An Introduction to Git and Github

Poruri Sai Rahul,
Software Developer,
Enthought Inc.

Why?

- Why?
- What?
  - Git
  - GitHub
- How?
  - Basic
  - Advanced

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Why?

- Made a change to code, realised it was a mistake and wanted to revert back?
- Lost code or had a backup that was too old?
- Had to maintain multiple versions of a product?
- Wanted to see the difference between two (or more) versions of your code?
- Wanted to prove that a particular change broke or fixed a piece of code?

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Why? (continued)

- Wanted to review the history of some code?
- Wanted to submit a change to someone else's code?
- Wanted to share your code, or let other people work on your code?
- Wanted to see how much work is being done, and where, when and by whom?
- Wanted to experiment with a new feature without interfering with working code?

Source - https://goo.gl/GoW6My

What?

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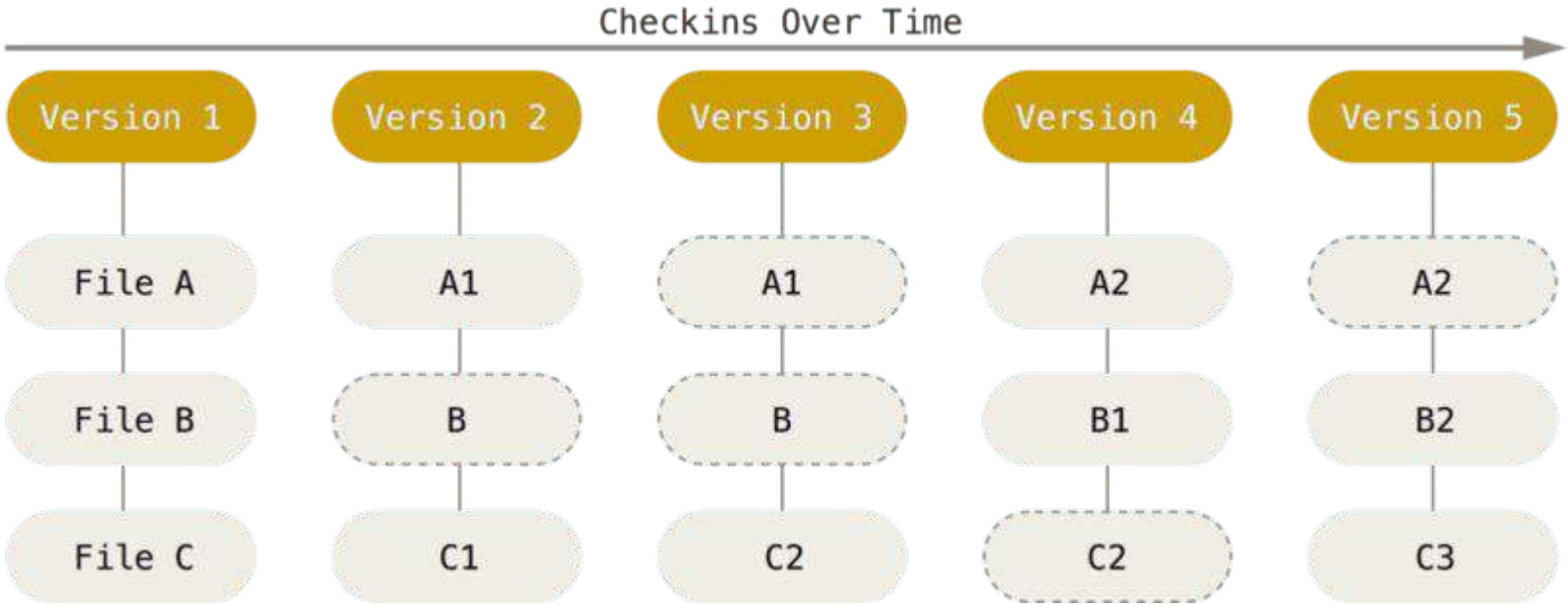
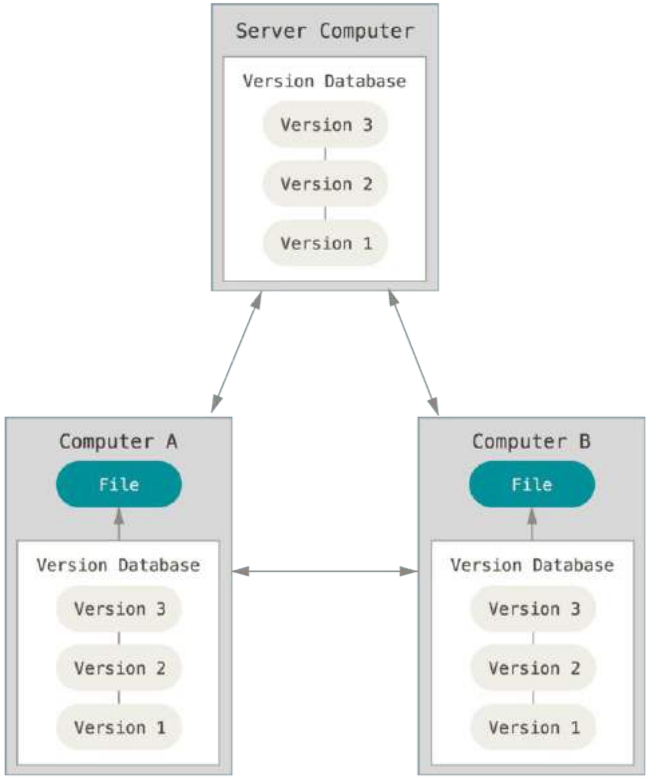
What? - Git

