Surviving with Git

How to Undo Things and Recover from Mistakes

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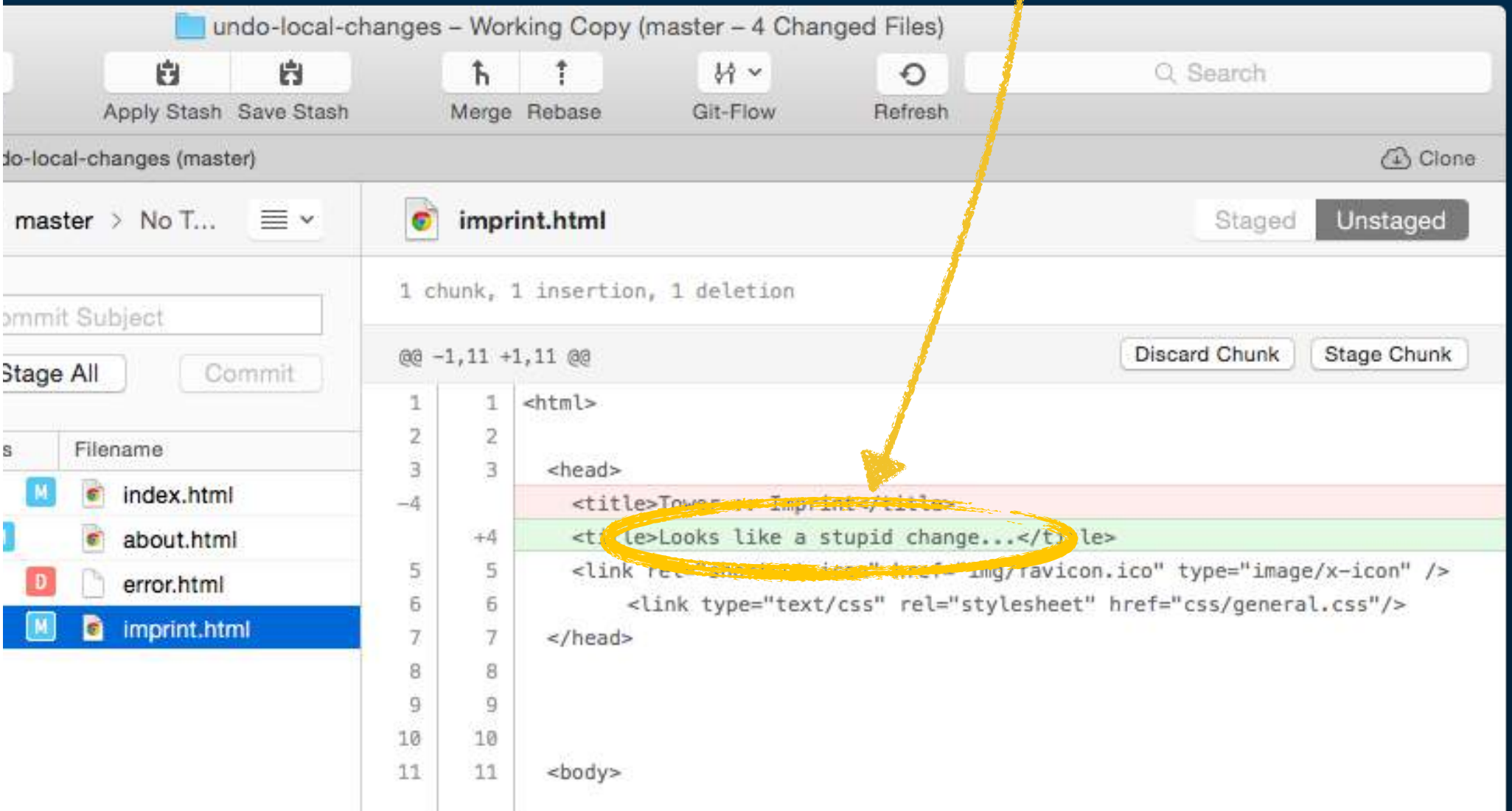
Making changes in a complex software project

#1 Discarding All Local Changes in a File

Apply in cases of:

"Oh my goodness! 🤔 When did I write that?!!"



