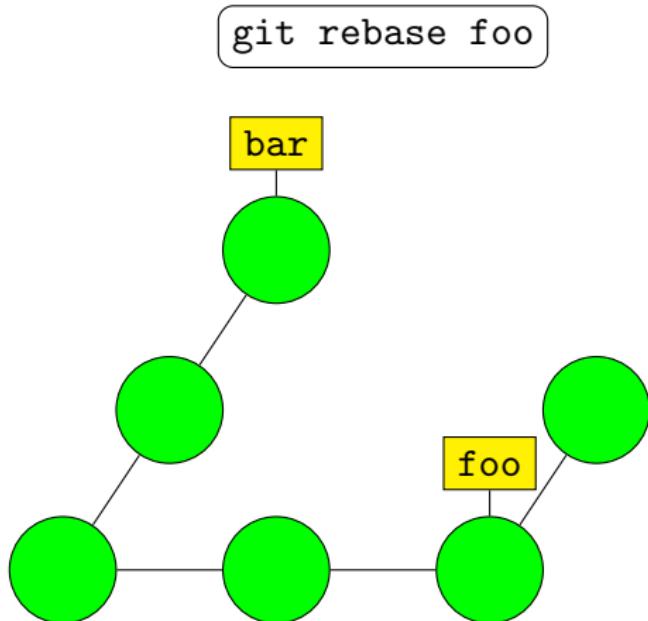
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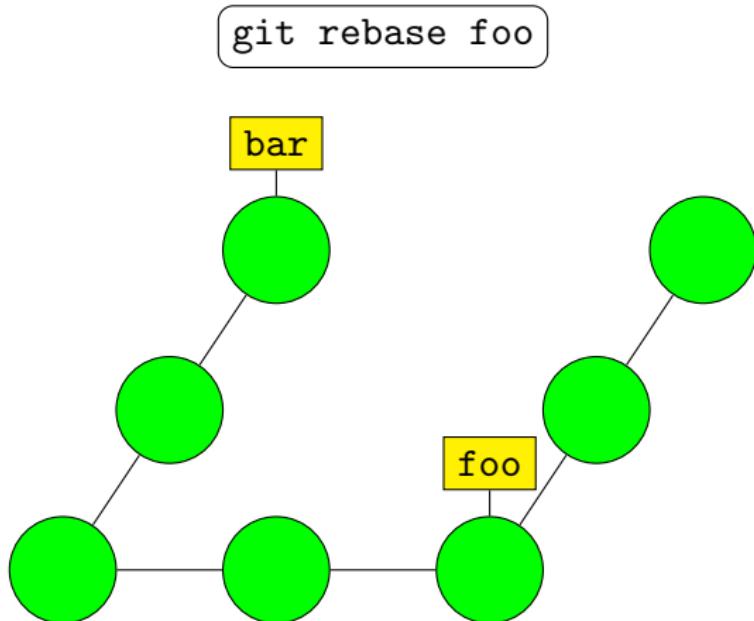
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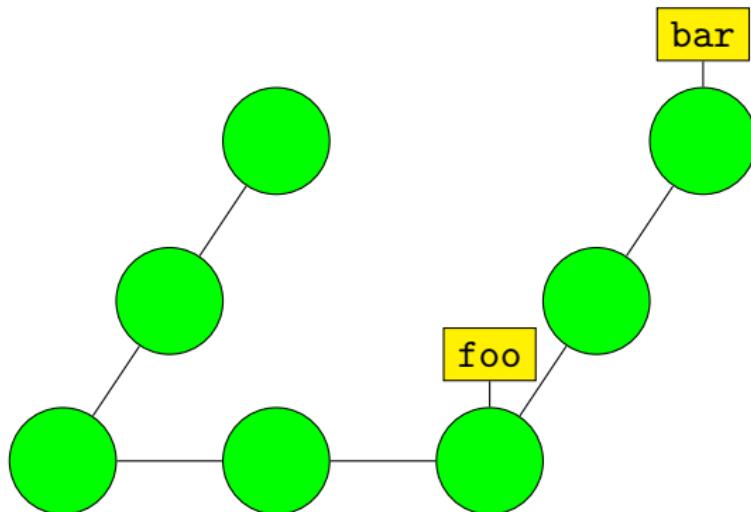
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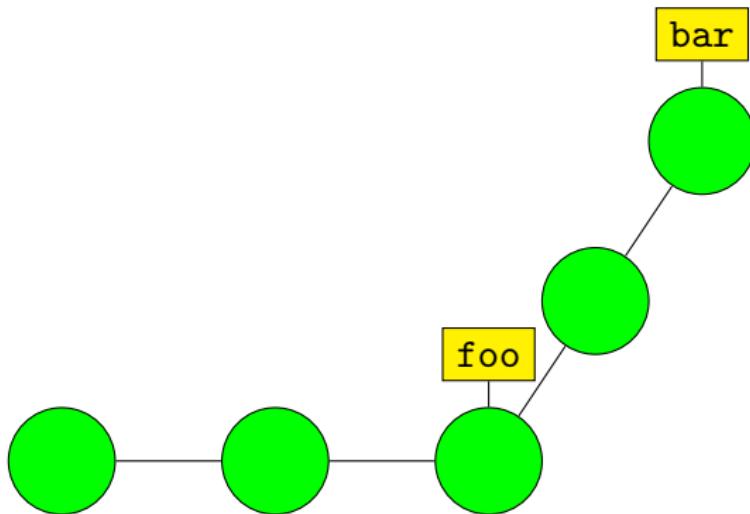
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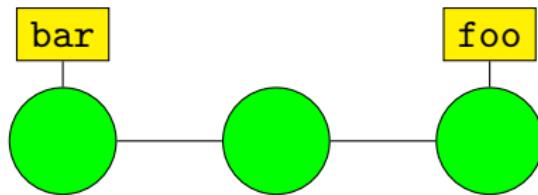
Merging



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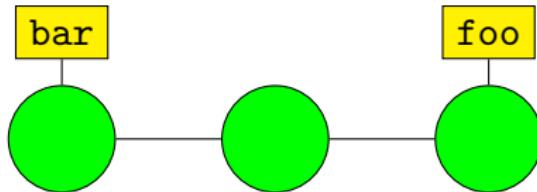