- One of many Distributed Version Control Software
- Hg and SVN are two other popular alternatives

What? - Git (continued)



What? - Distributed Version Control software



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What? - Github

- For a beginner - it’s a place to backup all of your code
- For a professional - it’s a place to collaboratively develop software

How?

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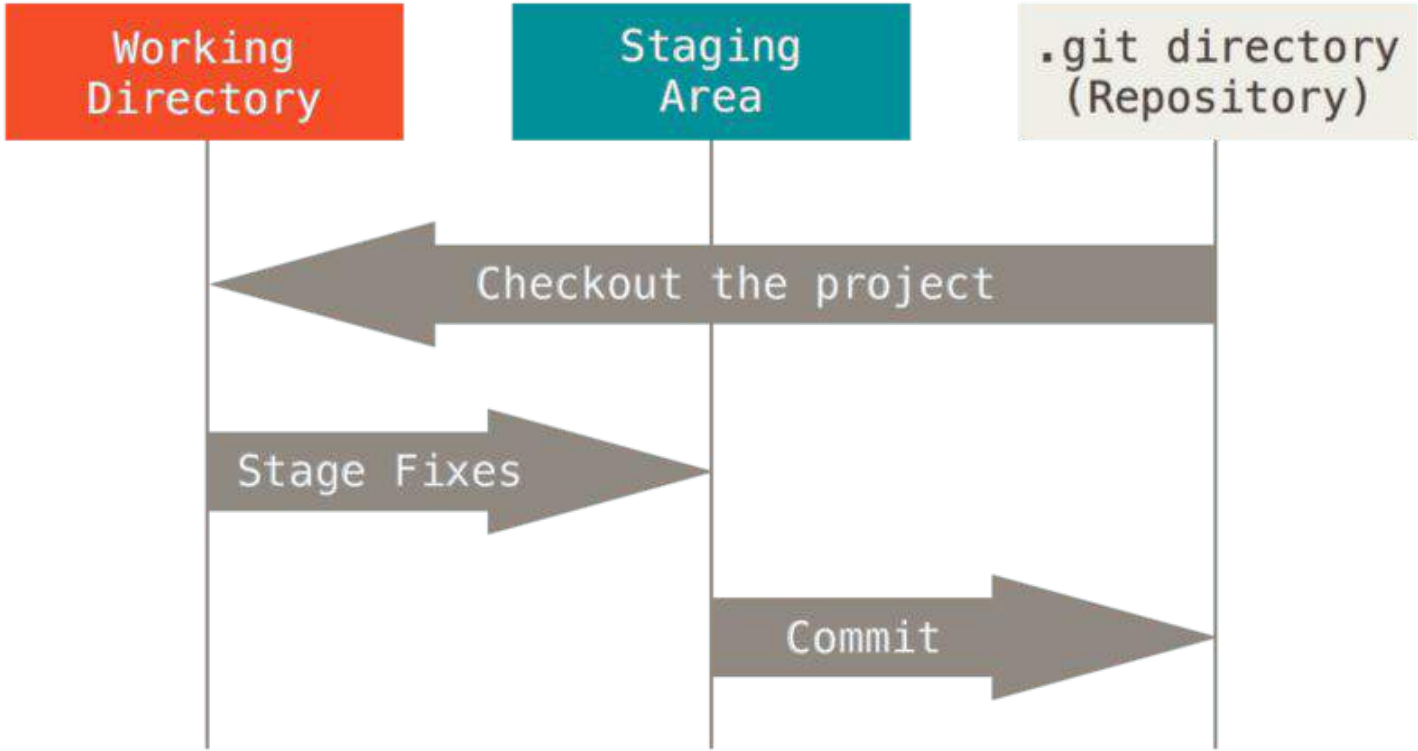
How? - Workflows