#1 Discarding All Local Changes in a File

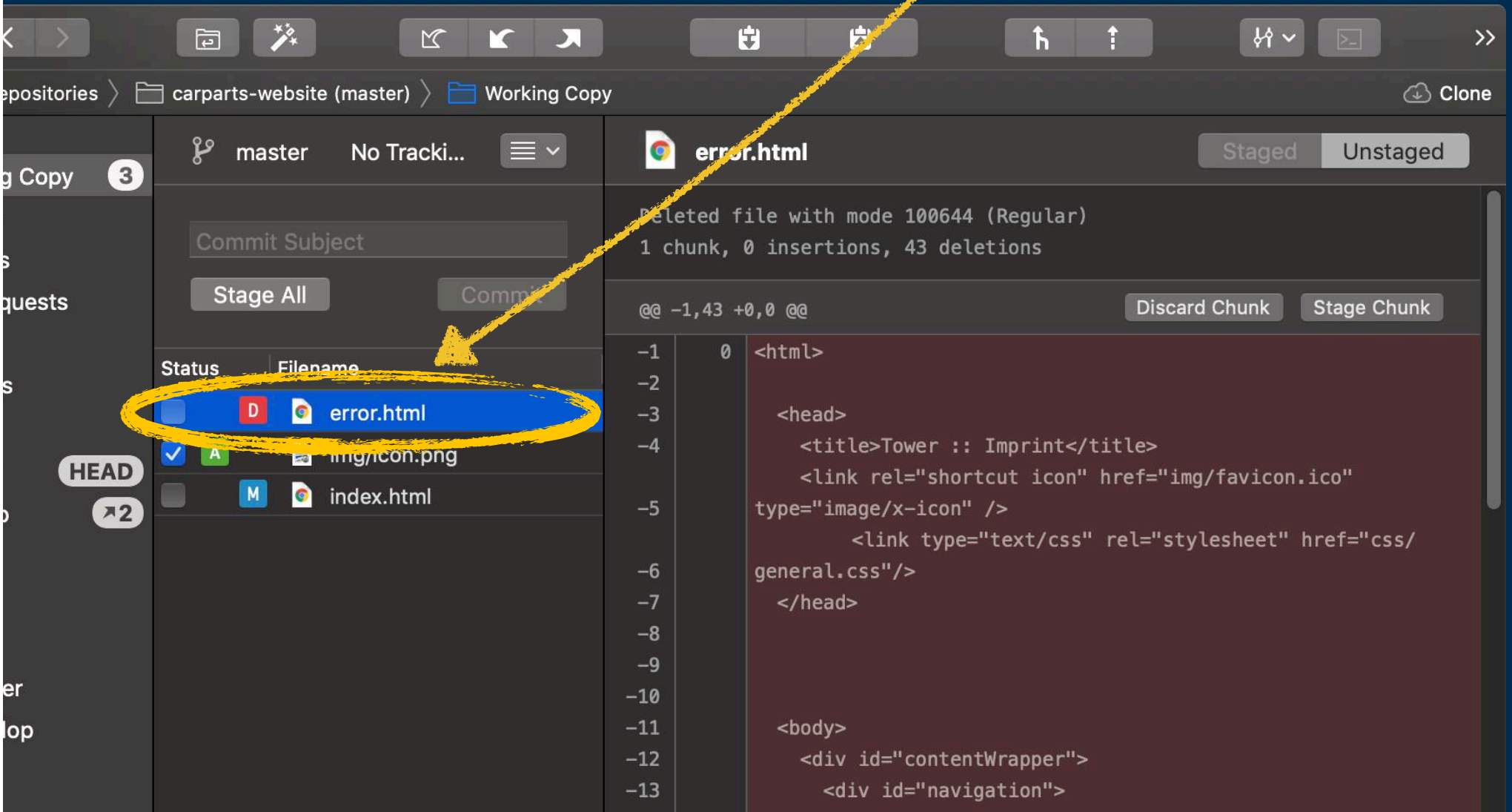
```
$ git checkout HEAD <filename>
```

Discarding uncommitted local changes cannot be undone!

#2 Restoring a Deleted File

Apply in cases of:

“Heavens above! 😳 Why did I delete that?!!”



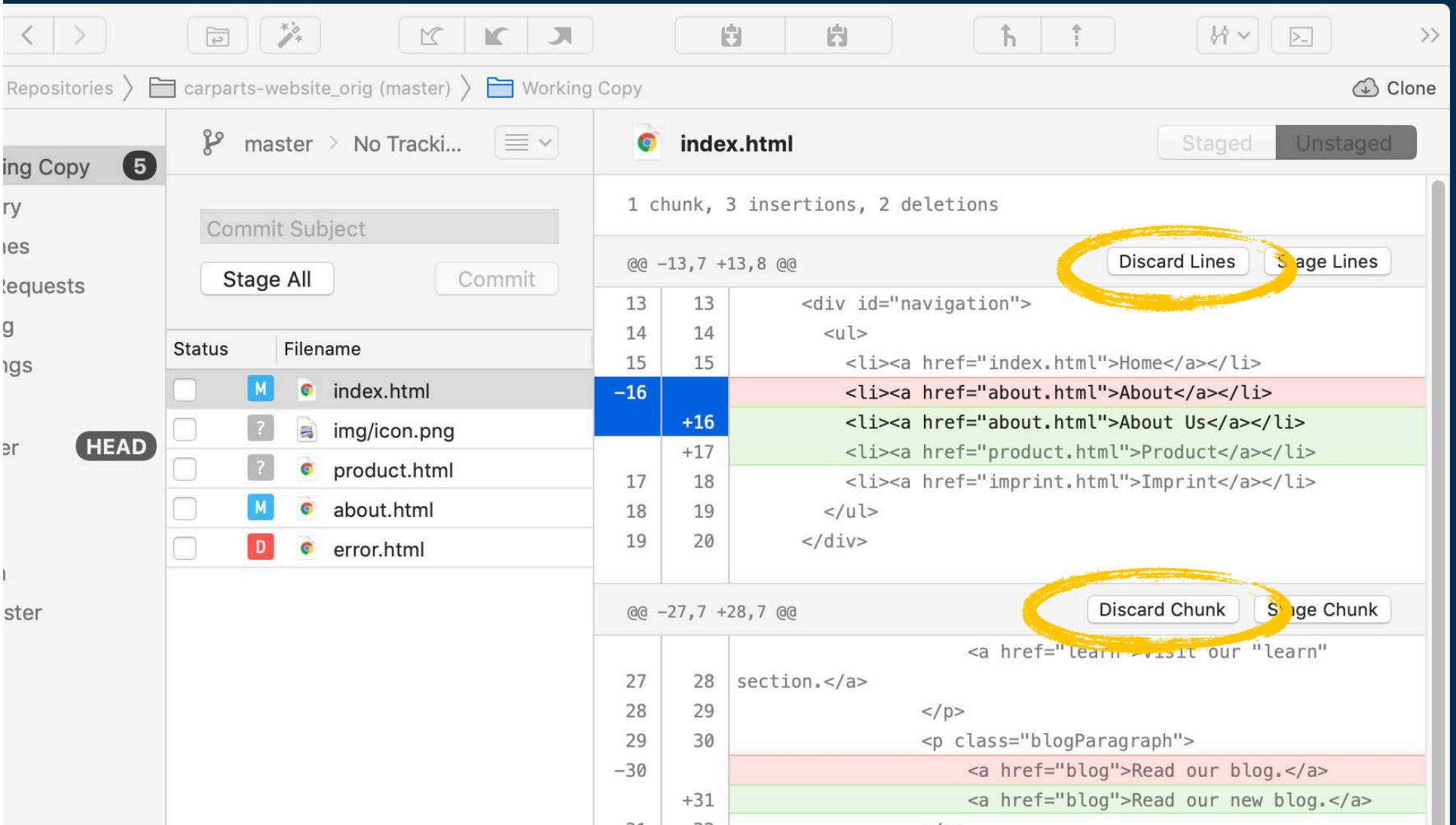
#2 Restoring a Deleted File

```
$ git checkout HEAD <filename>
```

#3 Discarding Chunks / Lines in a File

Apply in cases of:

"Mama mia! 🙄 Was that me?!!"