Merging

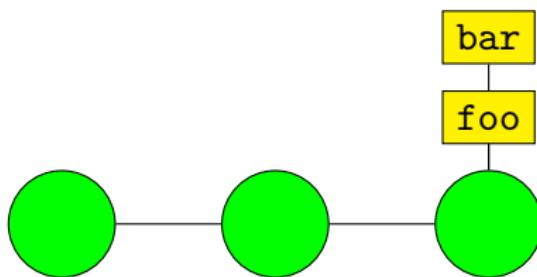


Merging

git merge foo

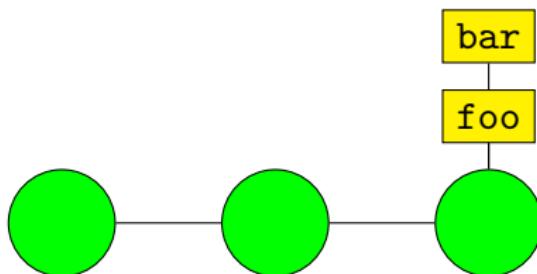


Merging



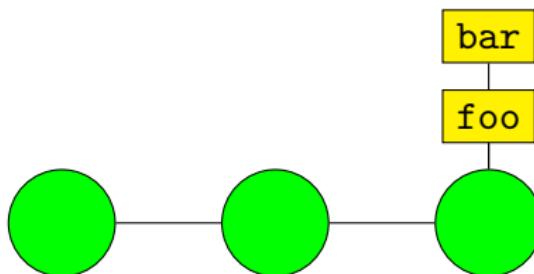
Merging

git rebase foo

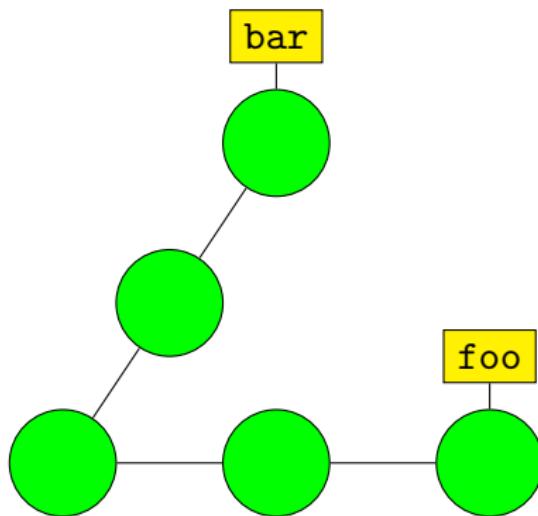


Merging

```
git merge --ff-only foo
```

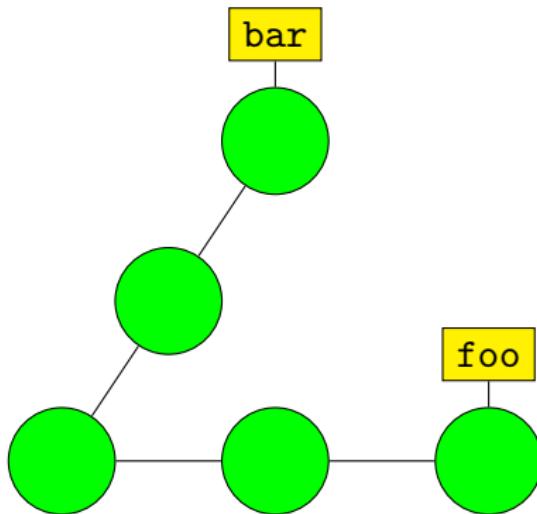


Merging

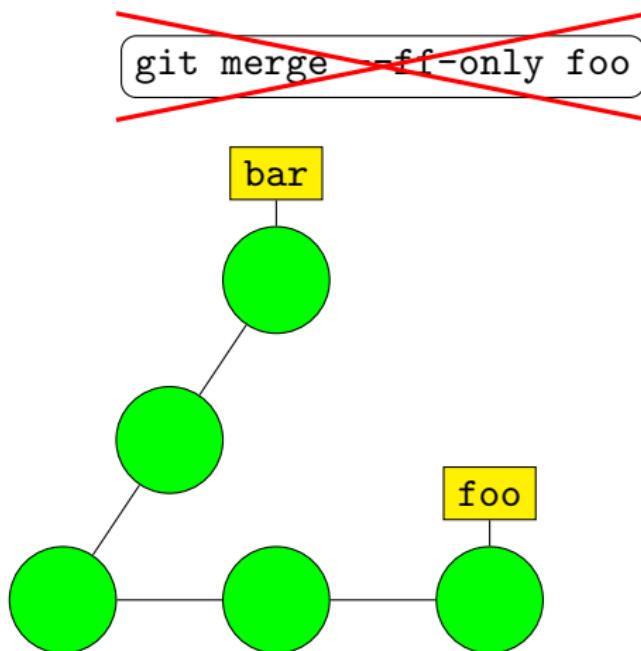


Merging

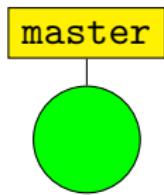
```
git merge --ff-only foo
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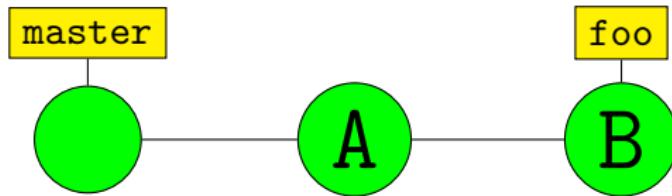
Merging



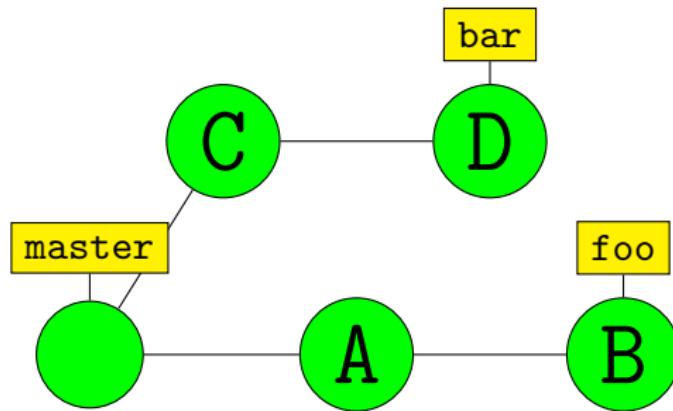
Merge Strategy



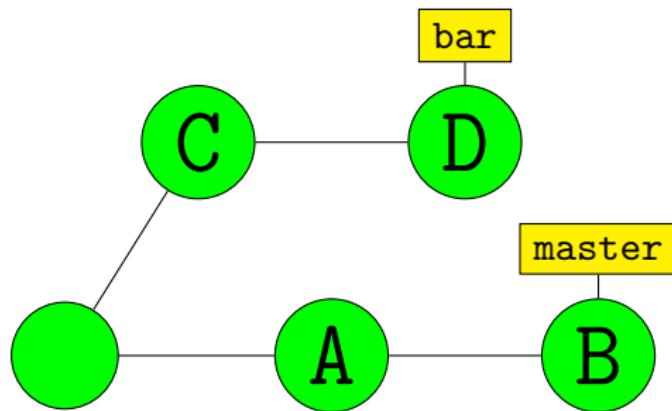
Merge Strategy



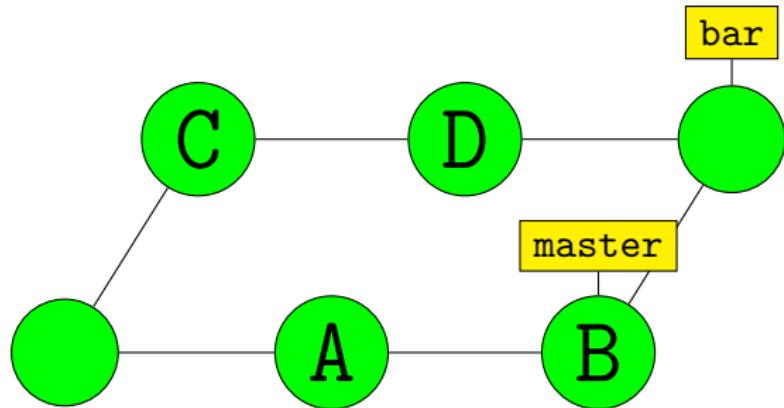
Merge Strategy



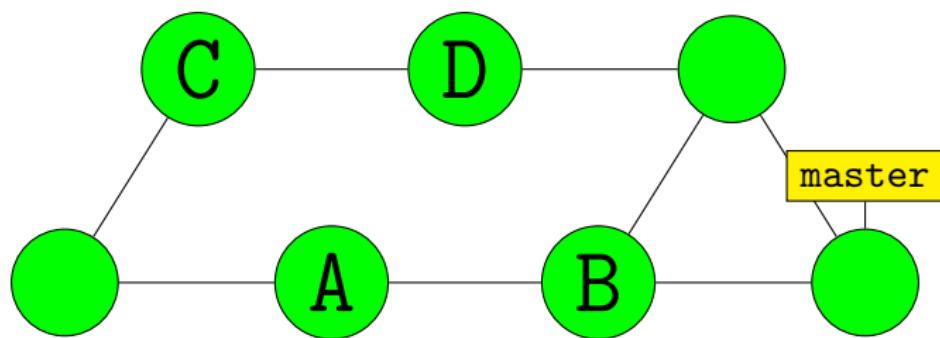
Merge Strategy



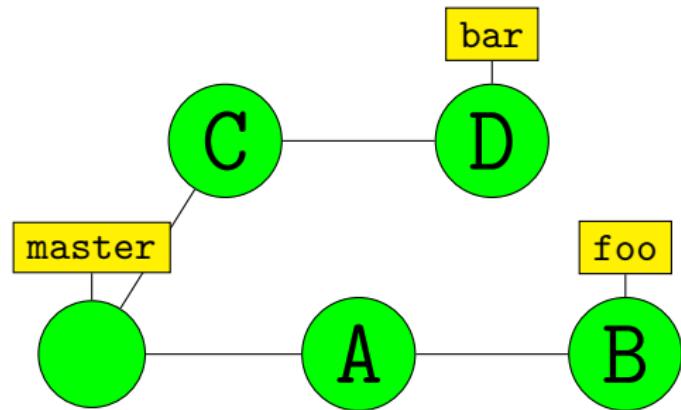
Merge Strategy



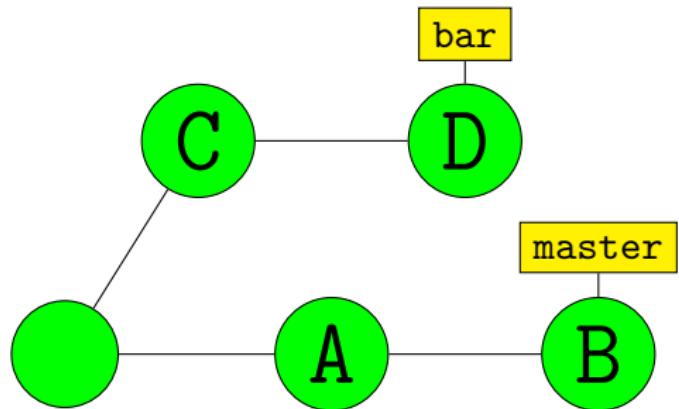
Merge Strategy



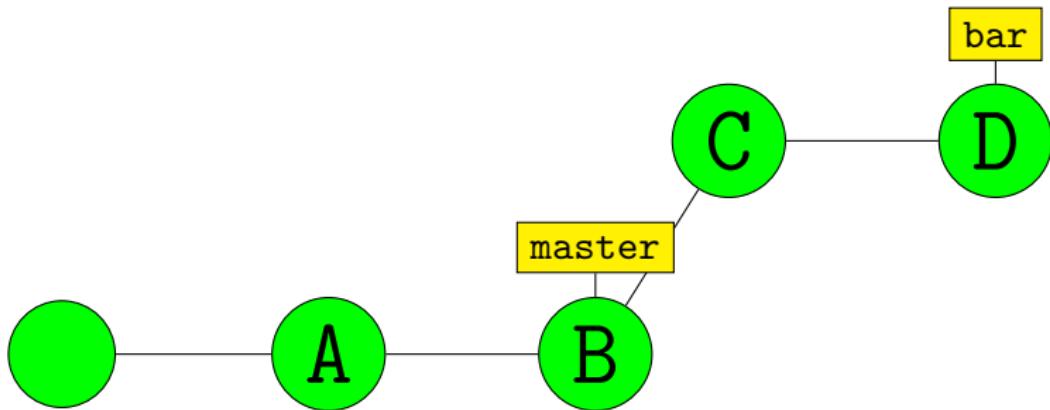
Merge Strategy (Rebase)



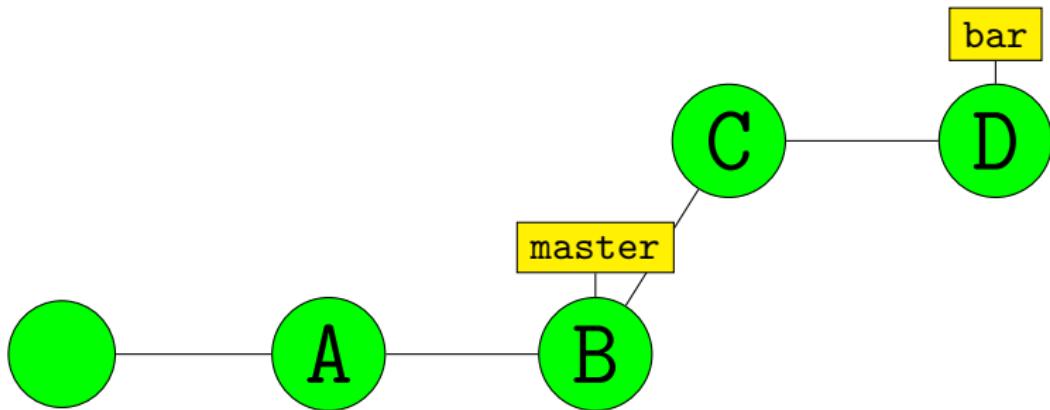
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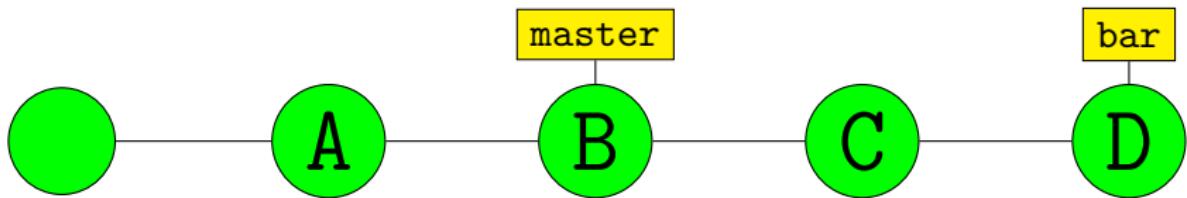
Merge Strategy (Rebase)



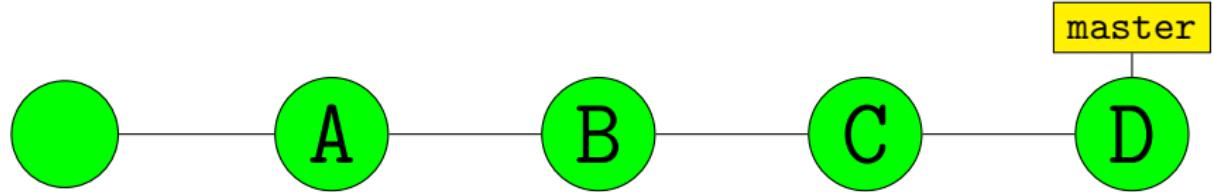
Merge Strategy (Rebase)



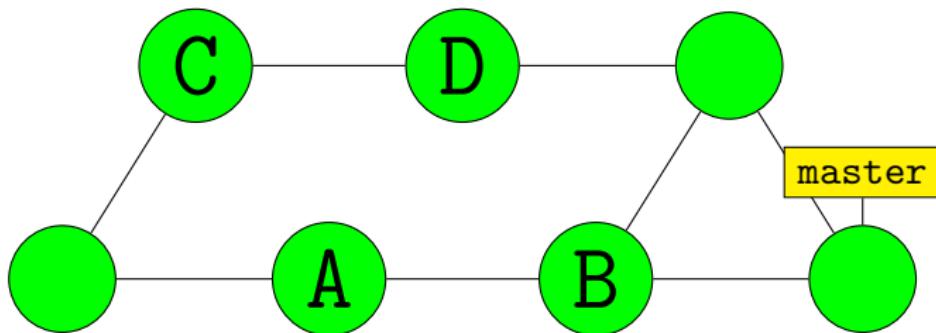
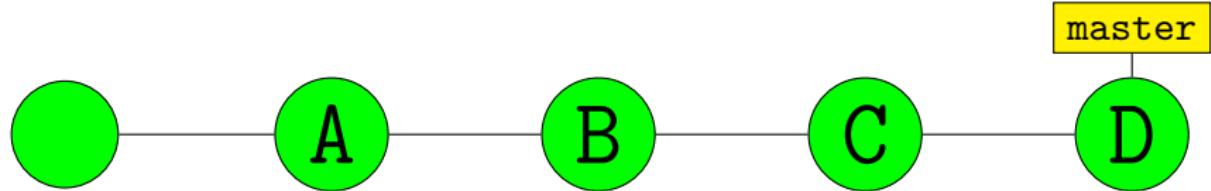
Merge Strategy (Rebase)



Merge Strategy (Rebase)



Merge Strategies



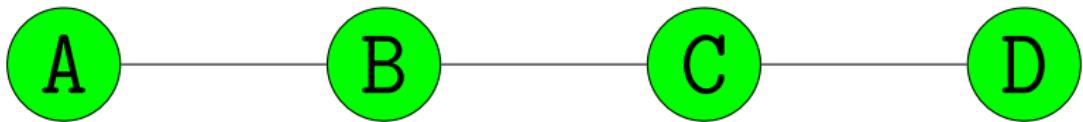
Rewriting History



```
git rebase -i A
```



pick B
pick C
pick D



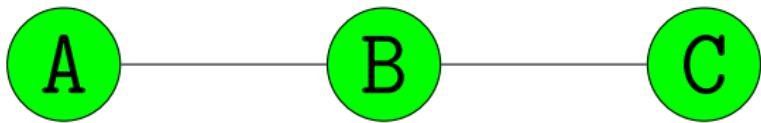
pick B
 pick C
 pick D

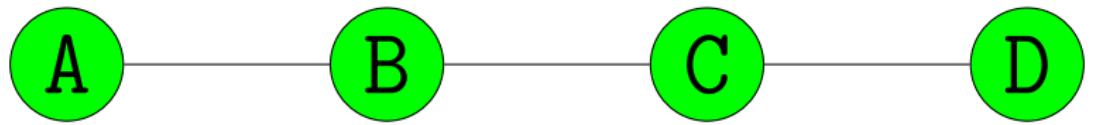
A



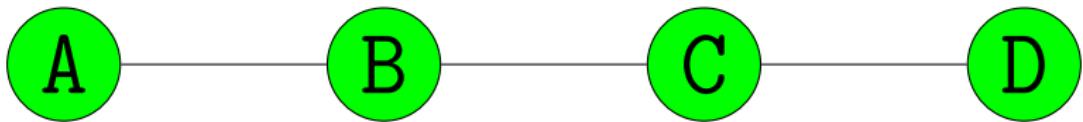
pick C
pick D

pick D

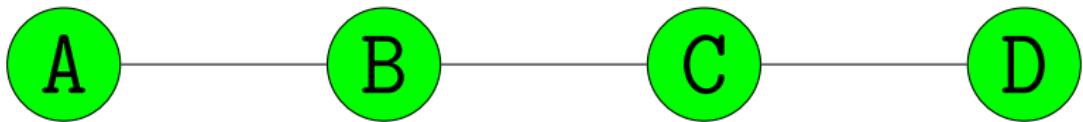




pick B
pick C
pick D



pick C
pick B
pick D



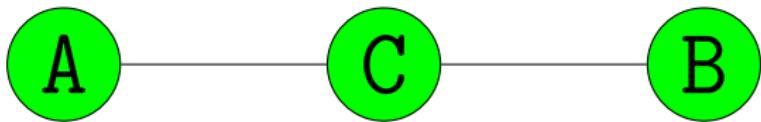
pick C
 pick B
 pick D

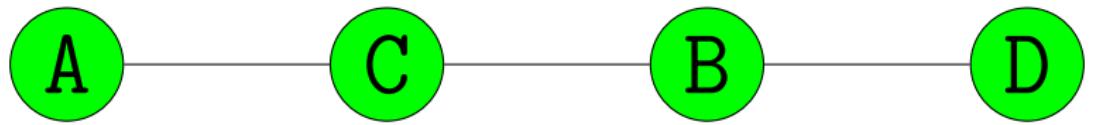
A



pick B
pick D

pick D





pick B
pick C
pick D



pick B
pick D
pick C



pick B
fixup D
pick C



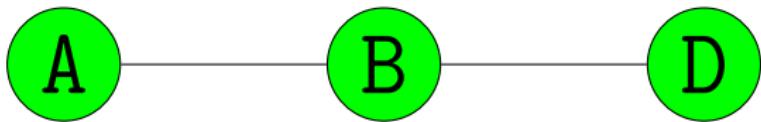
pick B
fixup D
pick C

A

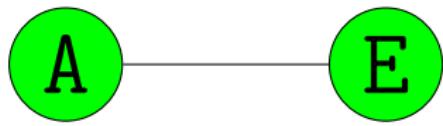
fixup D
pick C

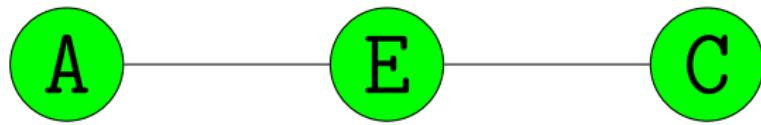


fixup
pick C



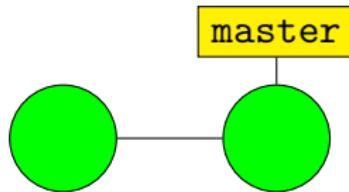
pick C



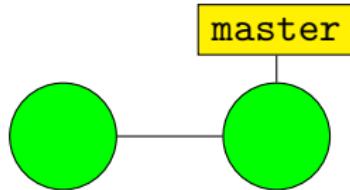


Pitfalls

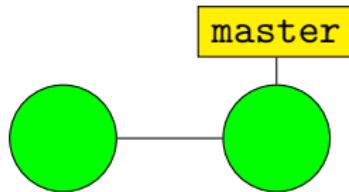
Remotes



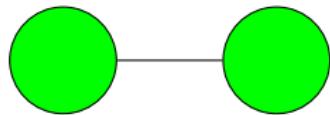
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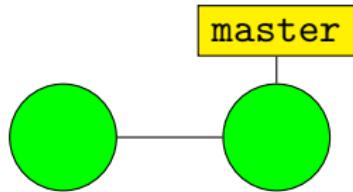