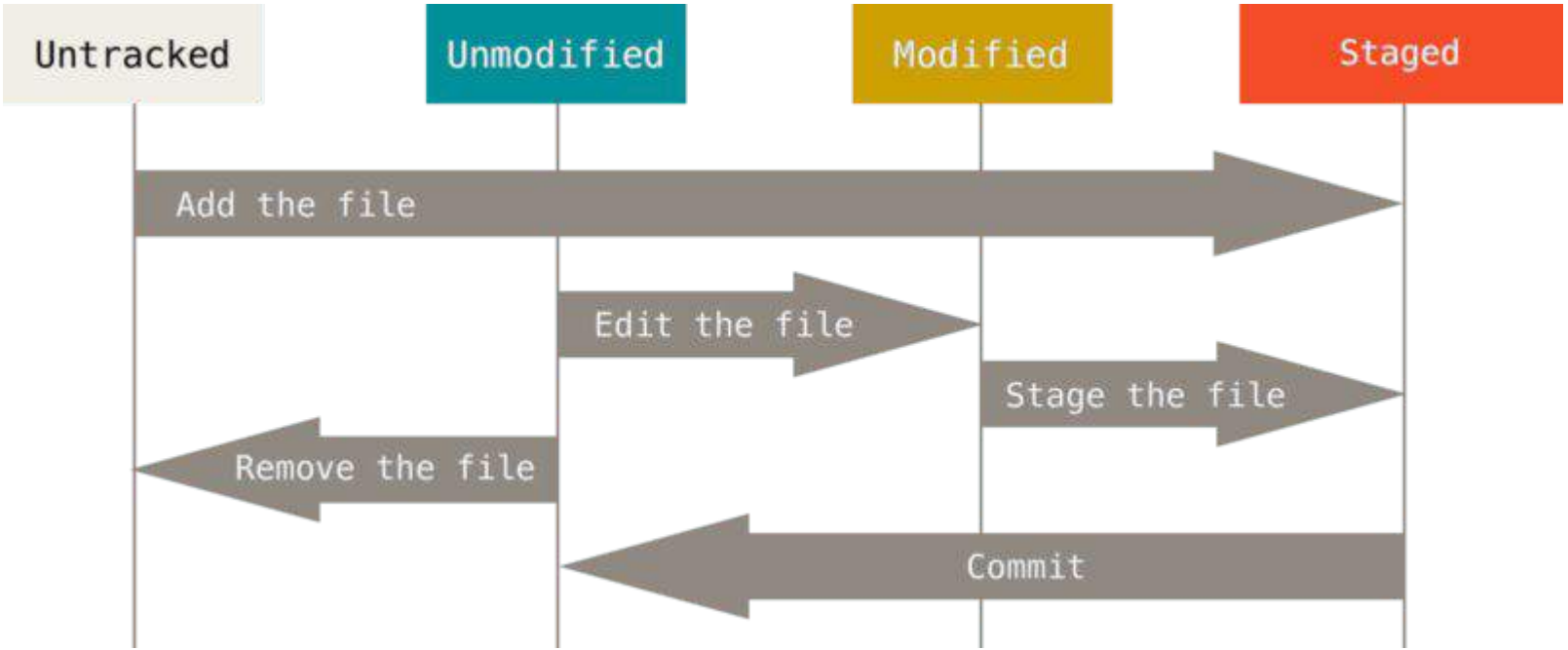
- A Basic workflow, which introduces commands for single user to get up and running with Git.
- An advanced workflow, which introduces commands that allow multiple users to work on the same repository(?).

repository - a directory being tracked/versioned using Git.

How? - Basic Workflow



How? - Basic Workflow (continued)



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How? - Basic Workflow

- `git add ‘file-name’`
- `git commit -m “commit message”`
- `git push`

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How? - Basic workflow (continued)

- What is happening behind the scenes?