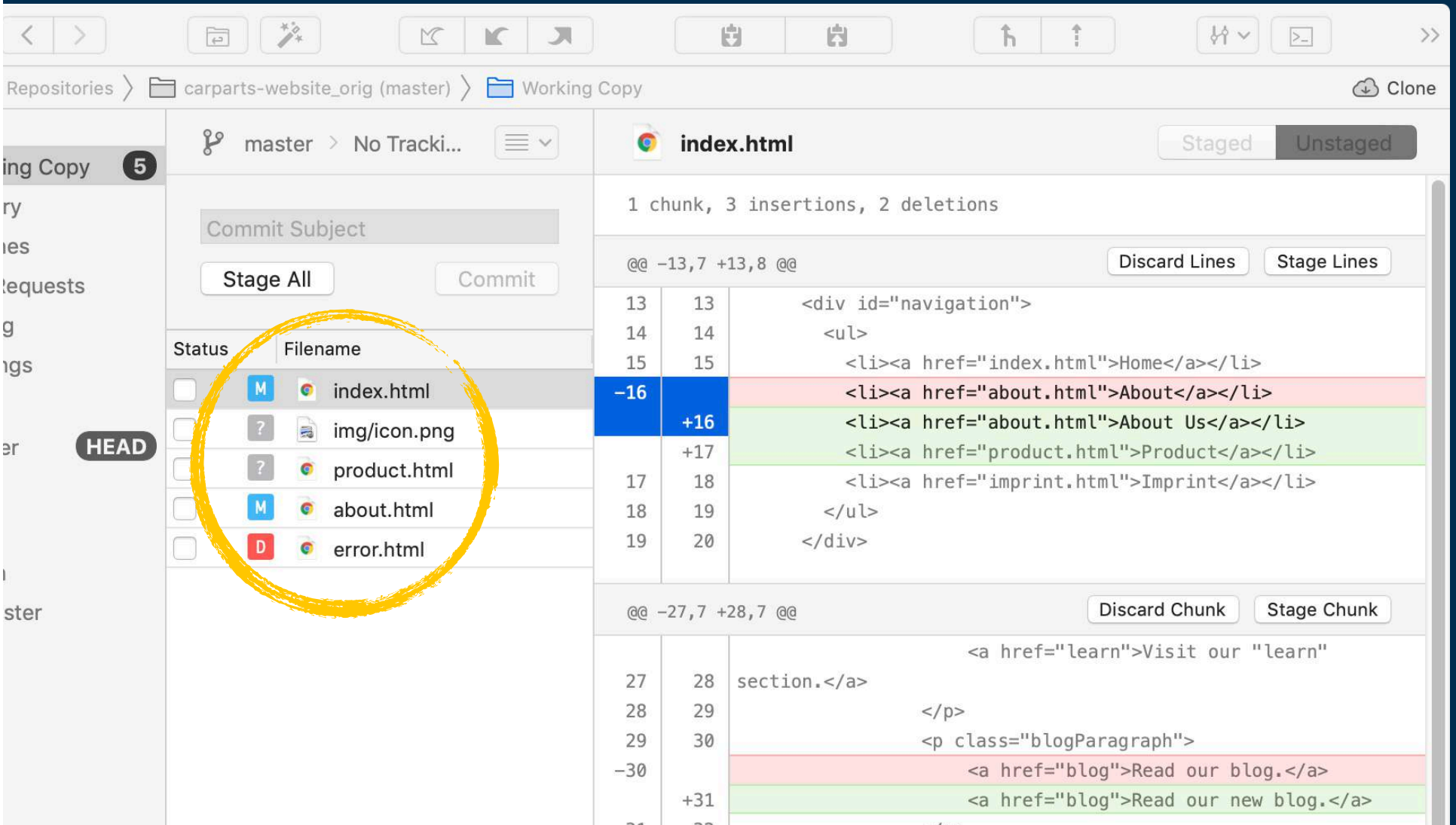
#3 Discarding Chunks / Lines in a File

```
$ git checkout -p <filename>
```

#4 Discarding All Local Changes

Apply in cases of:

“Bloody hell! 🙈 Let’s start over!”



#4 Discarding All Local Changes

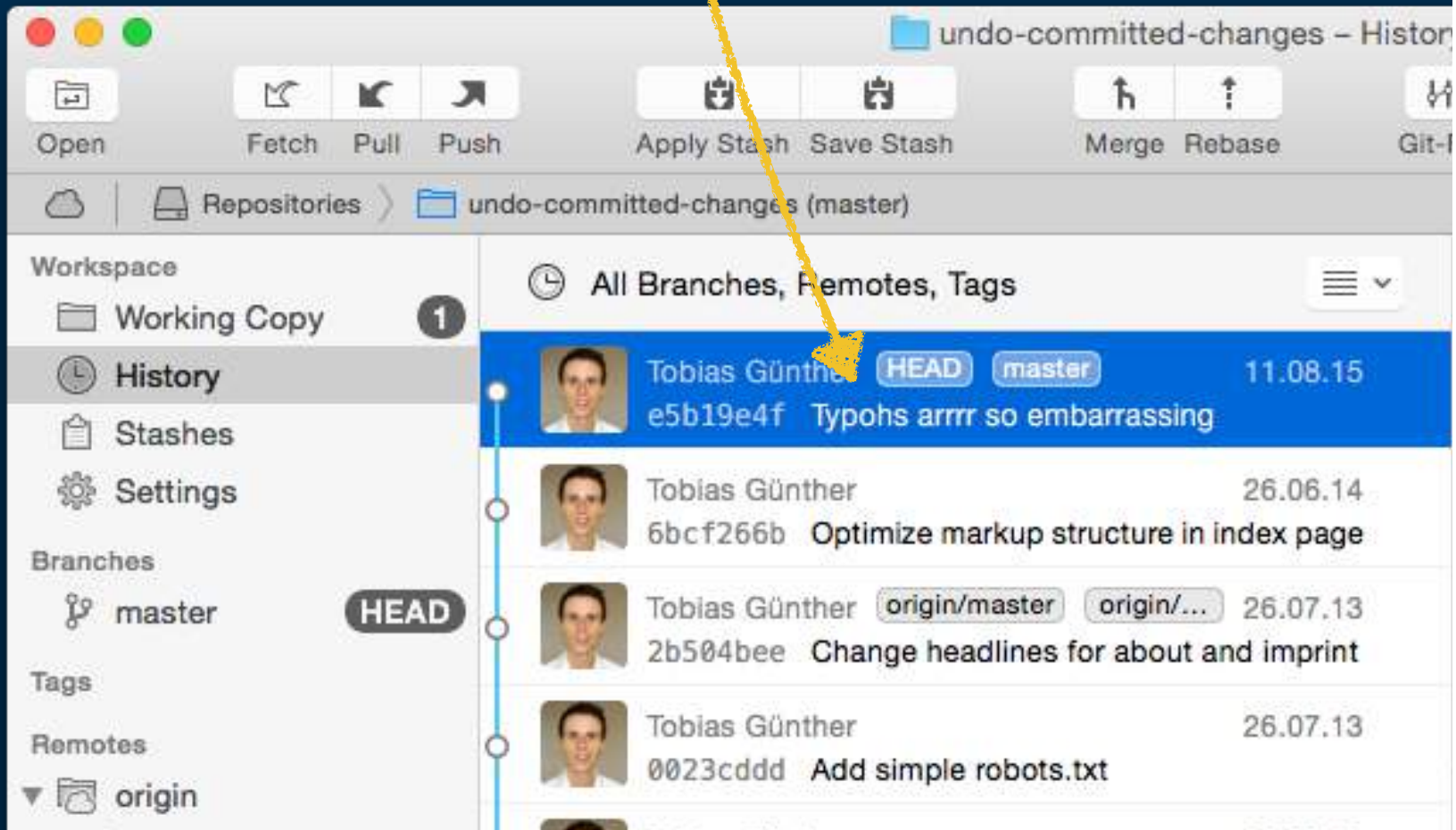
```
$ git reset --hard HEAD
```

Please be careful with this command:
discarding uncommitted local changes cannot be undone!