```
git clone path@to:remote/repo
```

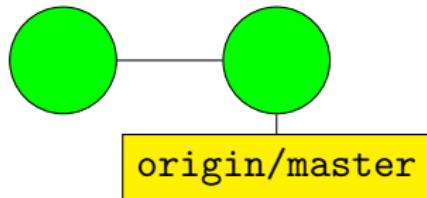


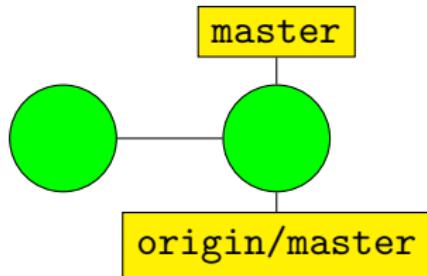
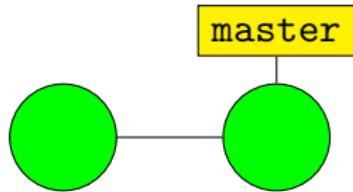
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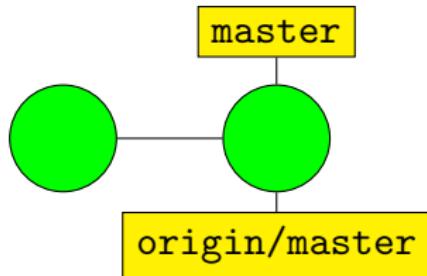
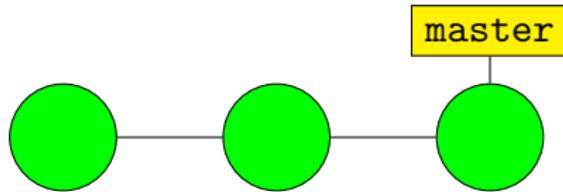


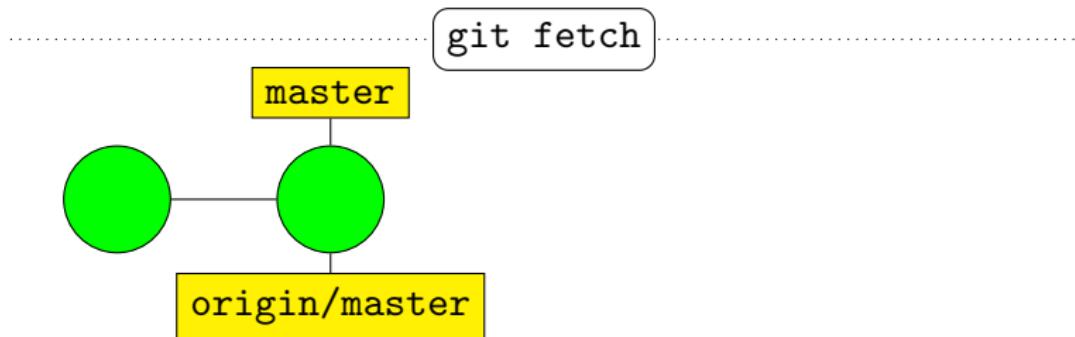
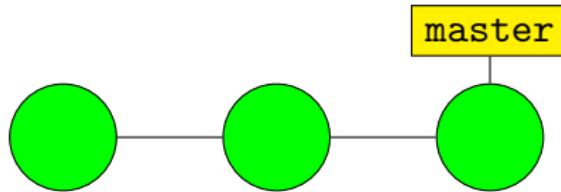


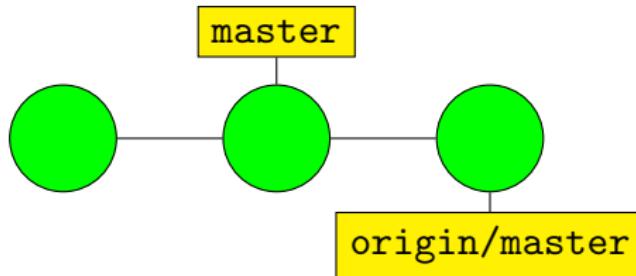
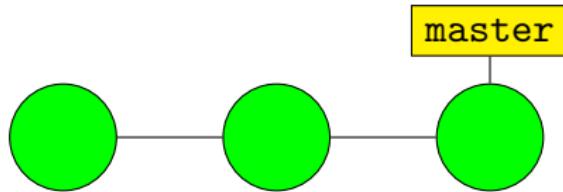
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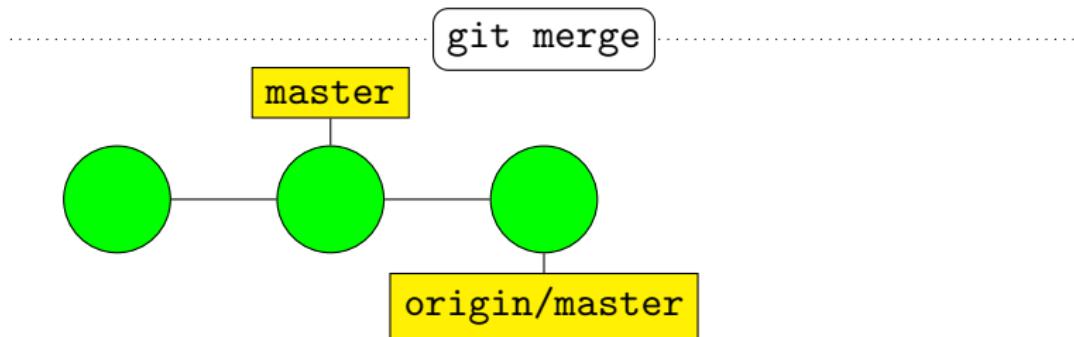
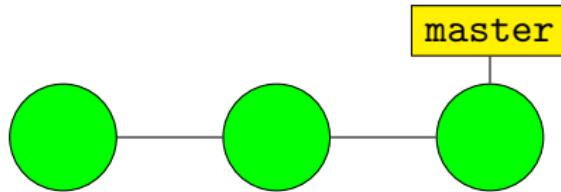


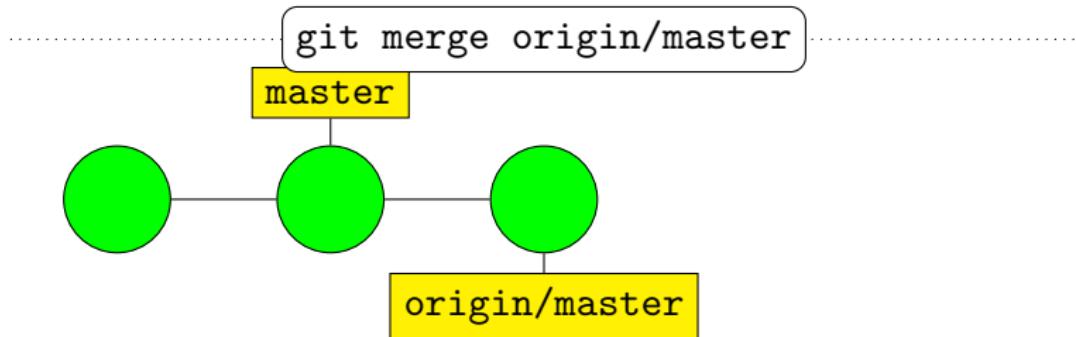
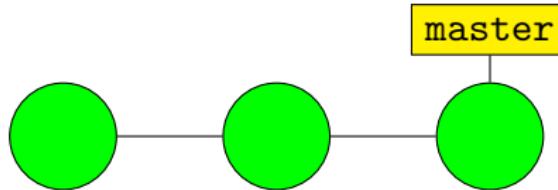


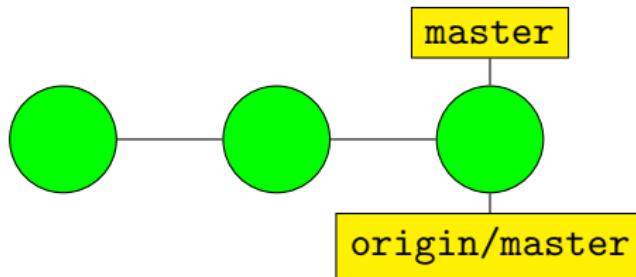
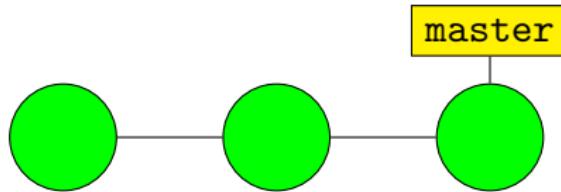




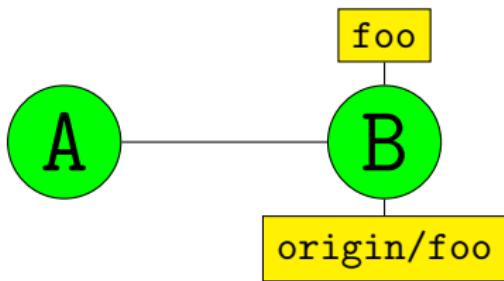


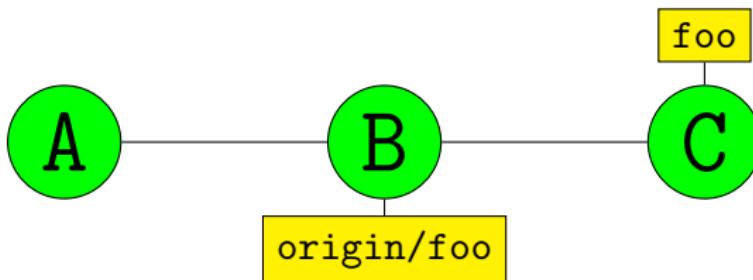


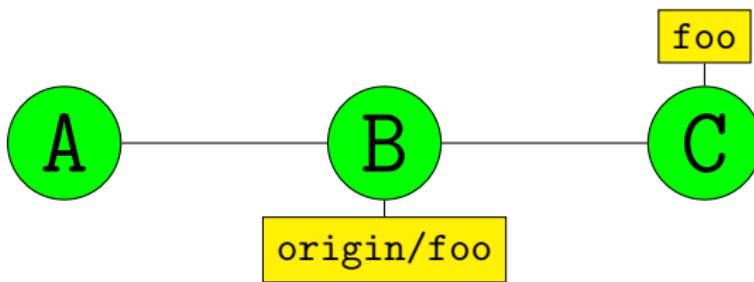
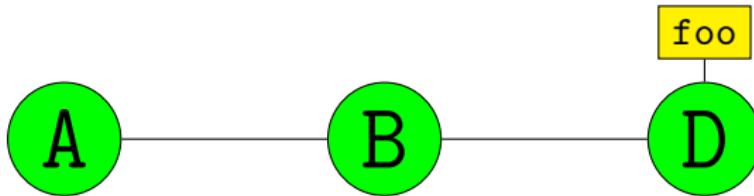


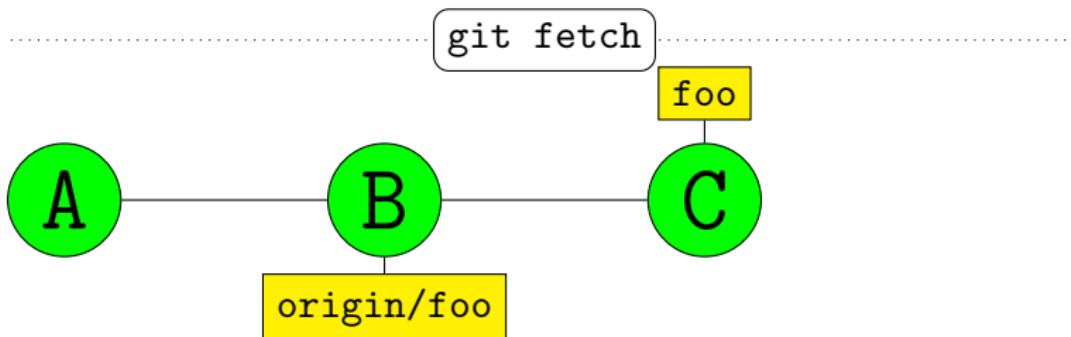
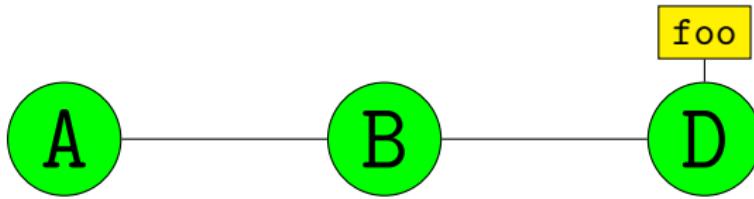


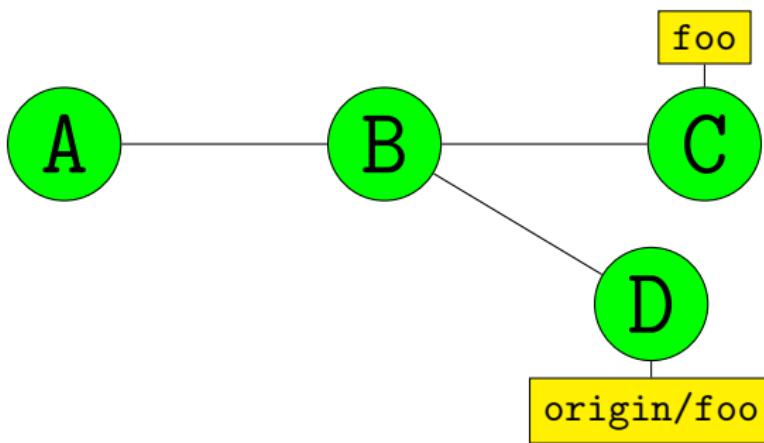
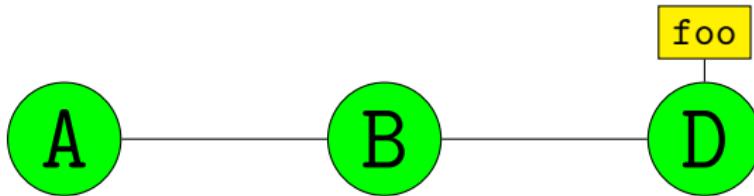
Collaborating

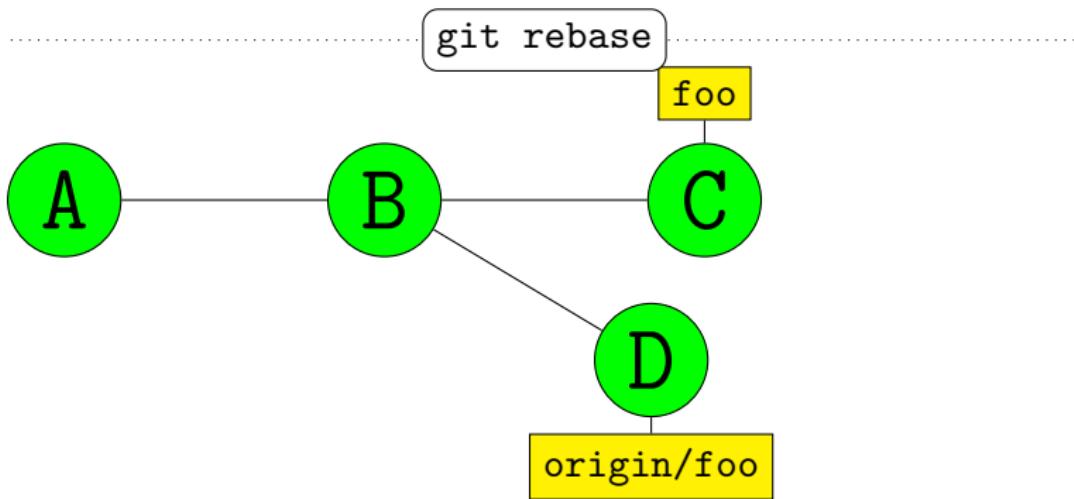
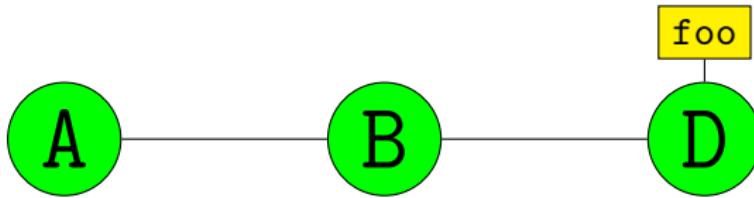


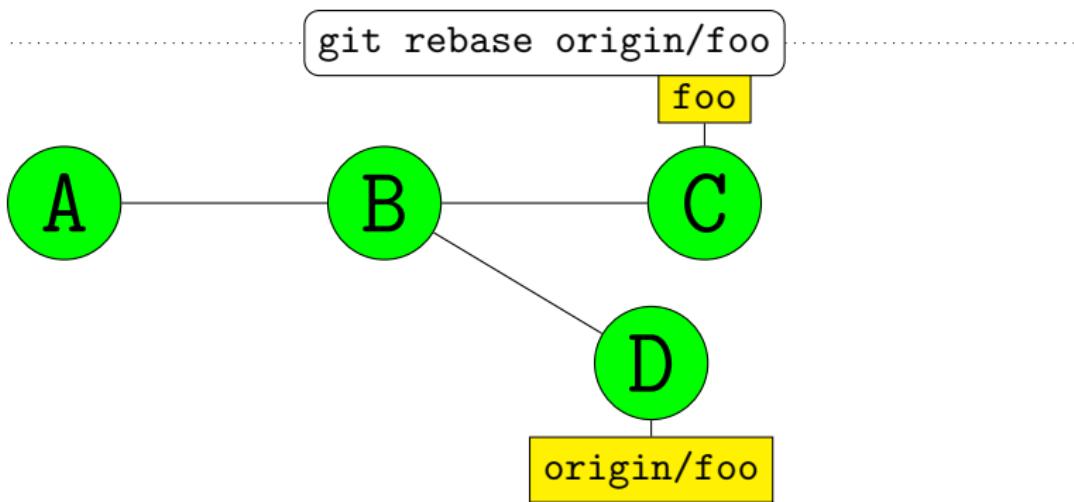
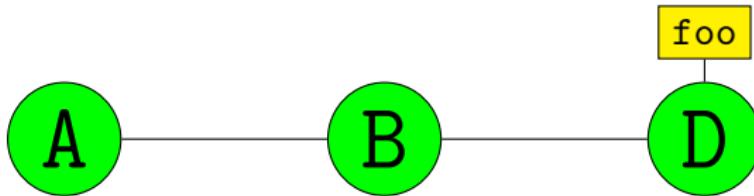


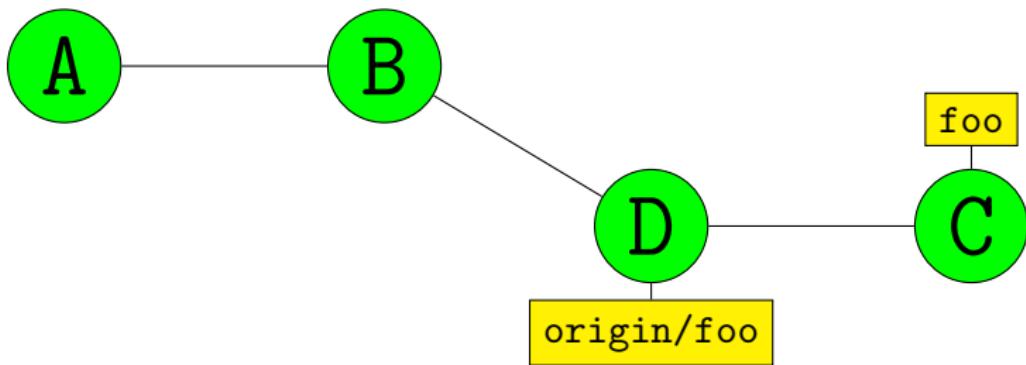
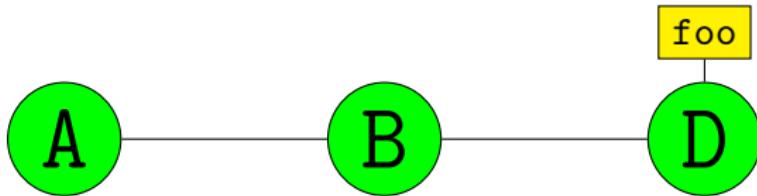


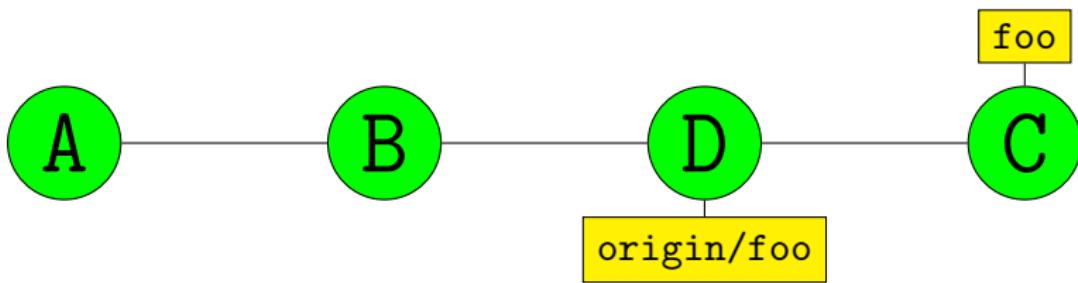
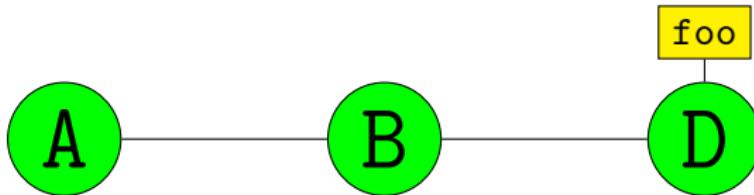


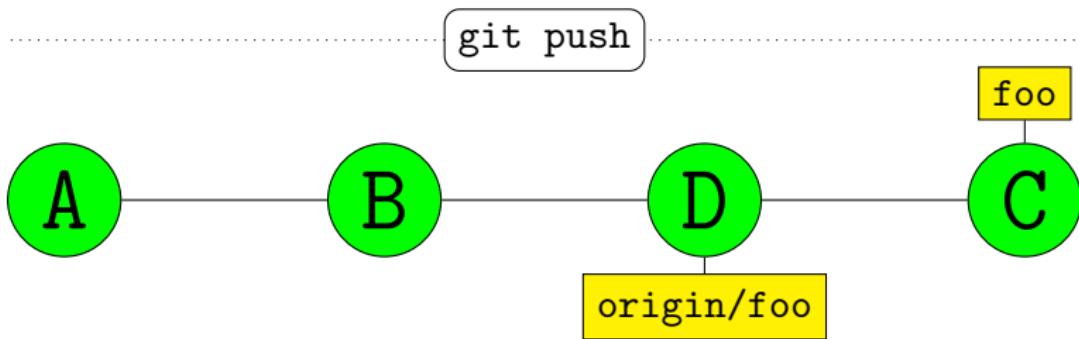
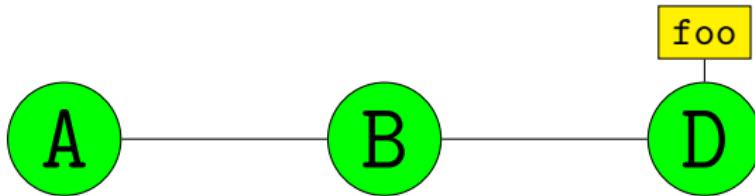