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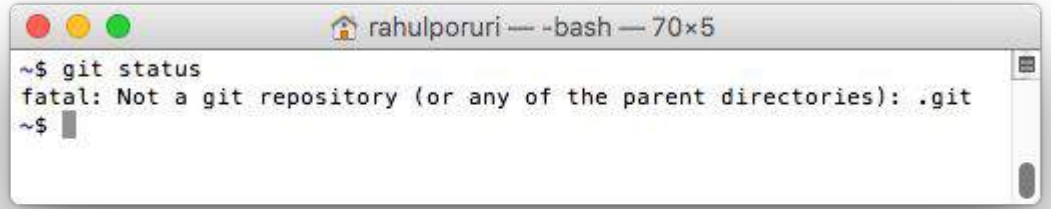
First mistake - Not a Git repository



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Second mistake - defaults aren't set

```
ab-tmp (master)$ git commit
[master (root-commit) cfa7b85] ealsdjaldfkj
 Committer: Poruri Sai Rahul <rahulporuri@Prashants-MacBook-Pro.local>
Your name and email address were configured automatically based
on your username and hostname. Please check that they are accurate.
You can suppress this message by setting them explicitly:

    git config --global user.name "Your Name"
    git config --global user.email you@example.com

After doing this, you may fix the identity used for this commit with:

    git commit --amend --reset-author

 1 file changed, 0 insertions(+), 0 deletions(-)
 create mode 100644 me
```

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Third mistake - Origin hasn't been set

```
[ab-tmp (master)$ git push
fatal: No configured push destination.
Either specify the URL from the command-line or configure a remote repository using

    git remote add <name> <url>

and then push using the remote name

    git push <name>
```

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What? - Basic workflow (continued)

Helpful commands

- `git log`
- `git show ‘commit-hash’`
- `git commit  --amend`
- `git reset HEAD^`
- `git diff ‘file-name’`

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Advanced Workflow

- `git branch ‘branch-name’`
- `git checkout ‘branch-name’`
- `git add`
- `git commit`
- `git push origin ‘branch-name’`
- `git merge ‘branch-name’`

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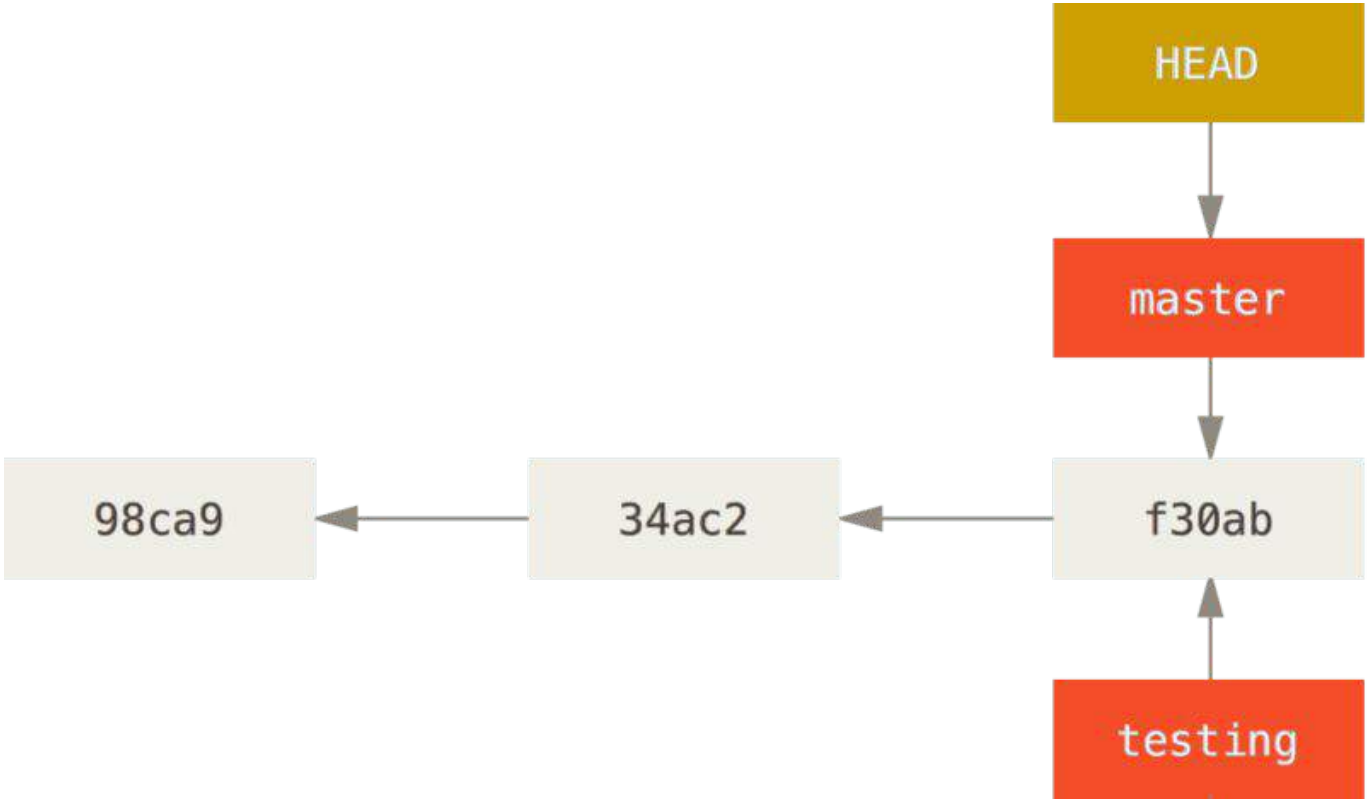
How? - Advanced Workflow (continued)

- What's happening behind the scenes?