#5 Fixing the Last Commit

Apply in cases of:

“Holy moly! 😤 Too quick with that commit…”



#5 Fixing the Last Commit

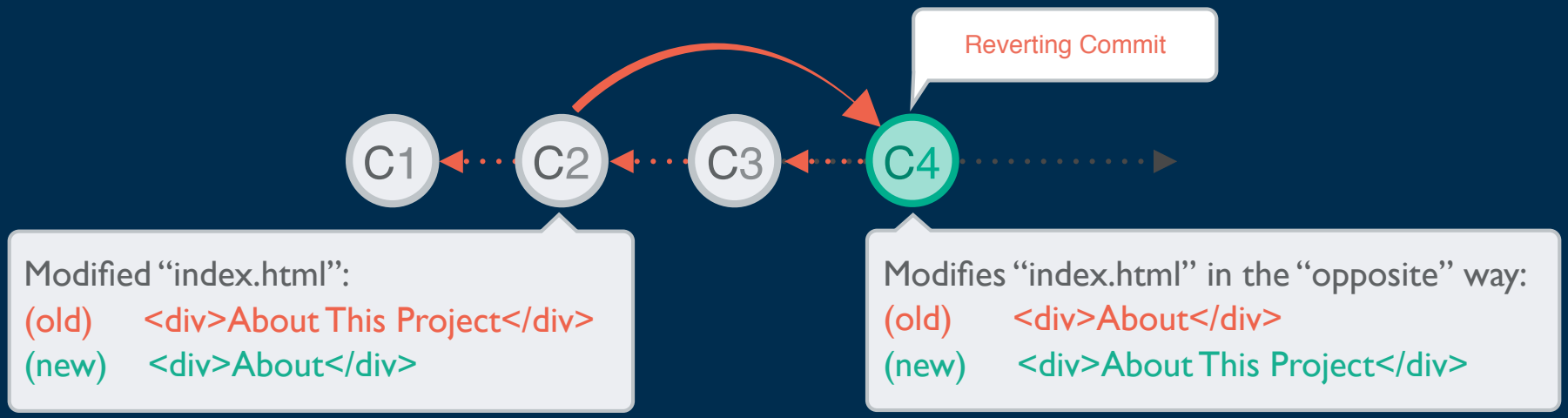
```
$ git commit --amend -m “correct”
```

“--amend” rewrites history! Never change history for commits that have already been pushed to a remote repository!

#6 Reverting a Commit in the Middle

Apply in cases of:

"Deary me! 😖 How can I get rid of that commit?"



"git revert" creates a new commit (C4)
that reverts the effects of a specified commit (C2).

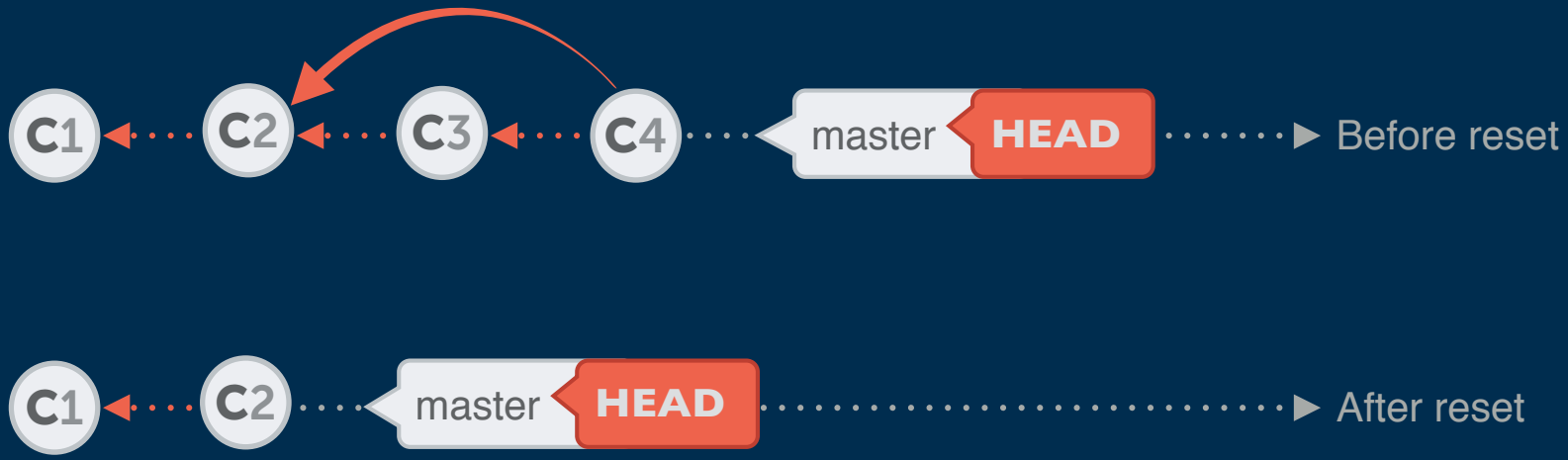
#6 Reverting a Commit in the Middle

```
$ git revert 2b504bee
```

#7 Resetting to an Old Revision

Apply in cases of:

“Good gravy! 😖 I wish I could turn back time…”



“git reset” sets your HEAD pointer (and thereby also your working copy) to an older revision. Commits that came after this revision appear to be undone.

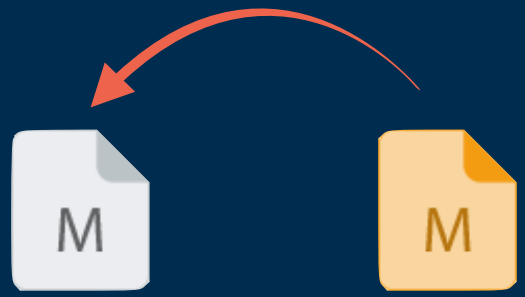
#7 Resetting to an Old Revision

```
$ git reset --hard 0023cdd
$ git reset --mixed 0023cdd
```

#8 Resetting a File to an Old Revision

Apply in cases of:

“Yikes! 🤔 I know this file was correct sometime!”