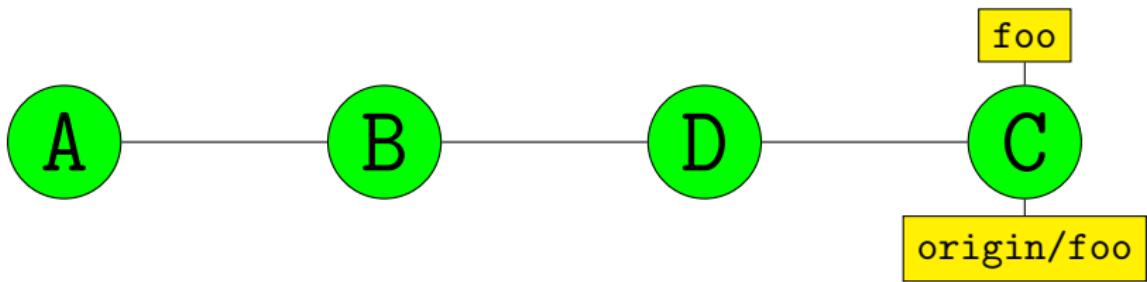


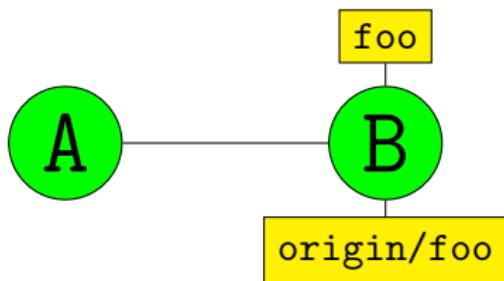


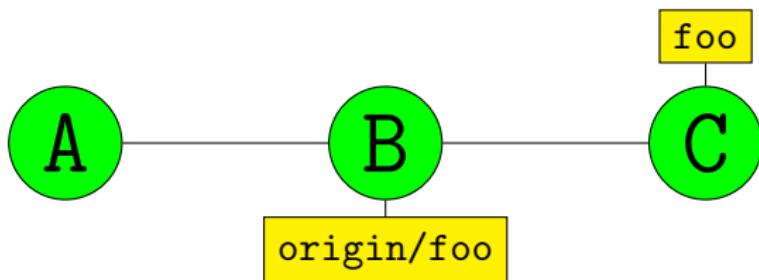


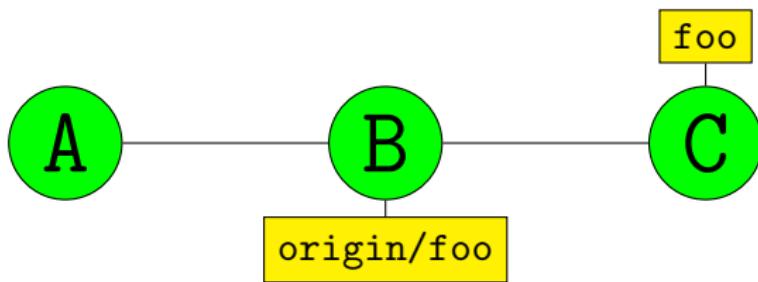
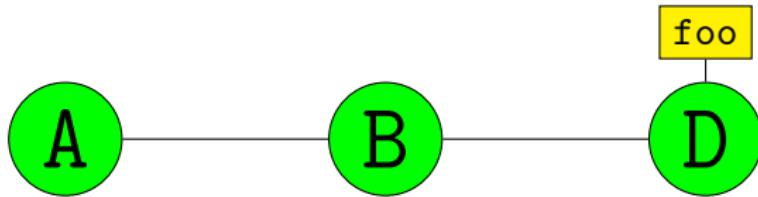


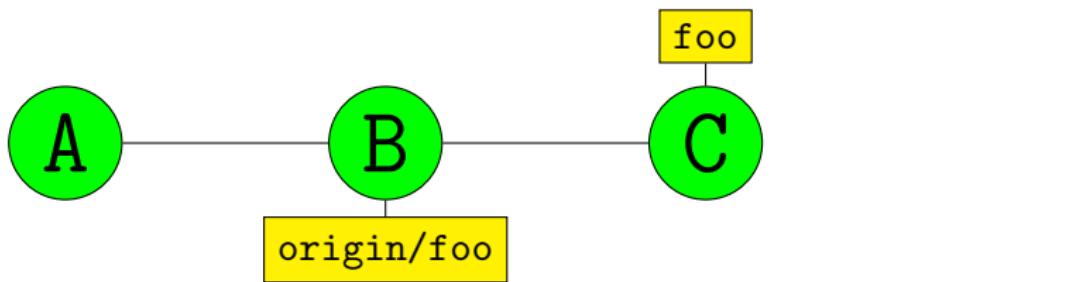


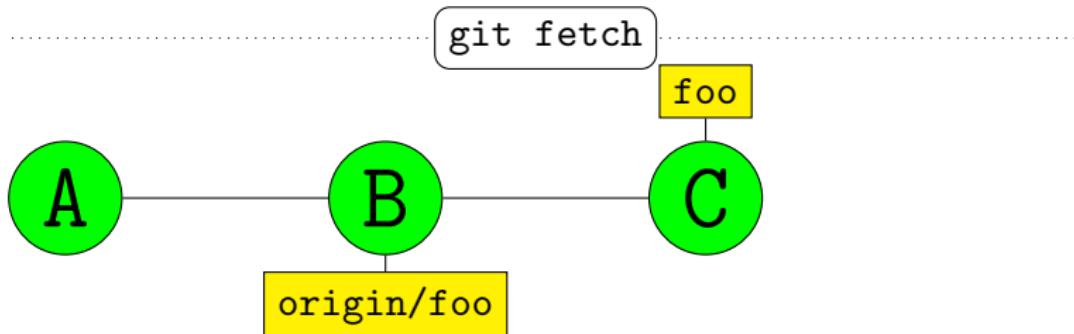


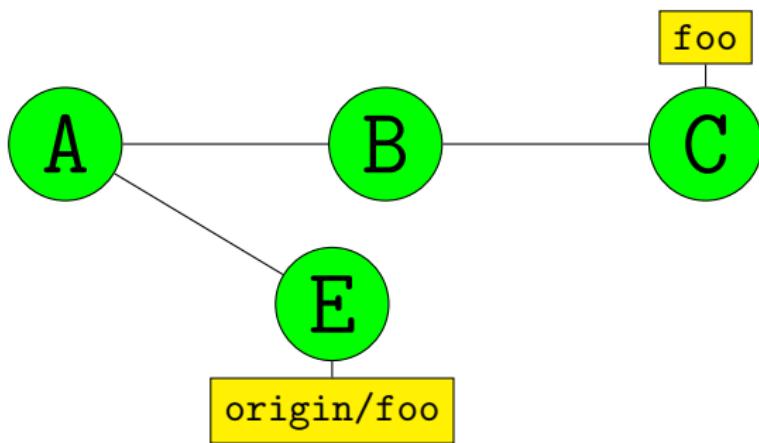


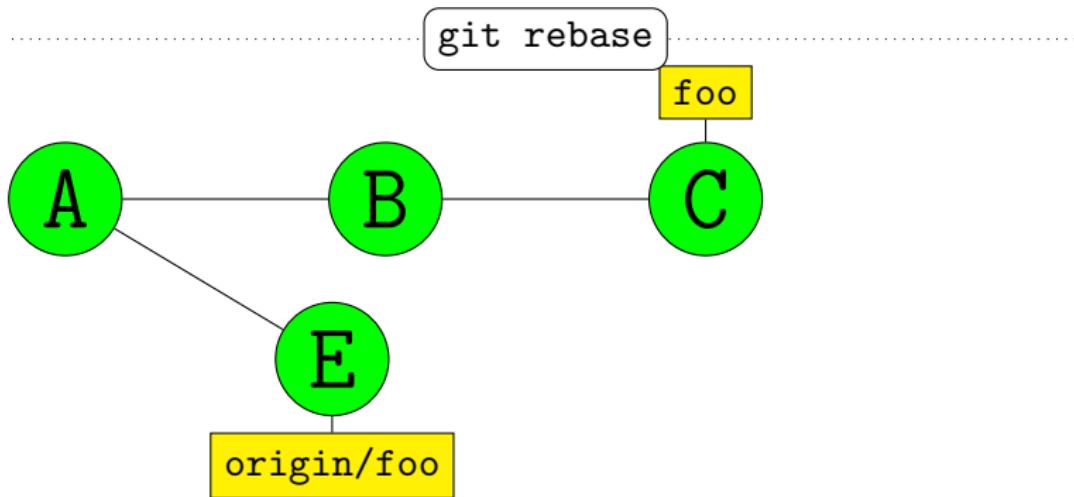


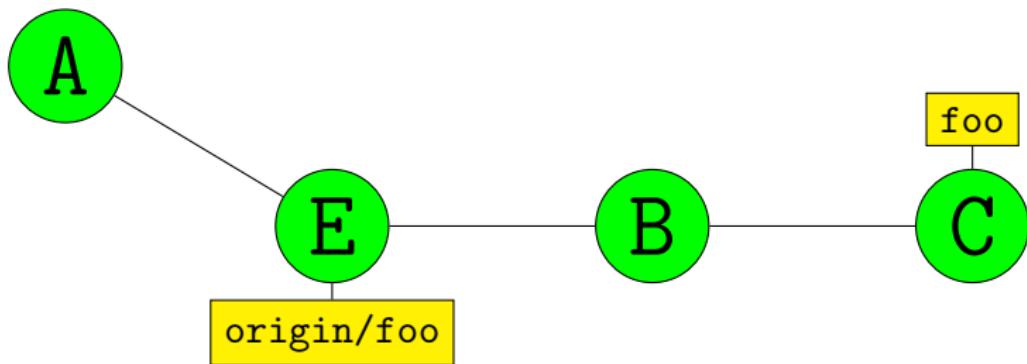


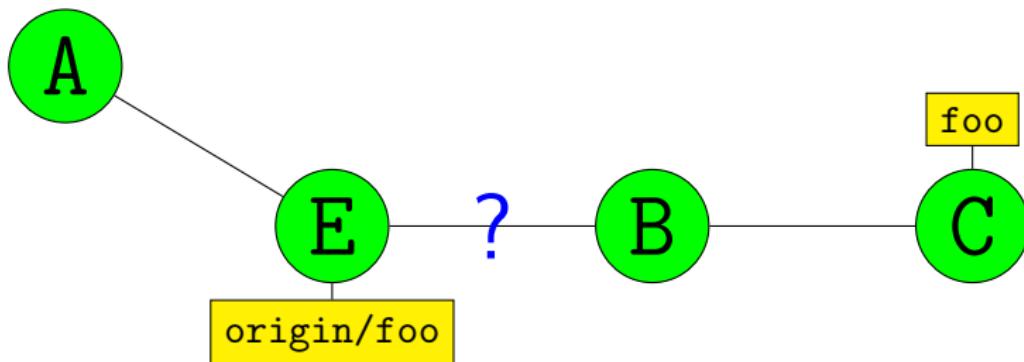








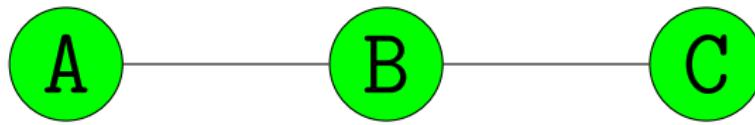




Rewriting History?

Carefully

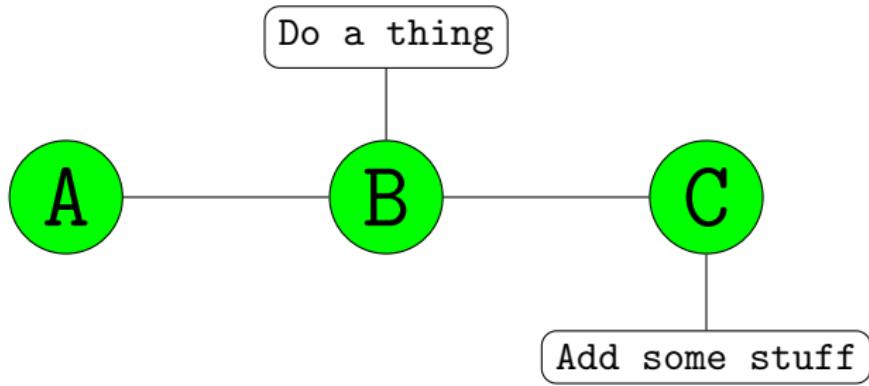
Fixup Commits

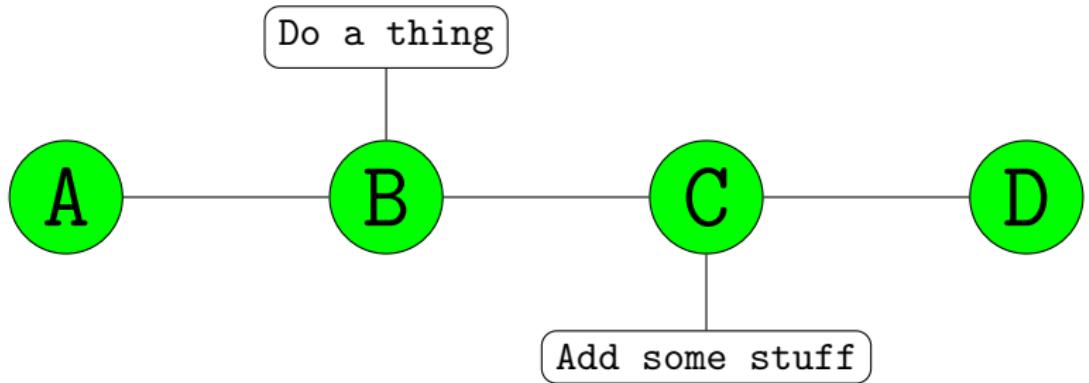


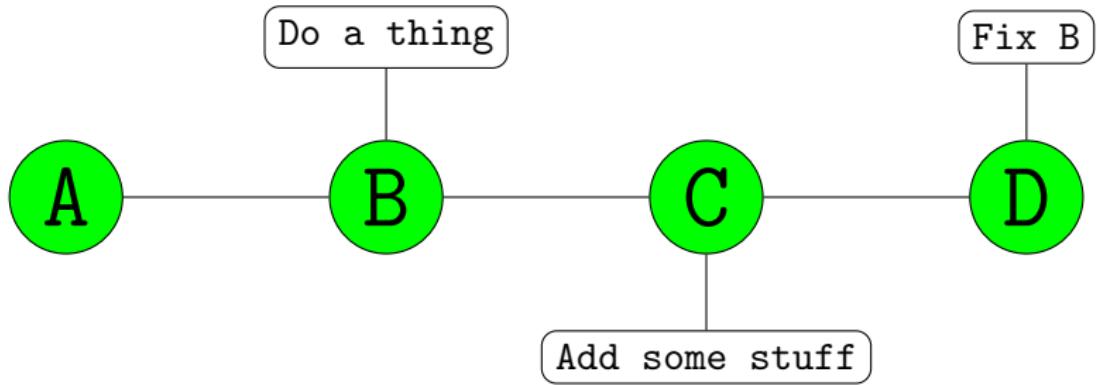
A

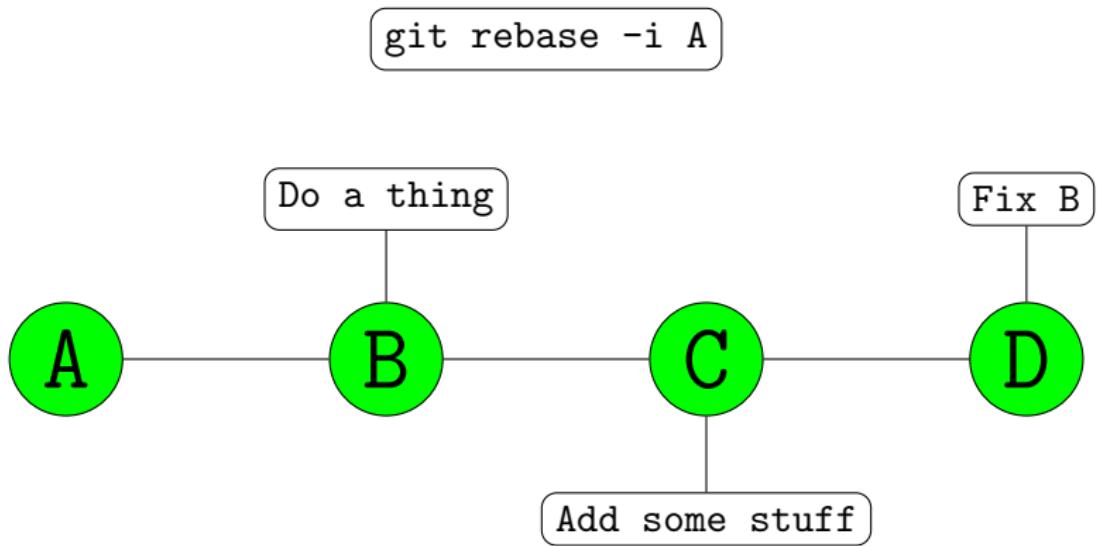
B

C

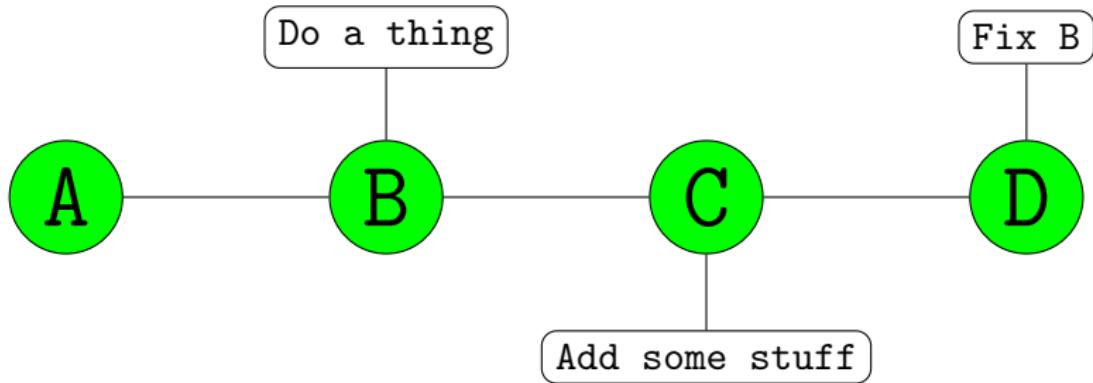




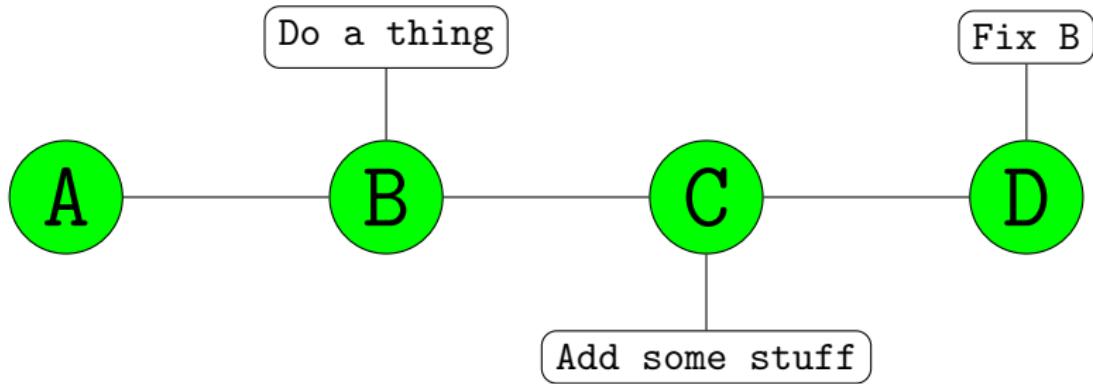




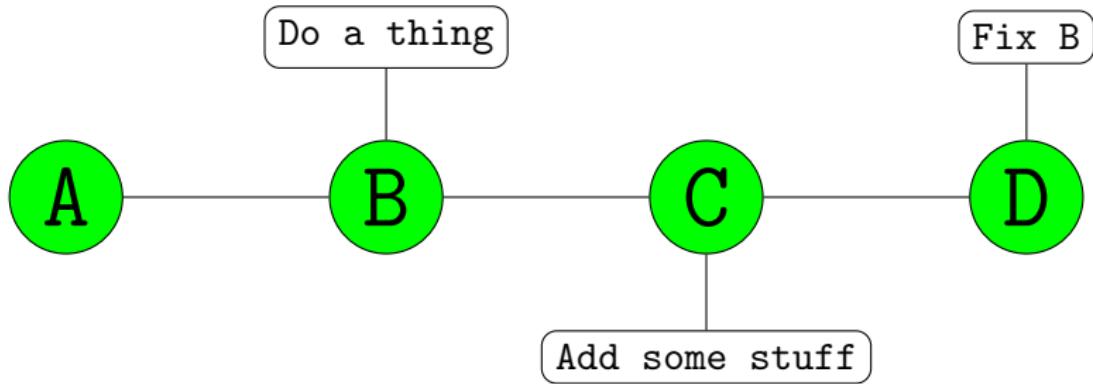
pick B - Do a thing
pick C - Add some stuff
pick D - Fix B

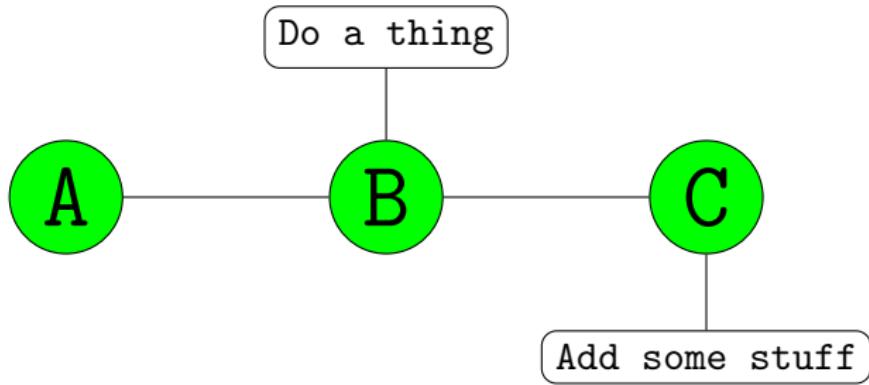


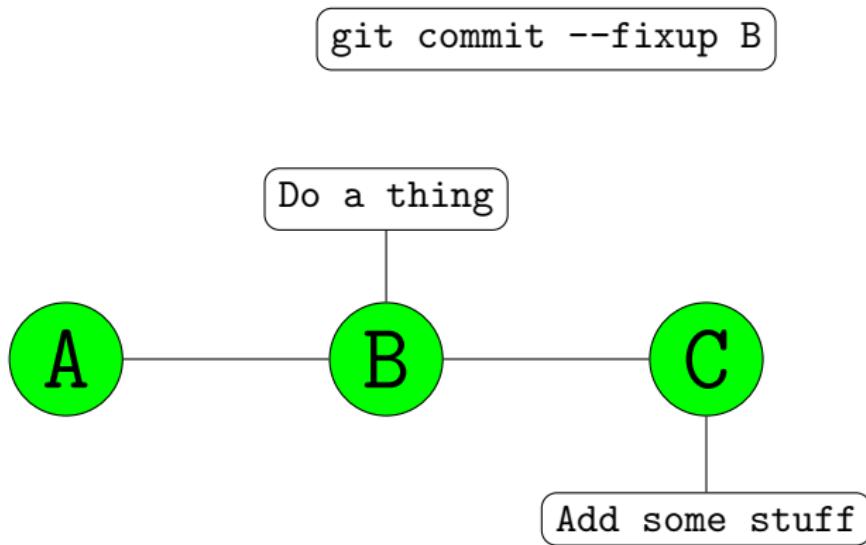
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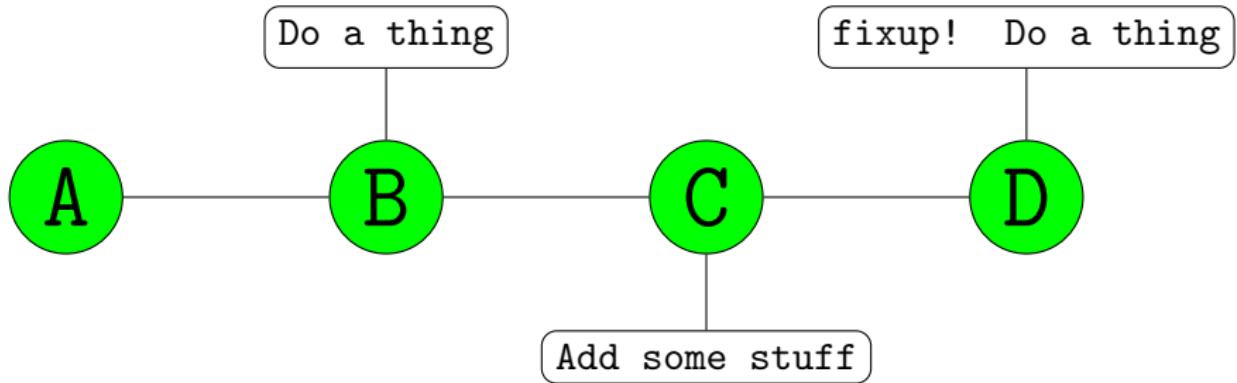


pick B - Do a thing
fixup D - Fix B
pick C - Add some stuff

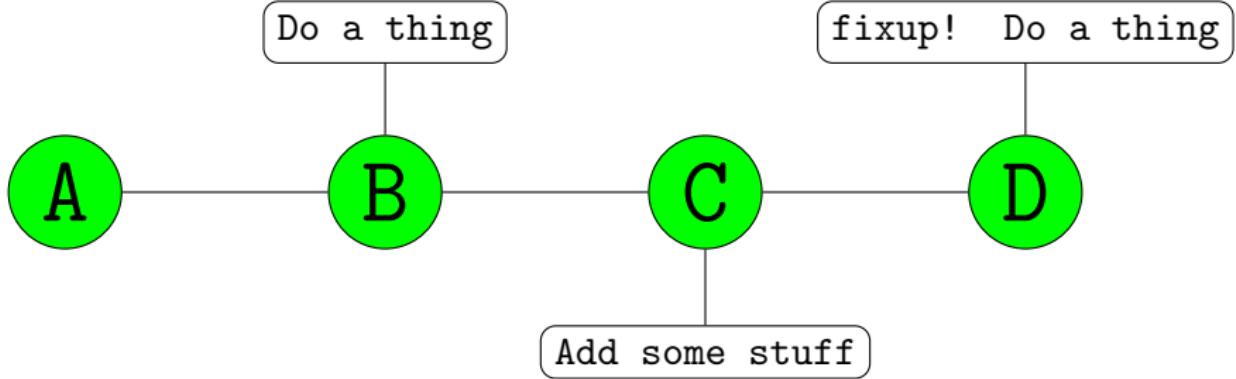




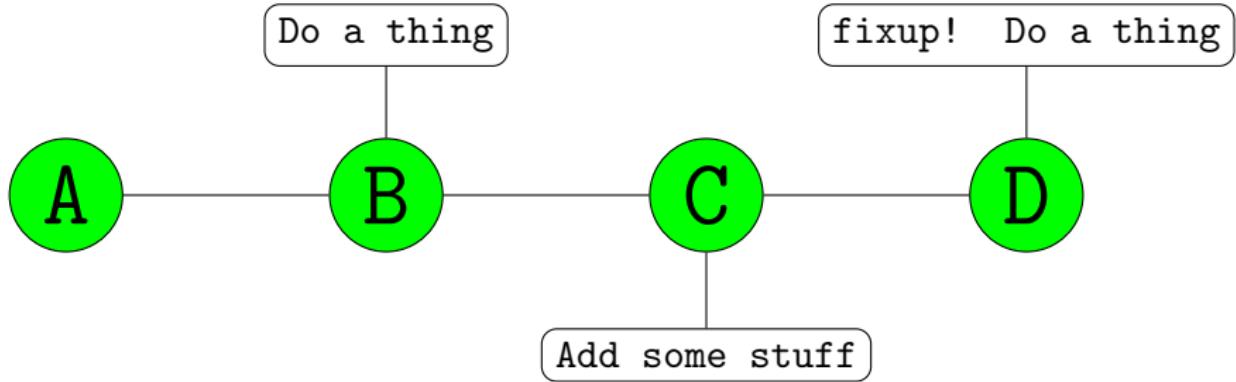




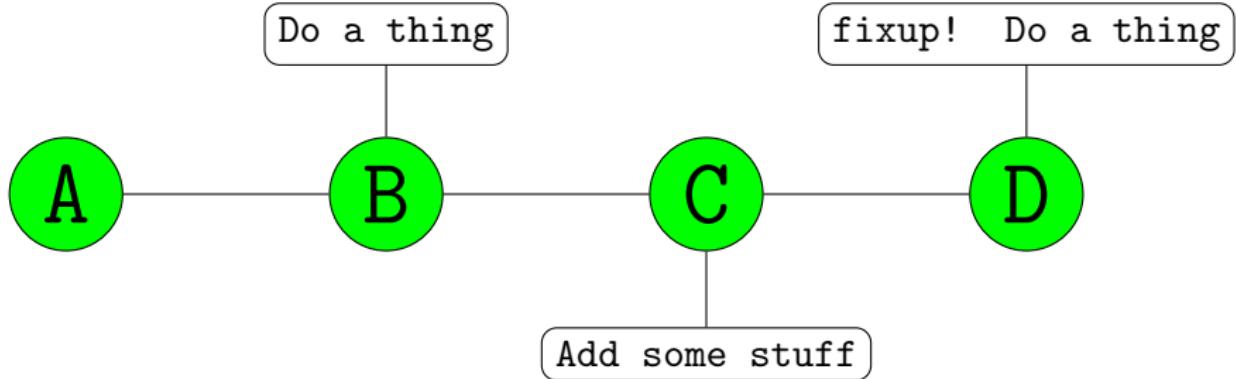
```
git rebase -i --autosquash A
```

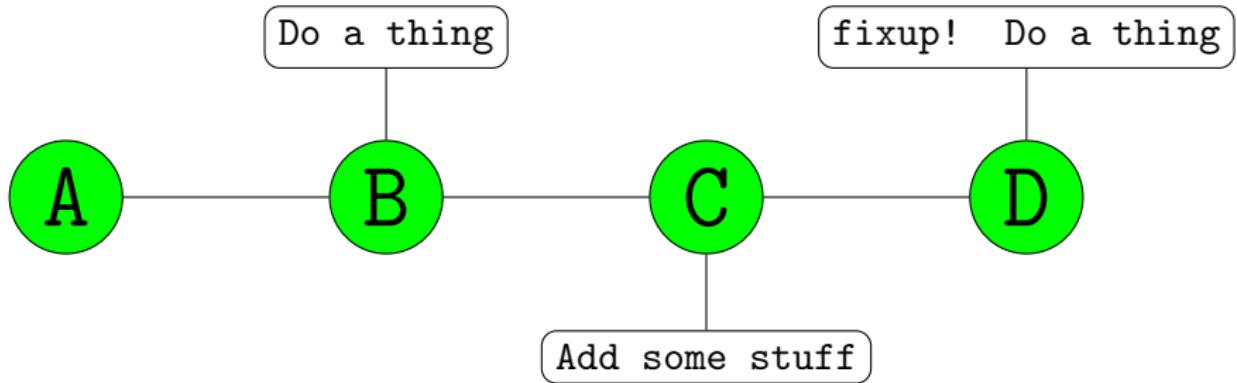


pick B - Do a thing
fixup D - fixup! Do a thing
pick C - Add some stuff

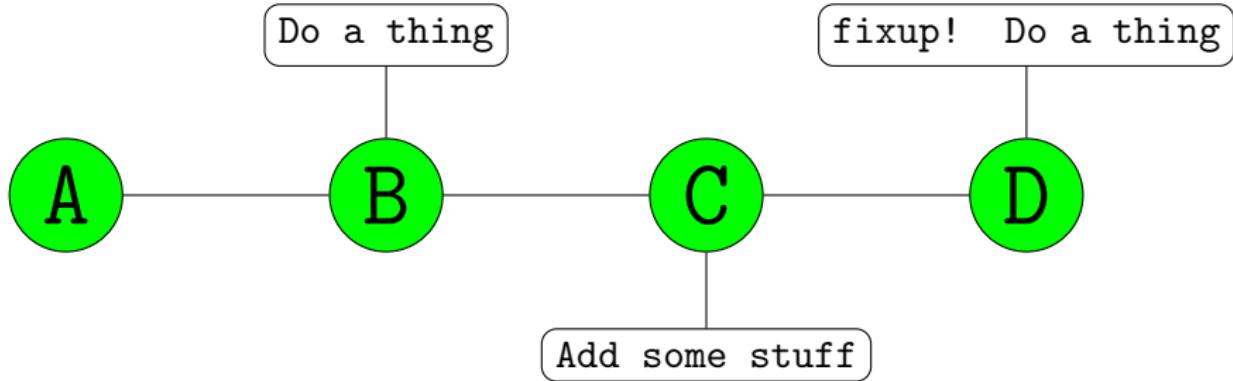