What? - Advanced Workflow (continued)



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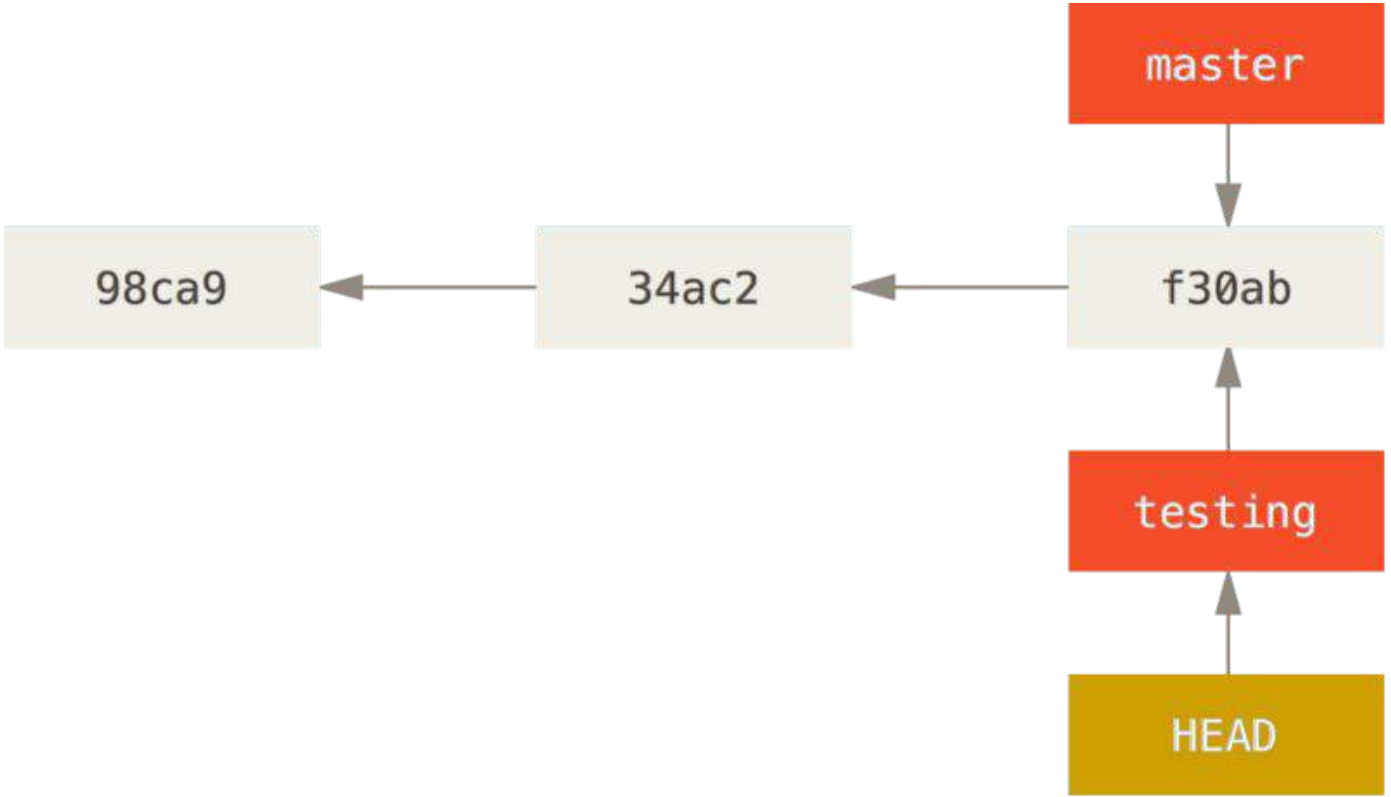