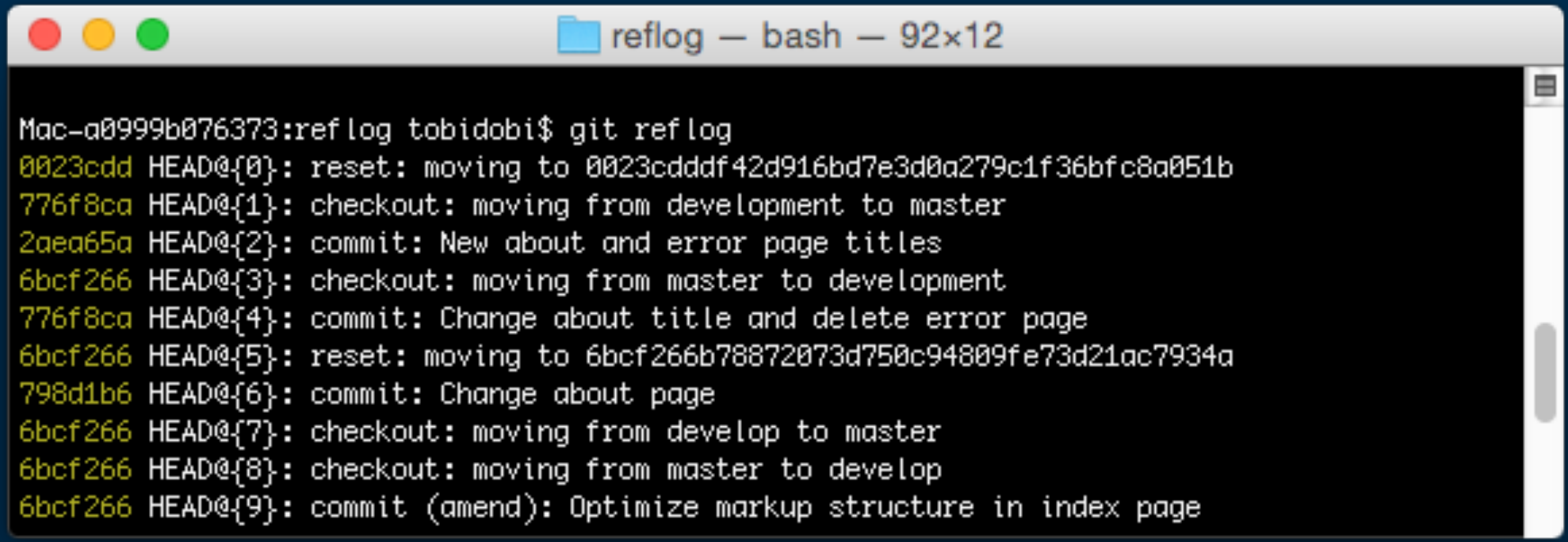
#8 Resetting a File to an Old Revision

```
$ git checkout 6bcf266b -- index.html
```

Intermezzo

Reflog

a journal that logs every
movement of the HEAD pointer



#9 Recovering Deleted Commits

Apply in cases of:

"Sweet baby Jesus! 😱 Did I just delete the wrong commits?!!"

1. You think you want to reset / roll back.

2. You reset.

3. You notice it was a bad idea.

4. You panic. 😱

#9 Recovering Deleted Commits

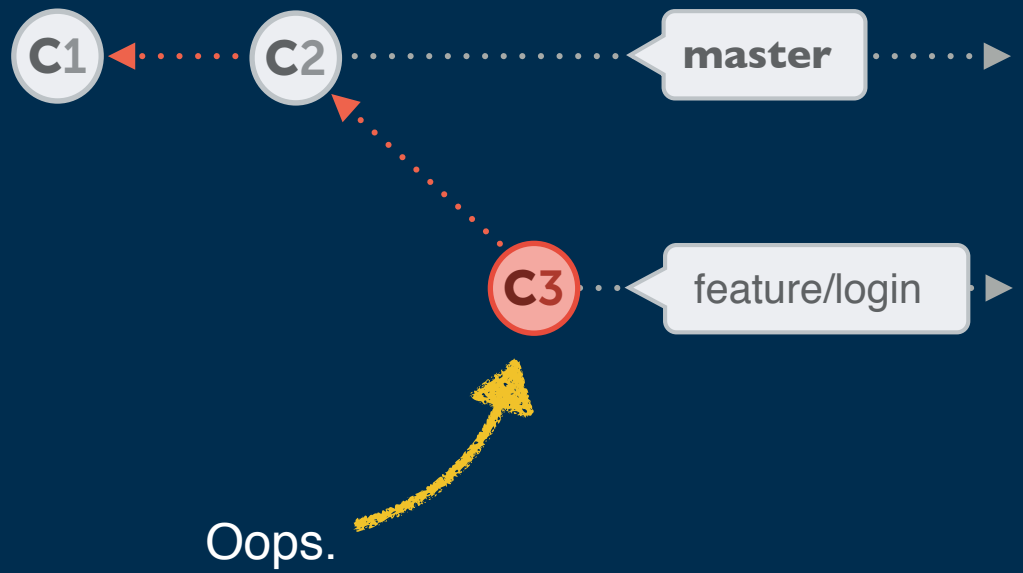
```
$ git reflog
$ git branch happy-ending e5b19e4
```

#10 Recovering a Deleted Branch

Apply in cases of:

"God Almighty! 😵 Did I just delete the wrong branch?!!"

1. You think you don't need a feature branch anymore.
2. You delete it.
3. You notice it was a bad idea.
4. You panic. 😱



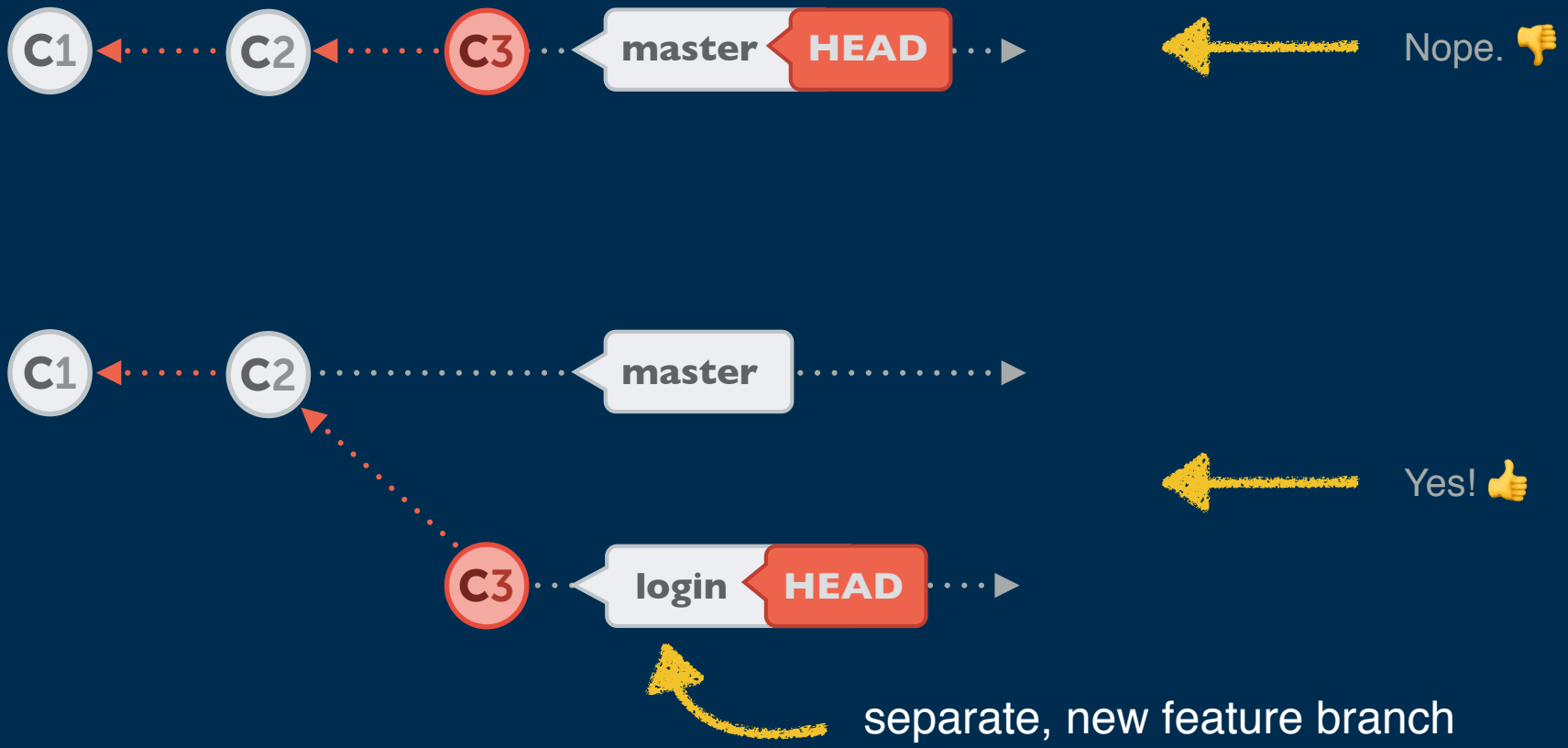
#10 Recovering a Deleted Branch

```
$ git reflog
$ git branch develop b1c249b
```