```
git config rebase.autosquash true  
git rebase -i A
```

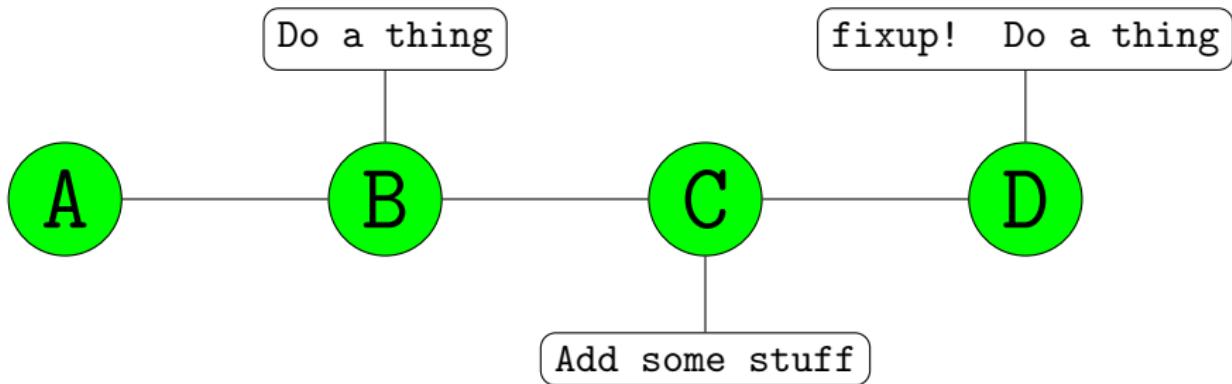