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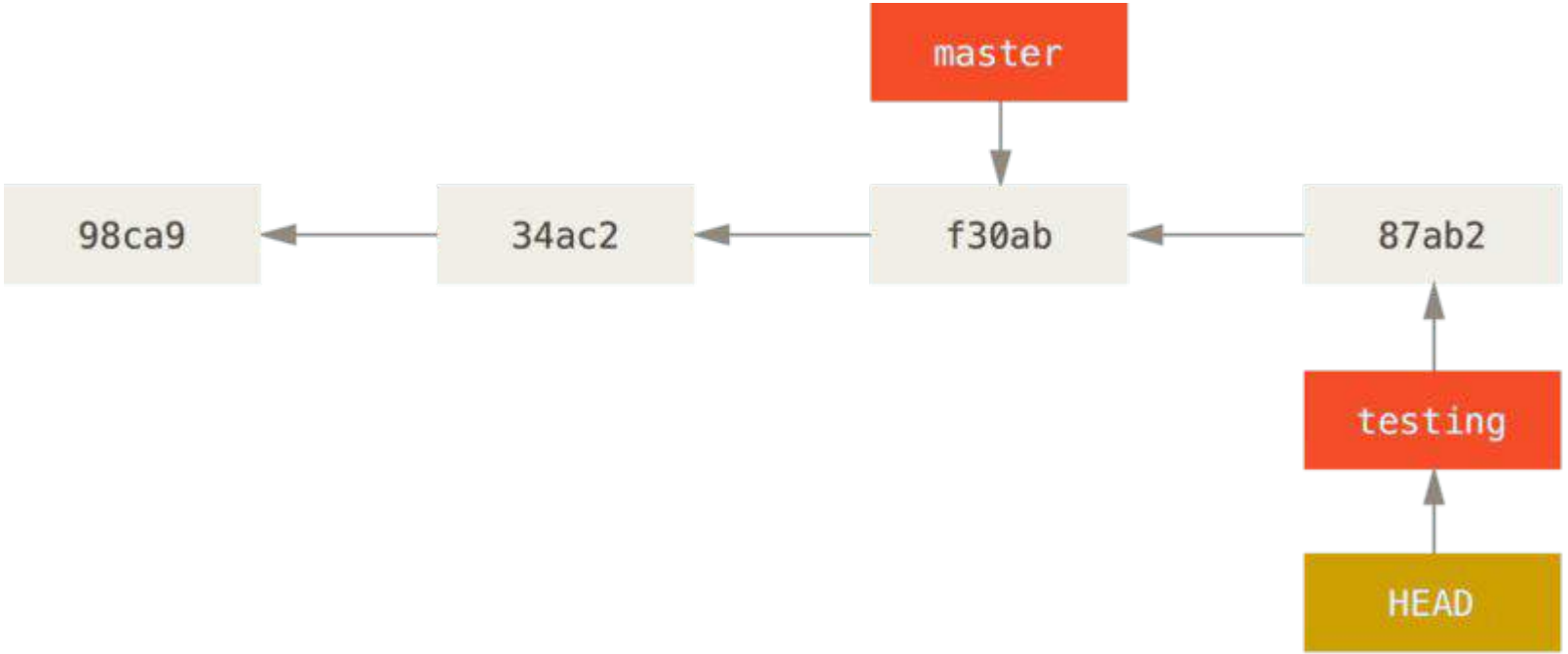

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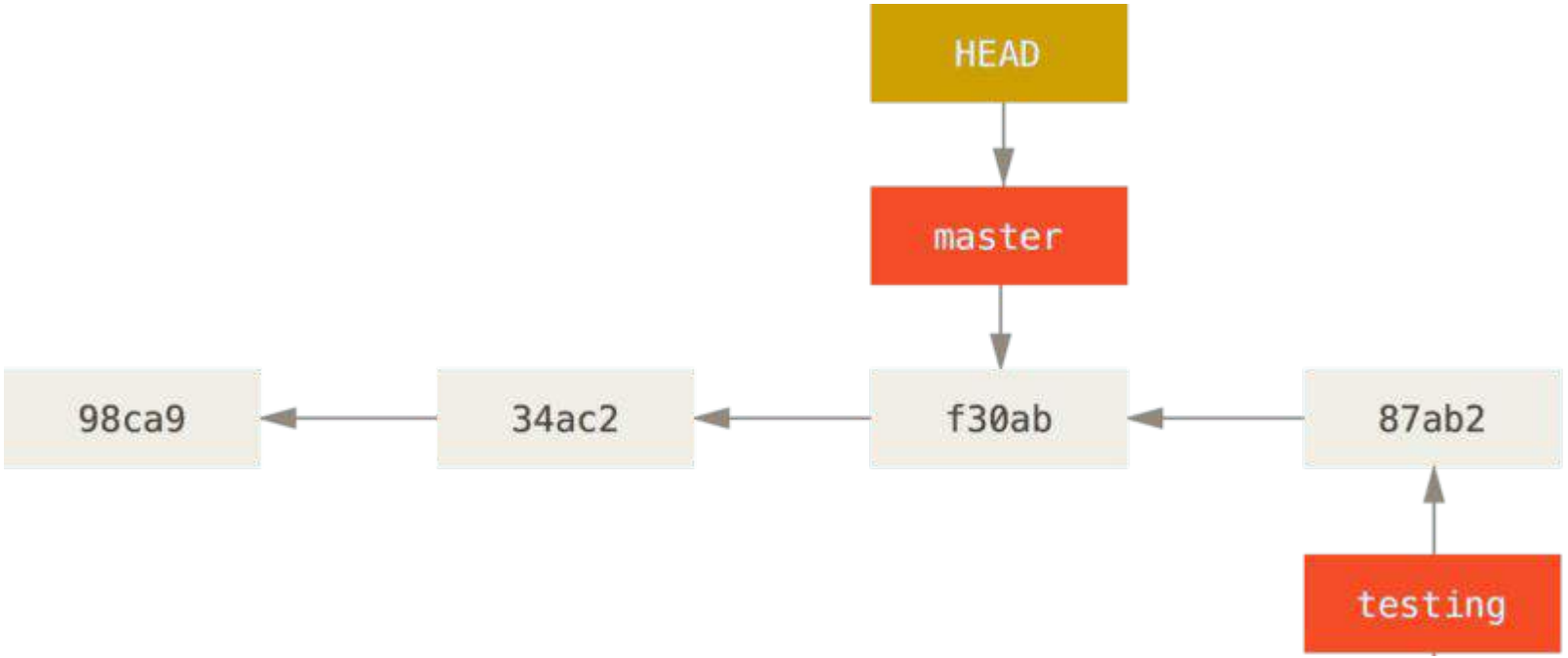