#11 Moving a Commit to a New Branch

Apply in cases of:

"Damn it! 😣 I should have created a new branch before committing!"



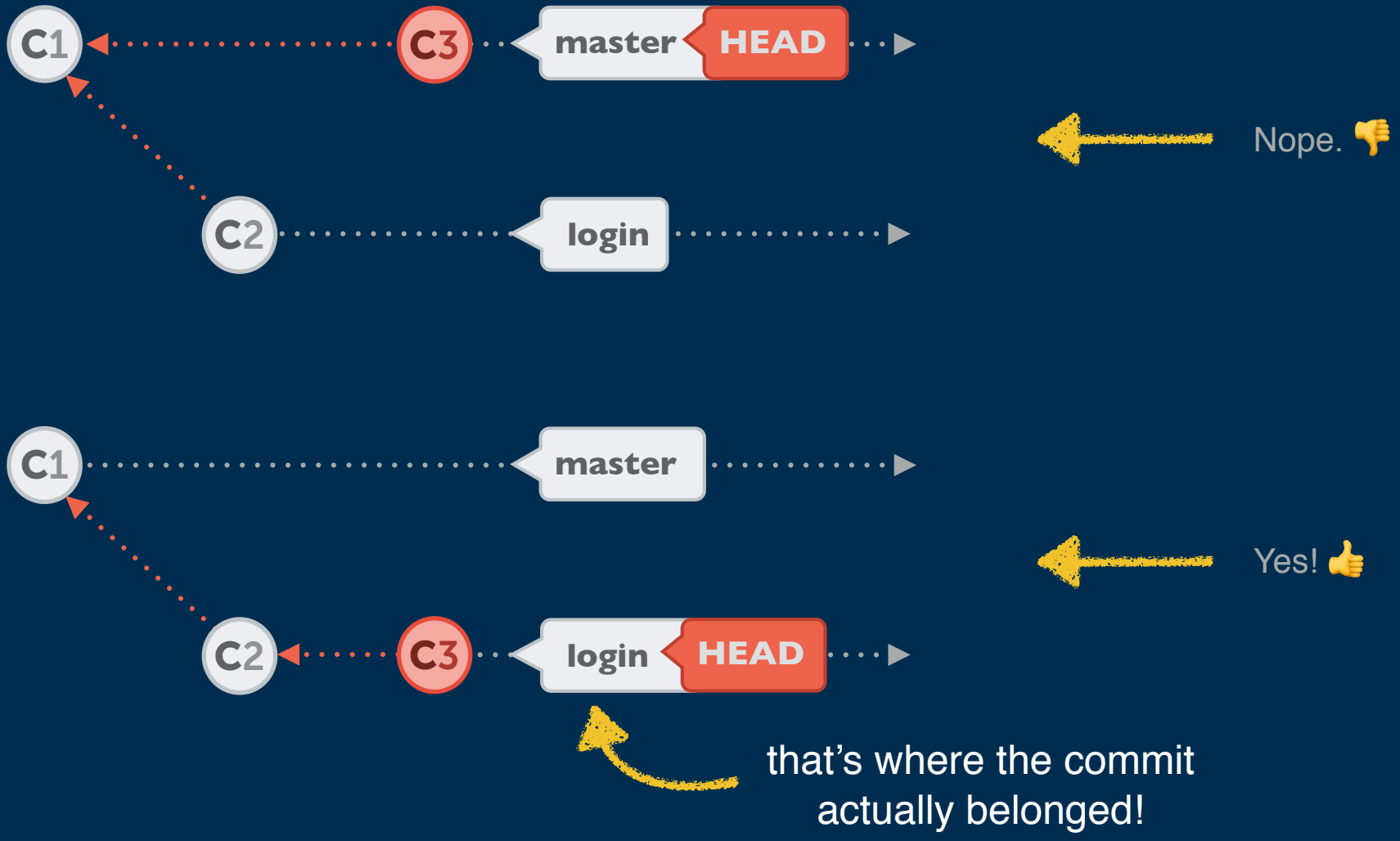
#11 Moving a Commit to a New Branch

```
$ git branch feature/login
$ git reset HEAD~1 --hard
```

#12 Moving a Commit to a Different Branch

Apply in cases of:

"Ay, caramba! 😐 I should have committed this to a different branch!"



#12 Moving a Commit to a Different Branch

```
$ git checkout feature/newsletter
$ git cherry-pick <SHA>
$ git checkout master
$ git reset --hard HEAD~1
```

Intermezzo

Interactive Rebase

the Swiss Army knife of Git tools

(please don’t cut yourself!)