```
git rebase -i --no-autosquash A
```



pick B - Do a thing
pick C - Add some stuff
pick D - fixup! Do a thing



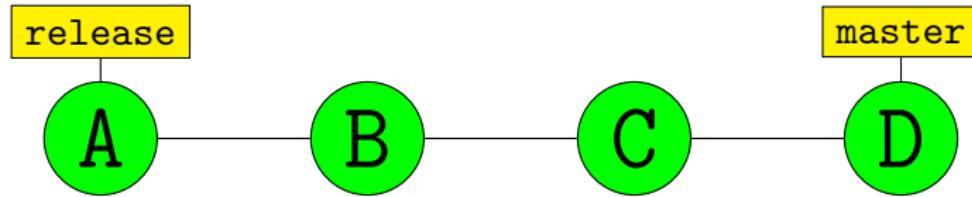
- ▶ Use `--fixup` commits to “amend” things during regular development.

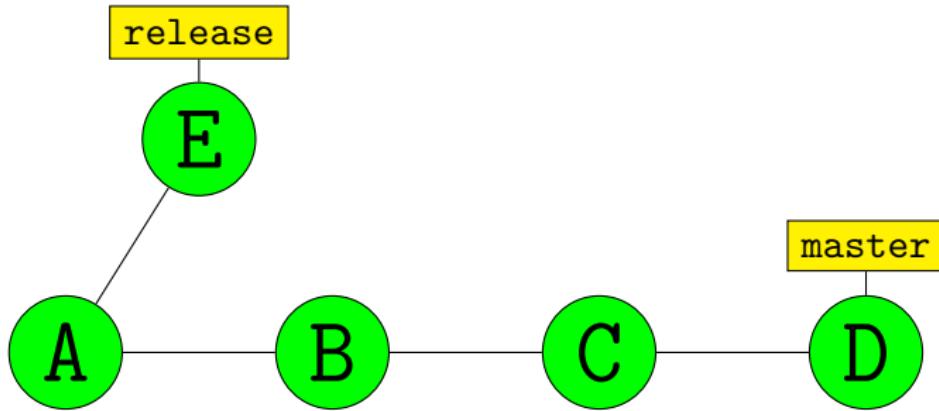
- ▶ Use --fixup commits to “amend” things during regular development.
- ▶ Coordinate with anyone else using the branch before doing a rebase --autosquash.

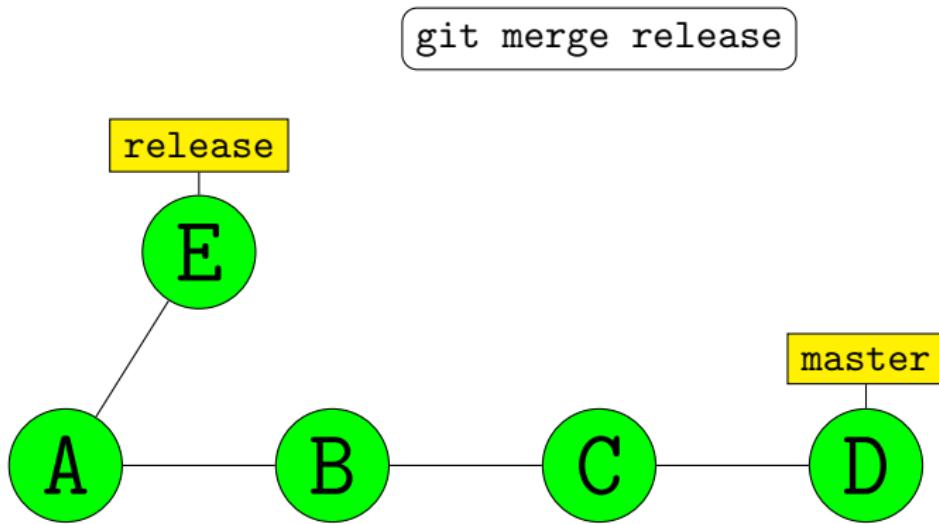
- ▶ Use `--fixup` commits to “amend” things during regular development.
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- ▶ Don't do it on `master`

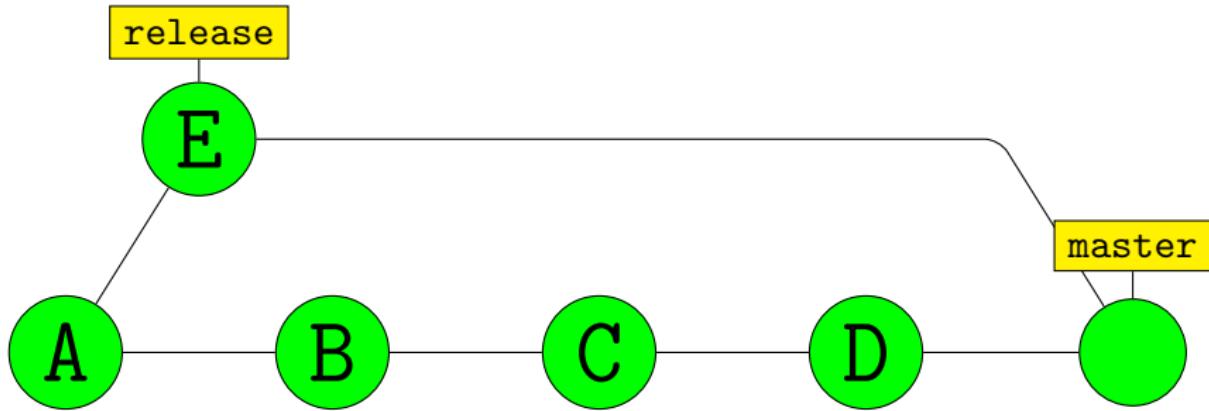
- ▶ Use `--fixup` commits to “amend” things during regular development.
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- ▶ Don't do it on `master`
- ▶ ... or `release`

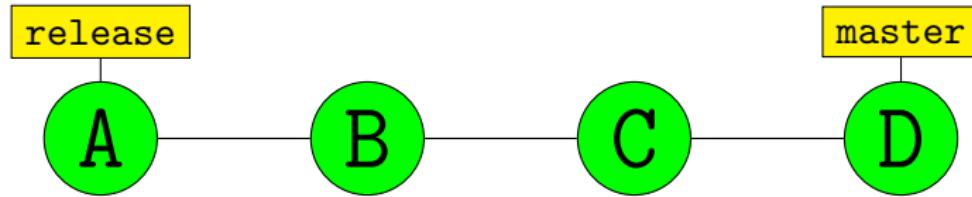
Merge Down



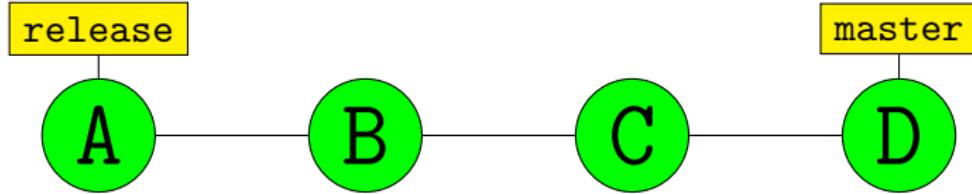


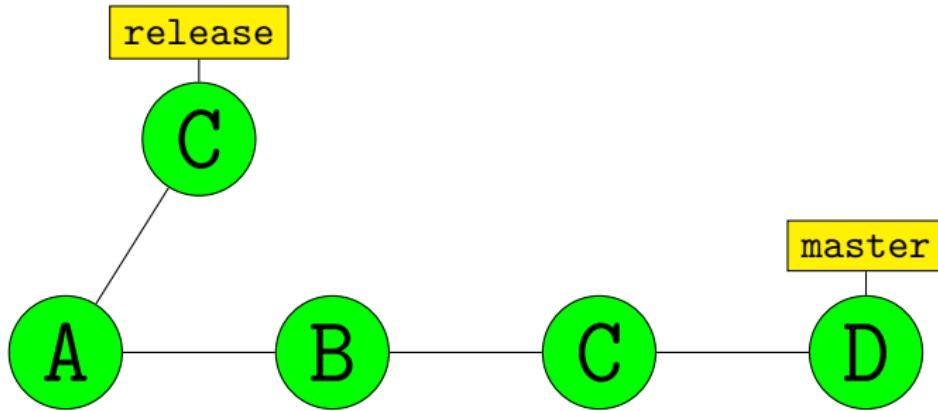


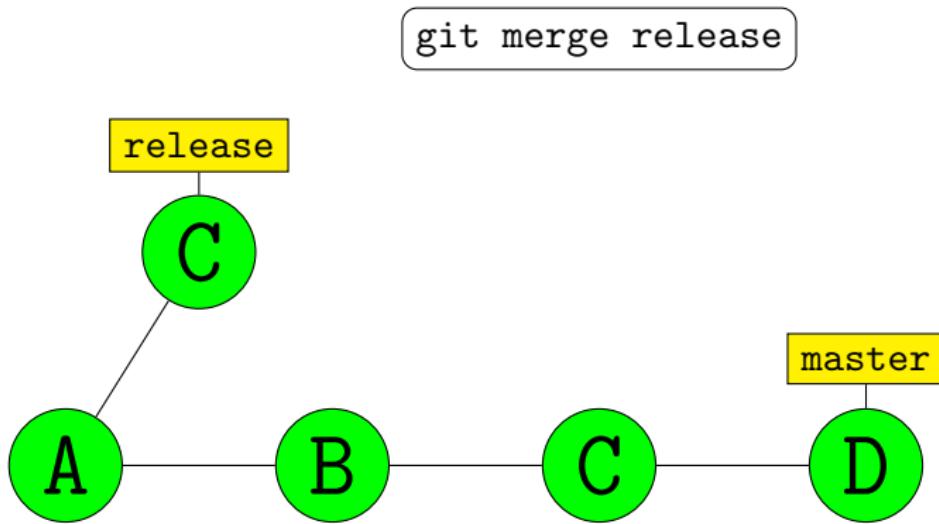


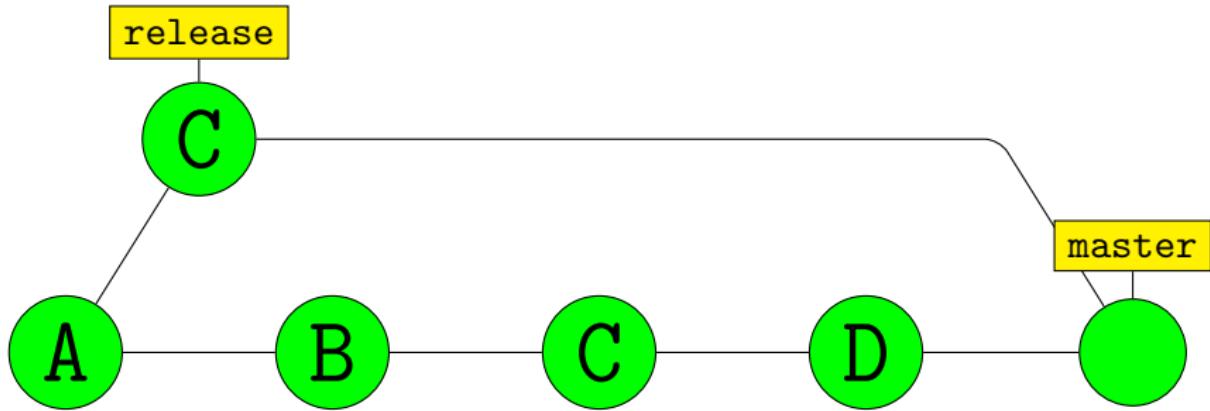