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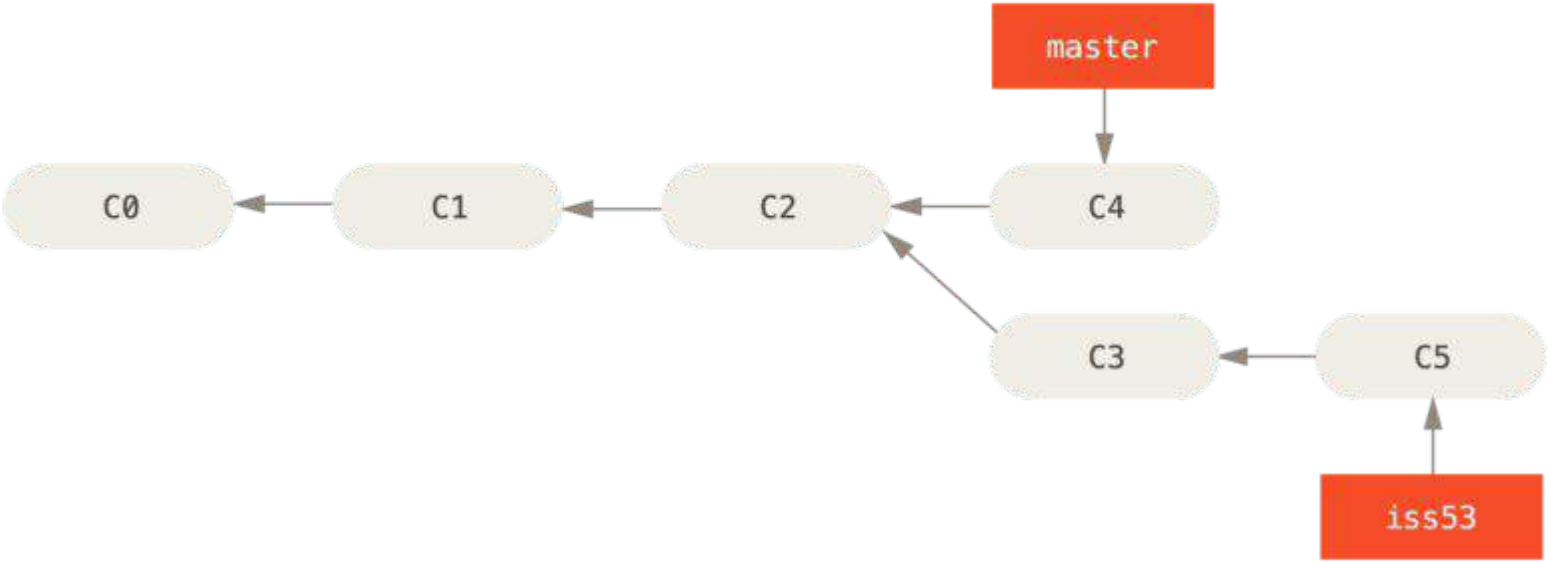