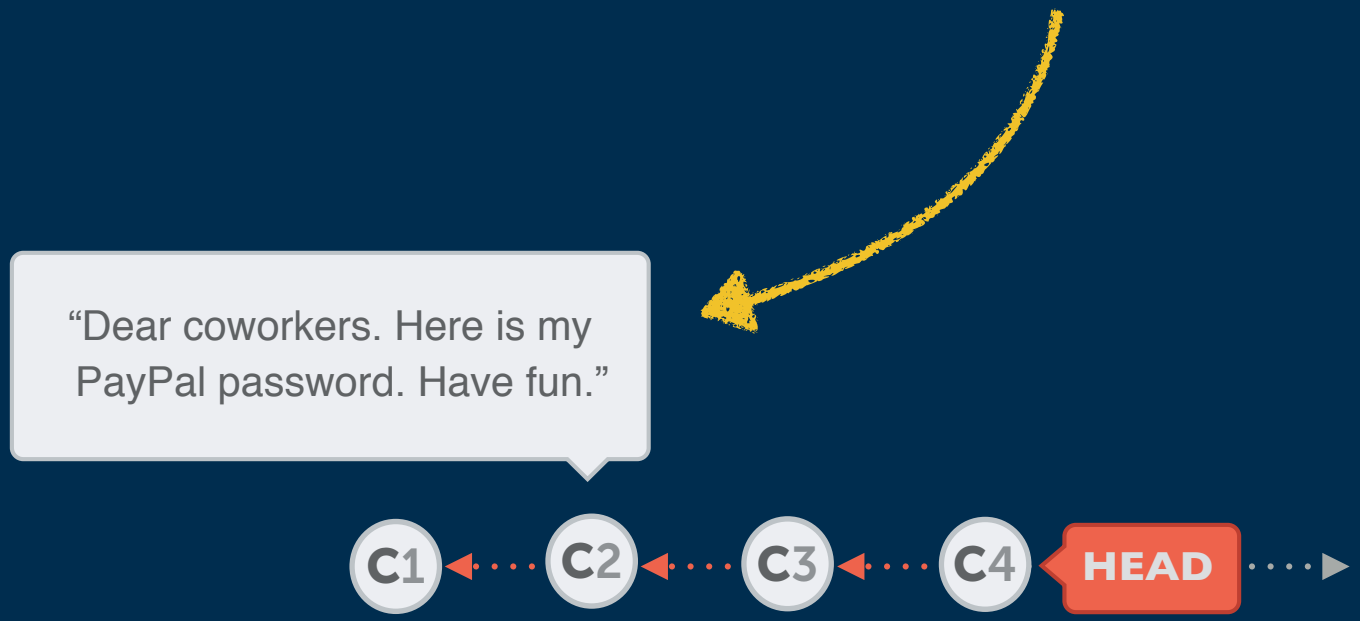
git-rebase-todo — rebase-merge (git: master)

```
1  pick 0023cdd Add simple robots.txt
2  pick 2b504be Change headlines for about and imprint
3  pick 6bcf266 Optimize markup structure in index page
4
5  # Rebase 113adcc..6bcf266 onto 113adcc (3 commands)
6  #
7  # Commands:
8  # p, pick = use commit
9  # r, reword = use commit, but edit the commit message
10 # e, edit = use commit, but stop for amending
11 # s, squash = use commit, but meld into previous commit
12 # f, fixup = like "squash", but discard this commit's log message
```

#13 Editing Old Commit Messages

Apply in cases of:

“Christ on a cracker! 😱 Did I write this commit message?!”



Intermezzo

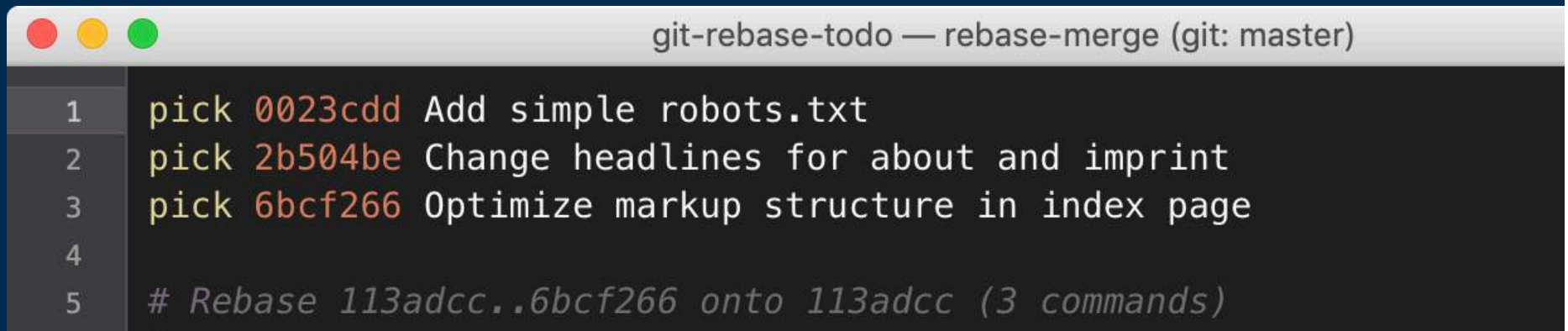
Interactive Rebase

Step by Step

1. How far back do you want to go? What should be the "base" commit?

2.
```
$ git rebase -i HEAD~3
```

3. In the editor, only determine which actions you want to perform.
Don’t change commit data in this step, yet!
Notice: Commits are in "reverse" order!



#13 Editing Old Commit Messages

```
$ git rebase -i HEAD~3

…then use “reword” option
```

#14 Deleting Old Commits

Apply in cases of:

“Knock me over with a feather! 🤔 Did I create that commit?!”

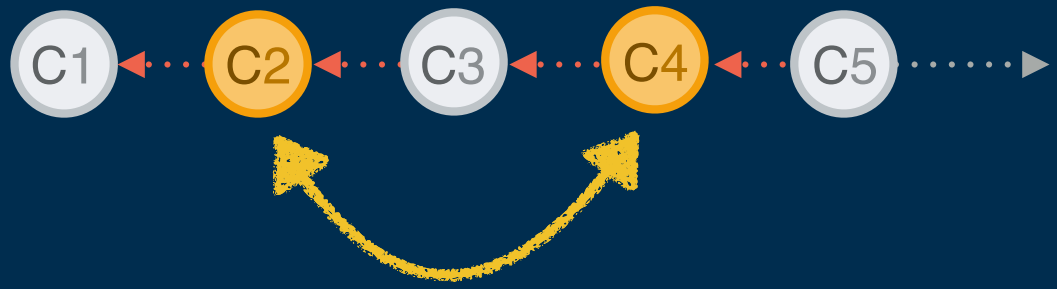
#14 Deleting Old Commits

```
$ git rebase -i HEAD~3

…and remove lines for unwanted commits
```

#15 Squashing Multiple Commits Into One

Apply in cases of:

“Holy cow! 🐮 Why did I create so many commits??”