```
git cherry-pick -x C
```









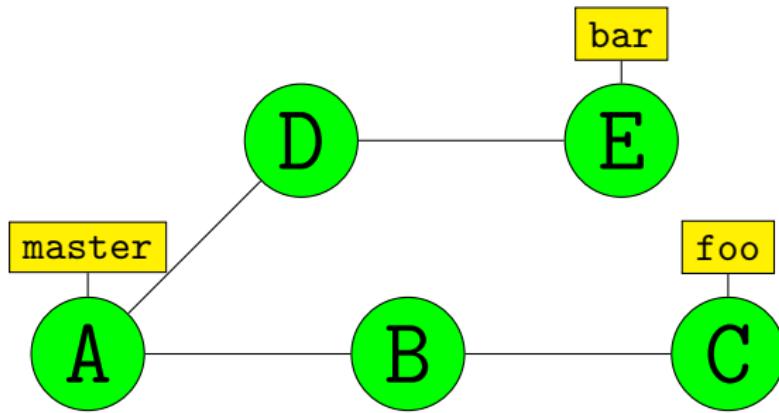
Log Thoughts

git log is useless

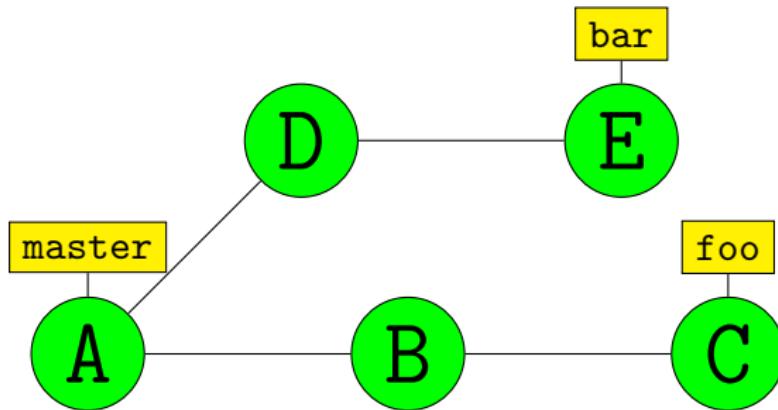
Use git log --graph

Or git hist

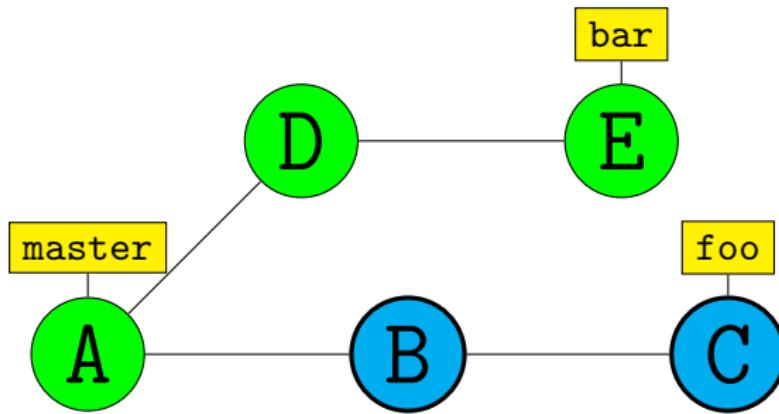
Diff Tricks



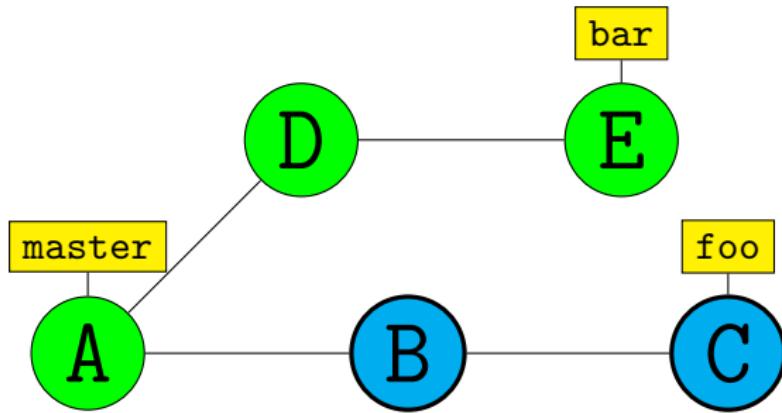
git diff A..C



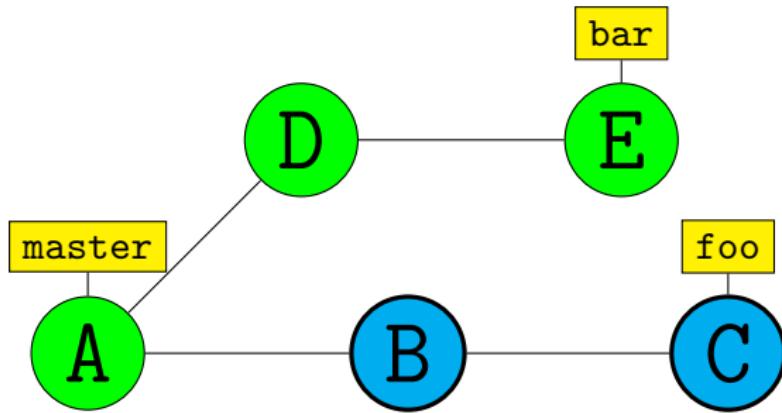
git diff A..C

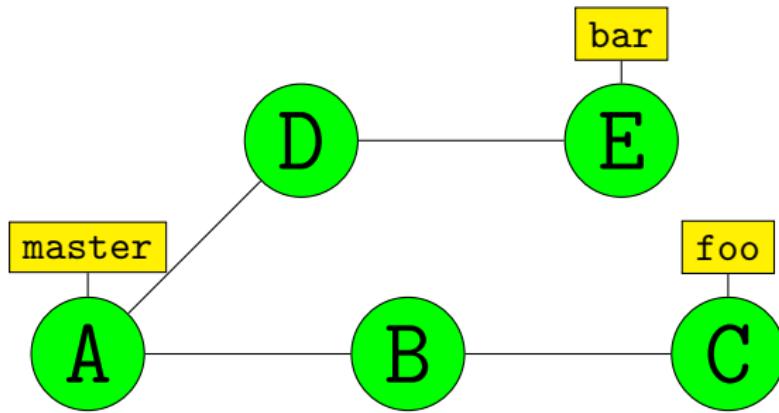


git diff master..foo

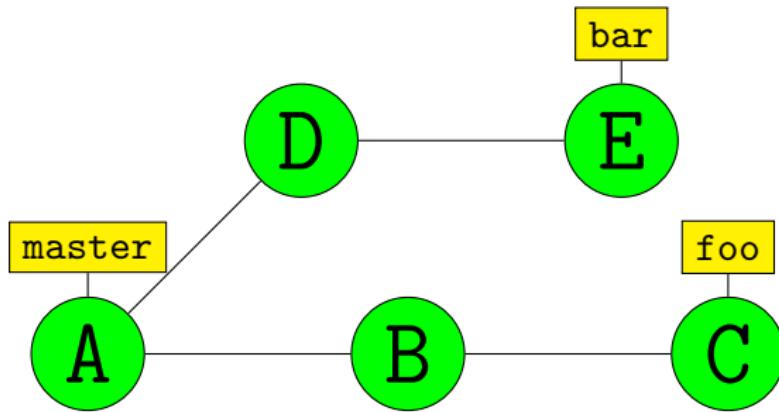


git diff master...foo

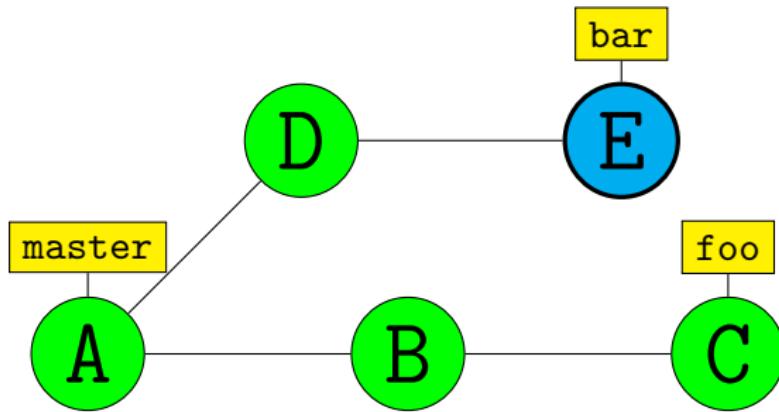


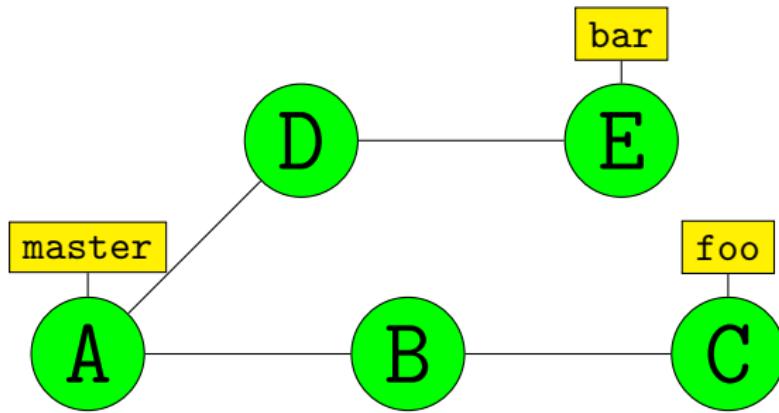


git diff D..E

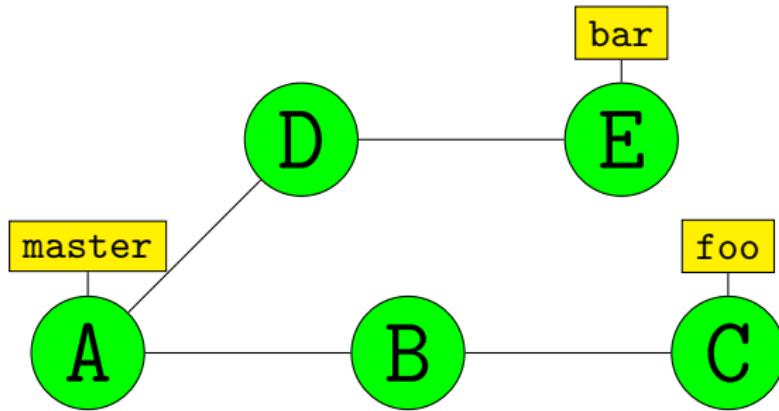


git diff D..E

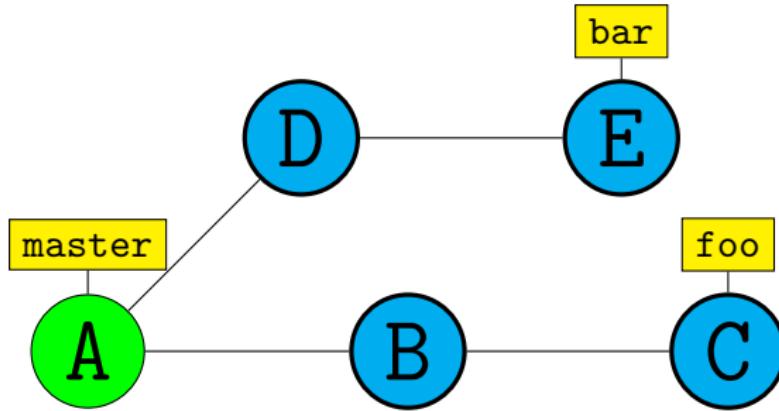


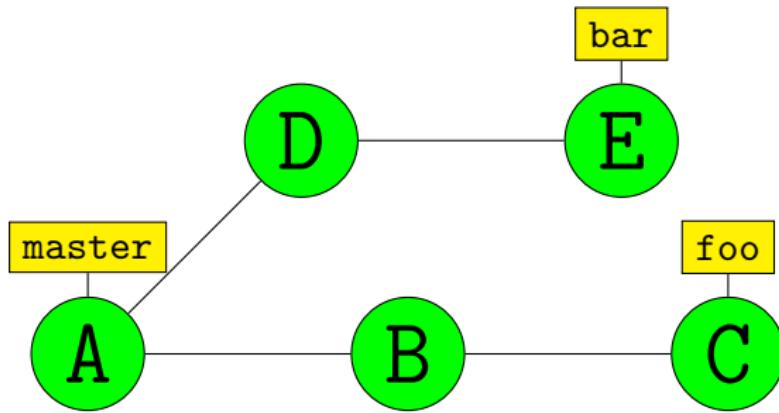


git diff foo..bar

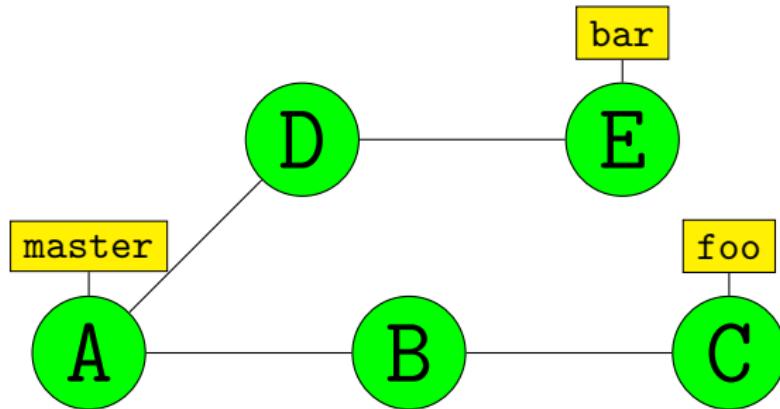


git diff foo..bar

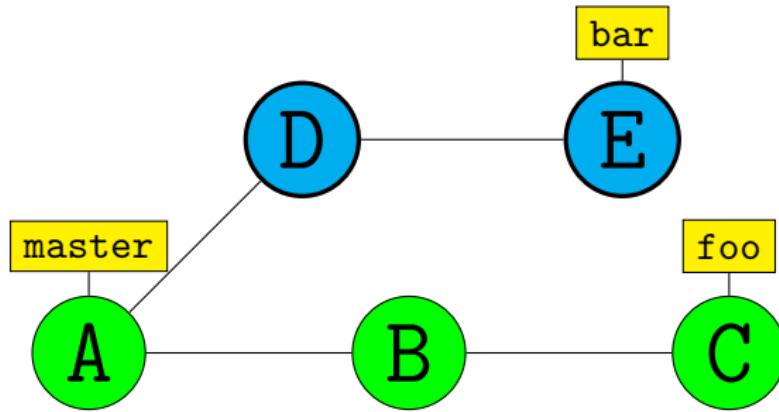


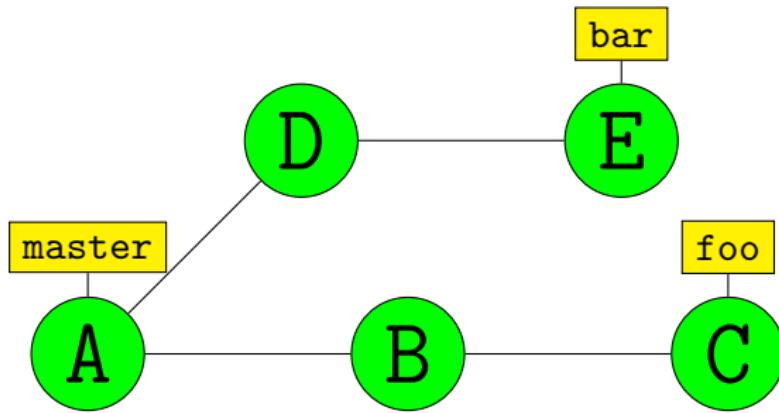


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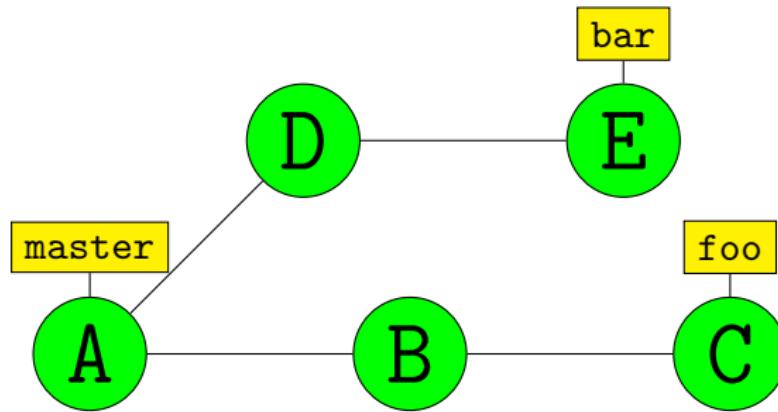


git diff foo...bar

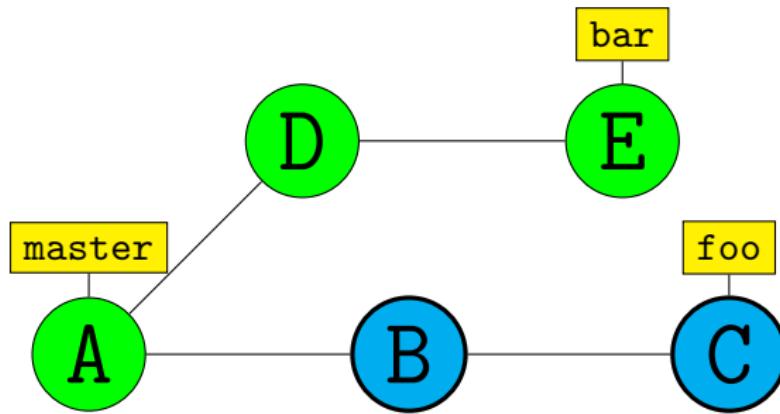


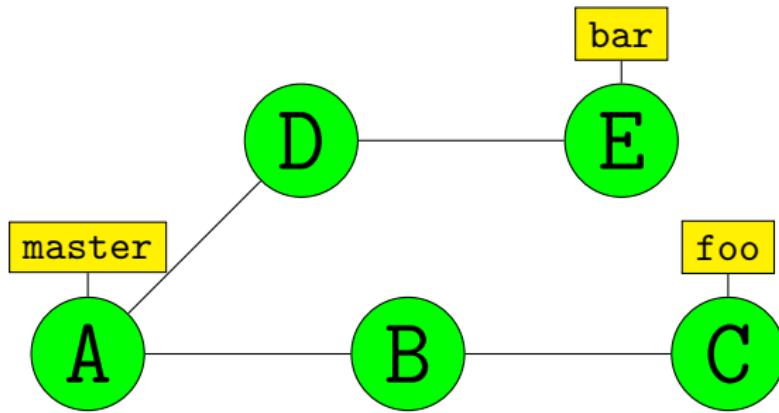


git diff bar...foo

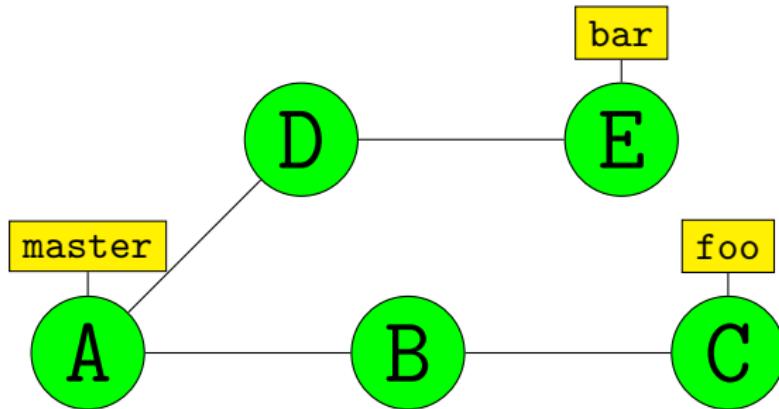


git diff bar...foo

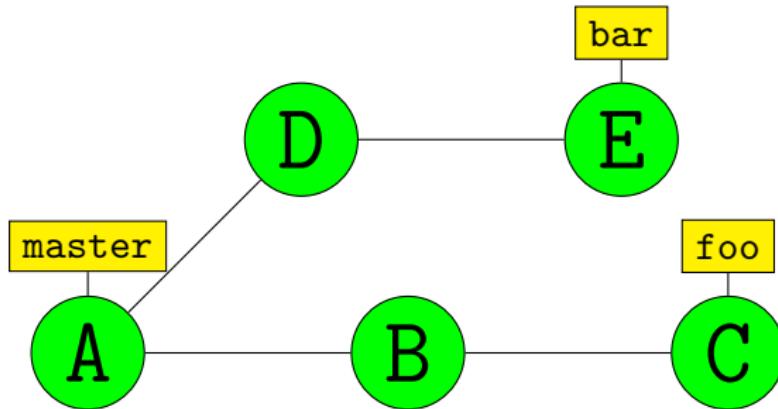




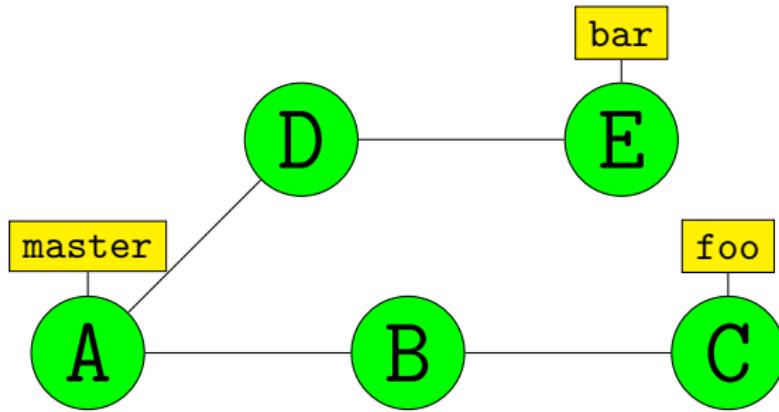
```
git diff master..bar spec
```



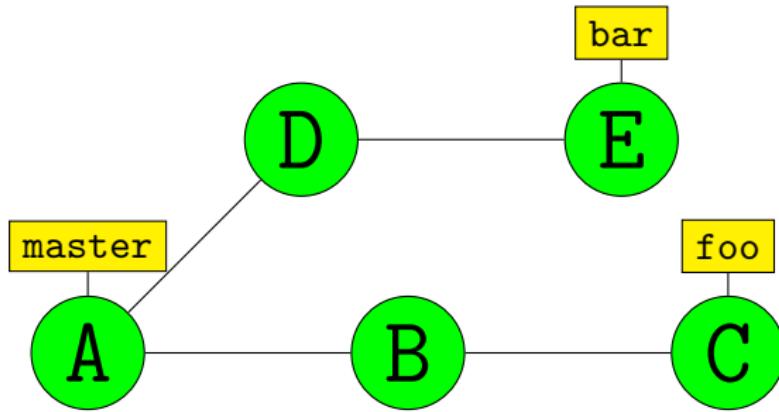
```
git diff master..bar spec | git apply
```

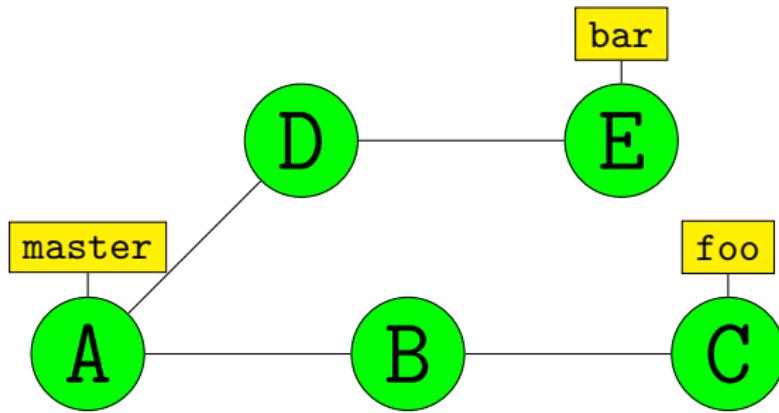