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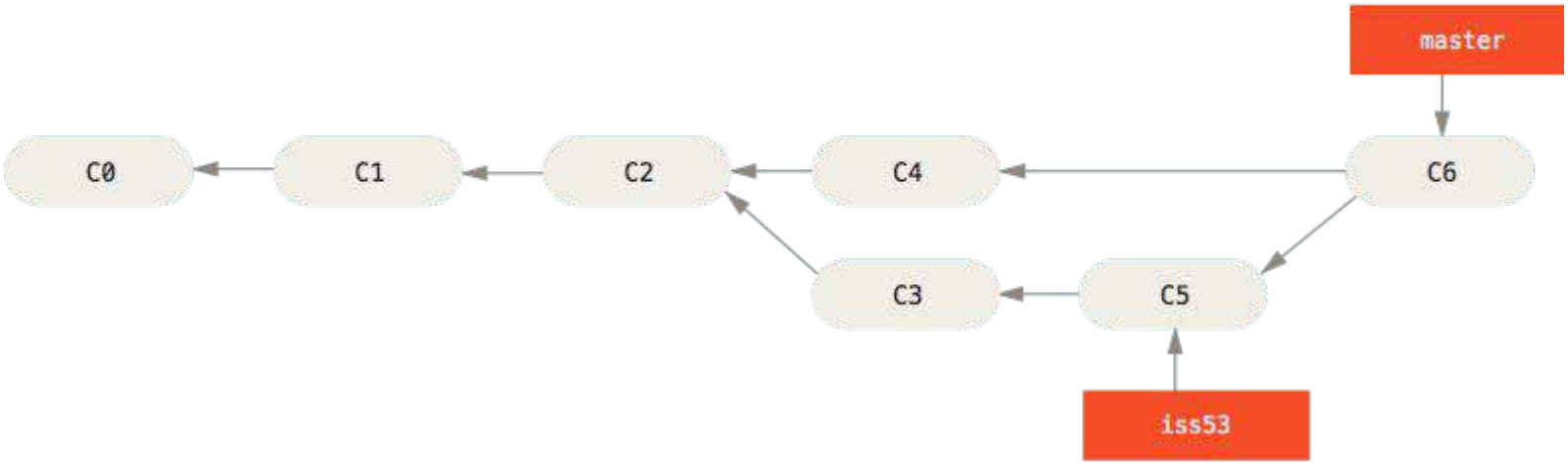

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How? - Advanced Workflow (continued)

Helpful commands

- `git branch -l`
- `git branch -d ‘branch-name’`

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Fourth mistake - Merge conflicts

```
[ab-tmp (test)$ git checkout master
Switched to branch 'master'
[ab-tmp (master)$
[ab-tmp (master)$ git merge test
Auto-merging me
CONFLICT (content): Merge conflict in me
Automatic merge failed; fix conflicts and then commit the result.
[ab-tmp (master|MERGING)$ git status
On branch master
You have unmerged paths.
  (fix conflicts and run "git commit")

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

        both modified:   me

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

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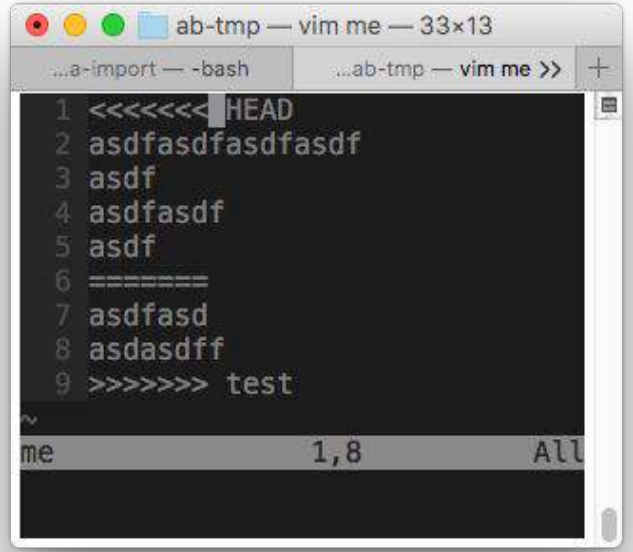
Fourth mistake - Merge conflicts (continued)



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Time travel using Git

- Using `git checkout` to travel back in time.

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Correcting your mistakes

- Using `git revert 'commit-hash'` to correct your mistakes

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Rewriting history

- Using `git reset 'commit-hash'` to undo commits and bring back changes to the staging area.

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Prepare for mind=blown

- `git bisect` and how it can be used to pinpoint breaking changes.
- Followed by `git blame` to play the blame game

Credits

- All images are from - https://git-scm.com/book/en/v2/, which is awesome.