let’s combine these
two into one

#15 Squashing Multiple Commits Into One

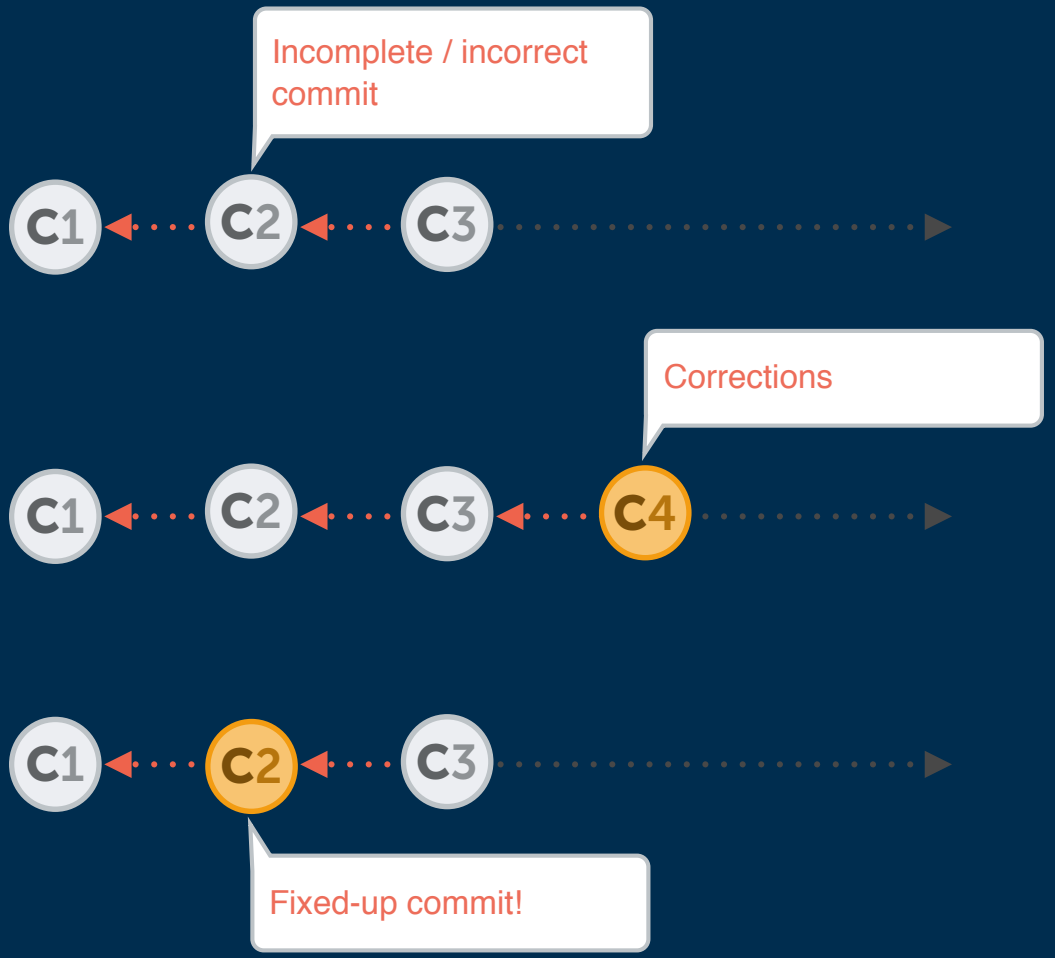
```
$ git rebase -i HEAD~3

…then use “squash” option
```

#16 Adding a Change to an Old Commit

Apply in cases of:

"Jiminy Cricket! 🤫 I forgot to add a change!"

1. You forgot to commit something - or simply made a mistake!
2. You add your corrections in a normal commit - but with --fixup
3. Your changes are added to the original commit.



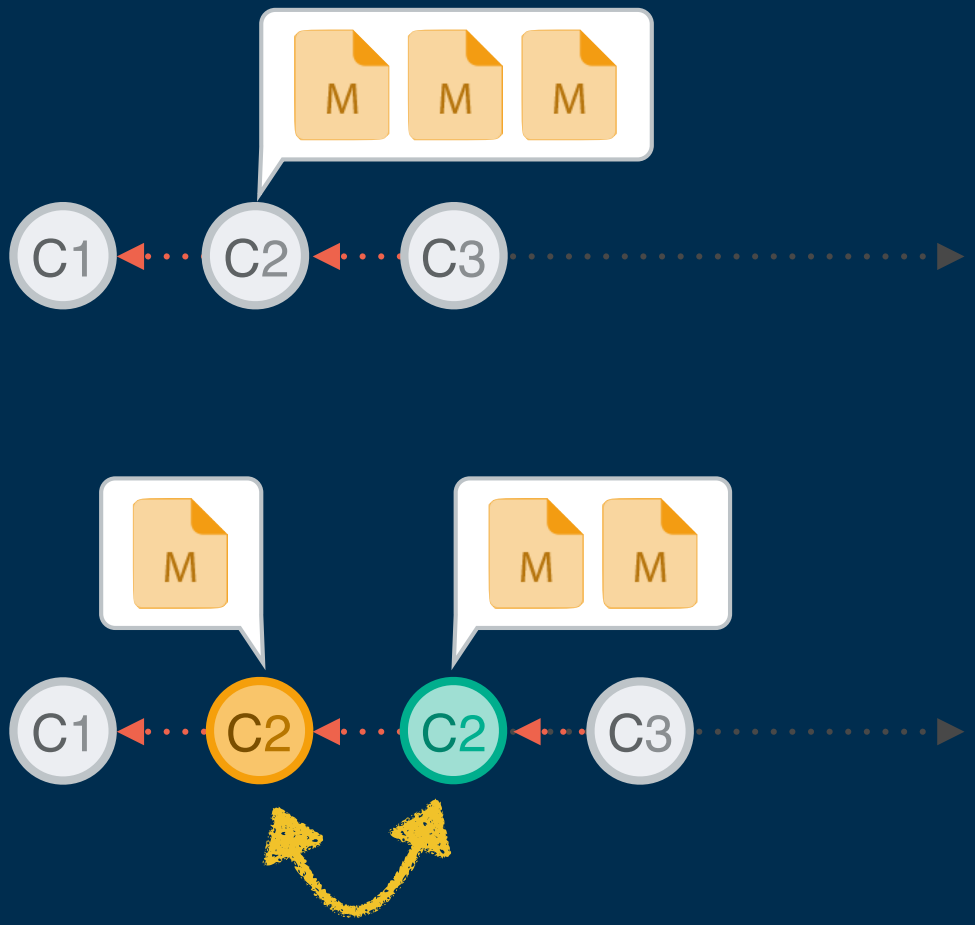
#16 Adding a Change to an Old Commit

```
$ git commit --fixup 2b504bee
$ git rebase -i --autosquash HEAD~4
```

#17 Splitting / Editing an Old Commit

Apply in cases of:

“Great Ceasar! 😕 Can I retry this commit once more?”



Attention!

Caution When Rewriting History!

Do NOT rewrite commit history that has already been pushed to a remote repository!

```
$ git commit --amend
$ git rebase
$ git rebase -i
$ git reset
…
```

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