```
git diff master..bar spec > blah.patch
```

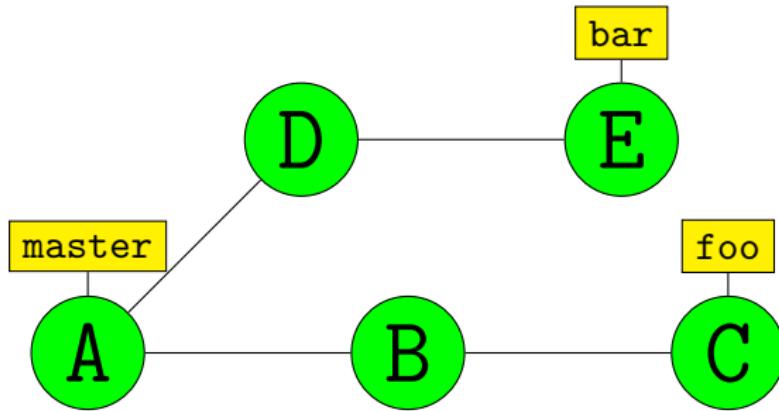


git apply blah.patch

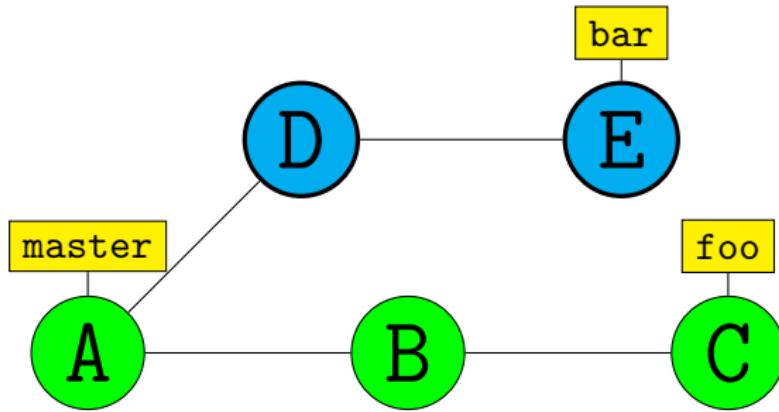


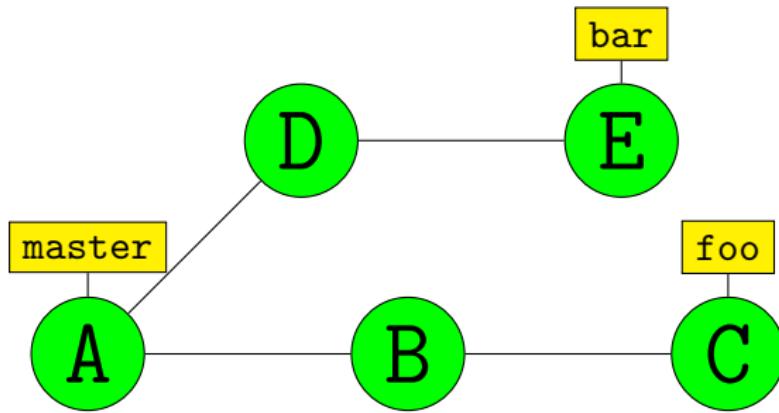


git log foo..bar

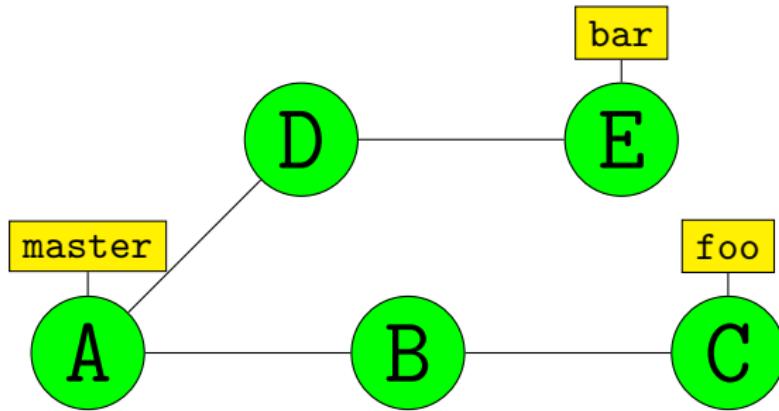


git log foo..bar

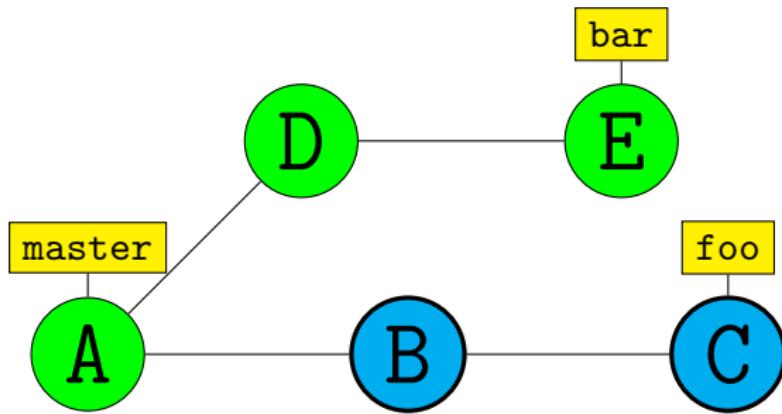


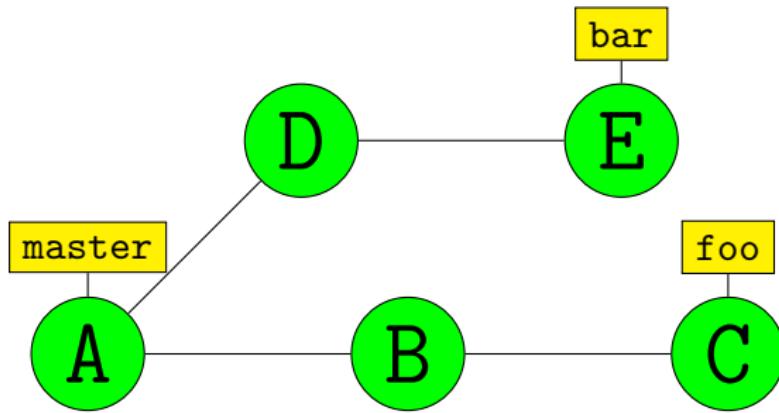


git log bar..foo

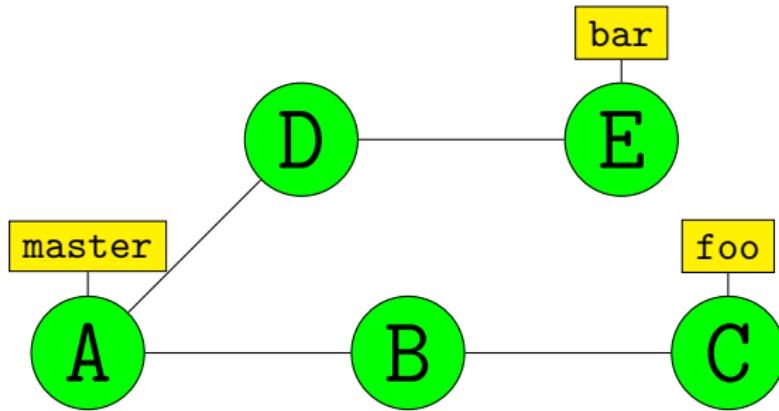


git log bar..foo

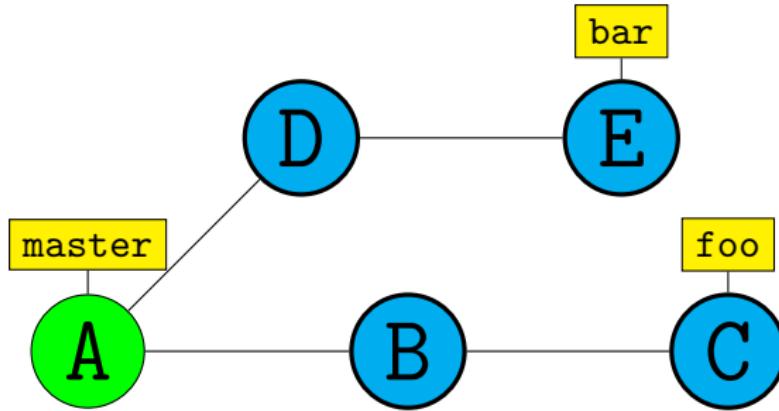




git log foo...bar



git log foo...bar



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- ▶ Be courteous when doing that on pushed branches (not master or release!)
- ▶ Know what your merge strategy communicates
- ▶ Ancestry matters
- ▶ Use fixup commits!

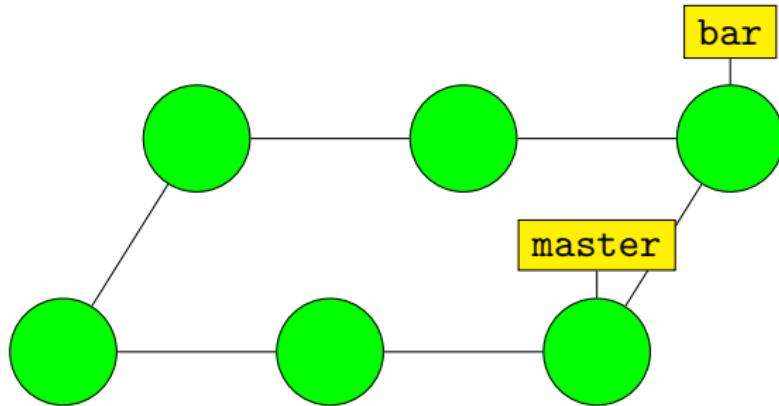
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- ▶ The goal of Git is to reveal *intent*
- ▶ Rewrite history to reveal intent
- ▶ Be courteous when doing that on pushed branches (not master or release!)
- ▶ Know what your merge strategy communicates
- ▶ Ancestry matters
- ▶ Use fixup commits!
- ▶ Git is awesome!

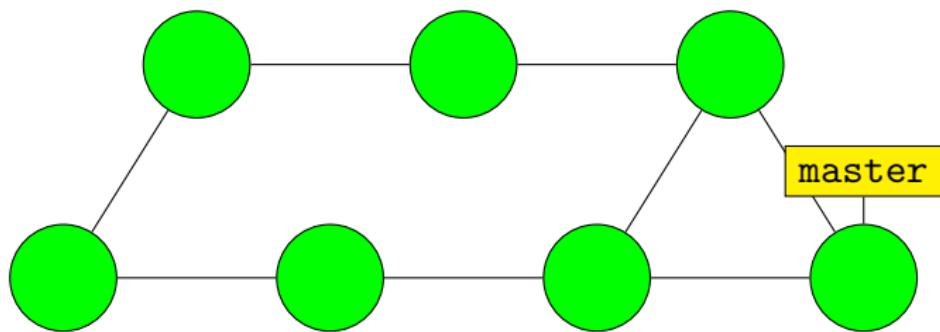
Questions?

Mistake?

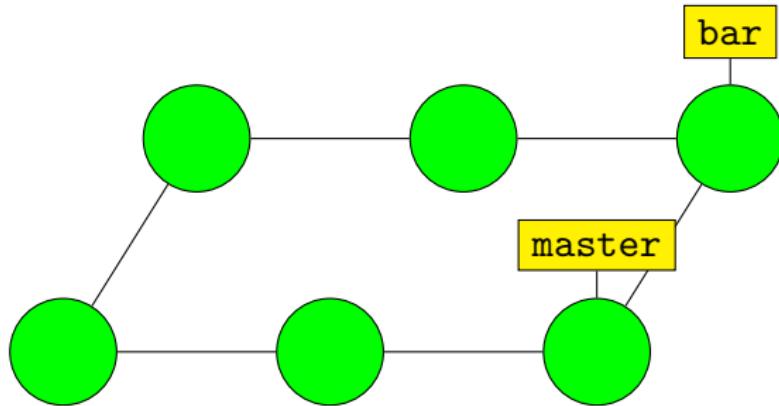
Merge Strategy



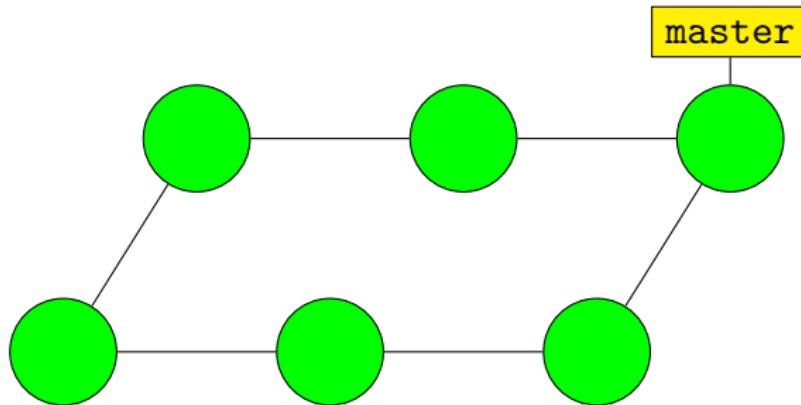
Merge Strategy



Merge Strategy



Merge Strategy



Questions?