

What is version control?

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- ▶ You don't have to worry about accidentally losing or deleting code.
- ▶ You can experiment and reset to a known good state.
- ▶ Makes collaborating with others easier.

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What is git?

- ▶ 'the stupid content tracker'
- ▶ Distributed - everything is kept on your local machine.
- ▶ 'Repository' - a collection of code and history.
- ▶ 'Commit' - a chunk of saved changes.

Getting Started

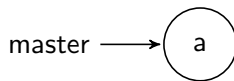
- ▶ `git init` Makes a new empty git repository.
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- ▶ `git status` Shows the status of the repository.

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- ▶ `git config --global user.name NAME`
- ▶ `git config --global user.email EMAIL`

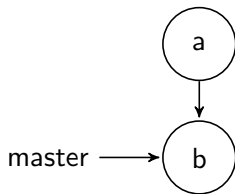
Committing

```
git commit -m ''a''
```



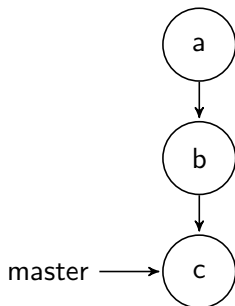
Committing

```
git commit -m ''b''
```



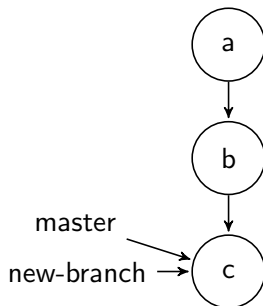
Committing

```
git commit -m ''c''
```



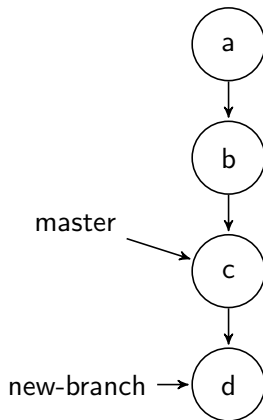
Branching

```
git checkout -b new-branch
```

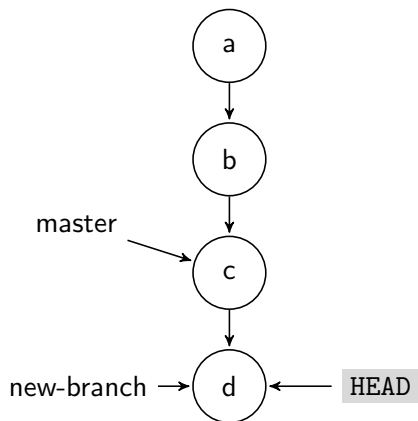


Branching

```
git commit -m ''d''
```

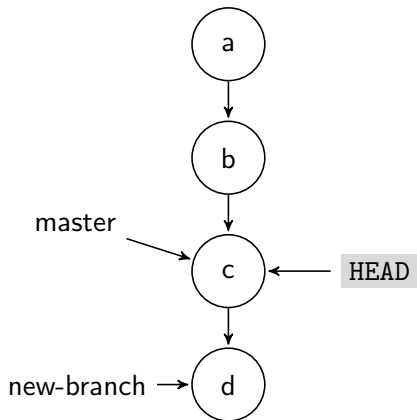


Branching



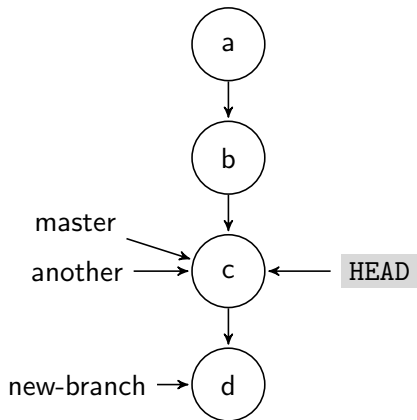
Branching

```
git checkout master
```



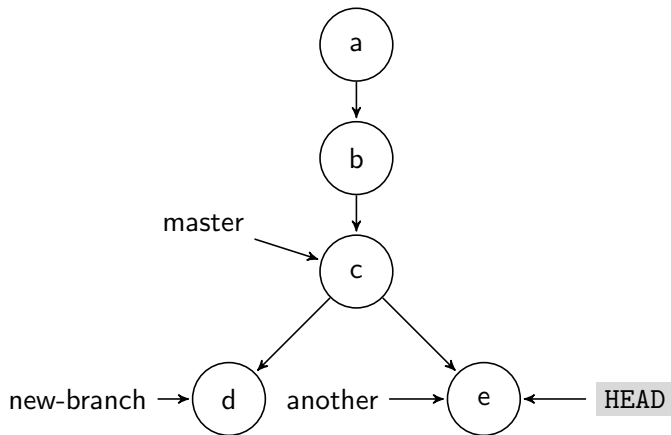
Branching

```
git checkout -b another
```



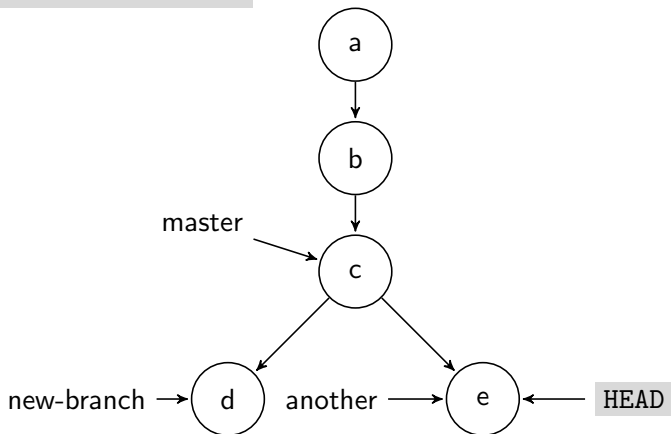
Branching

```
git commit -m ''e''
```



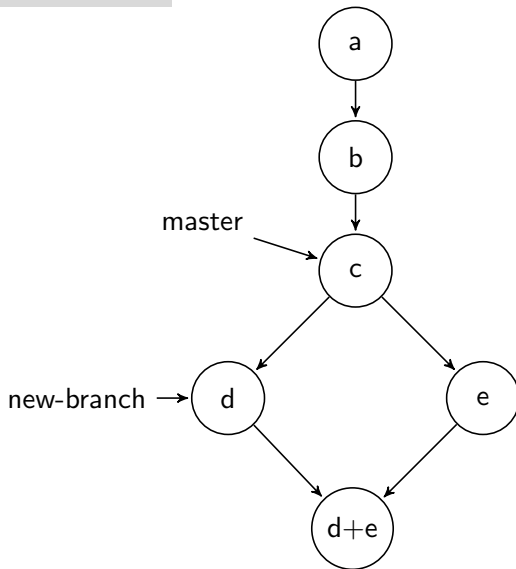
Merging

```
git merge new-branch
```



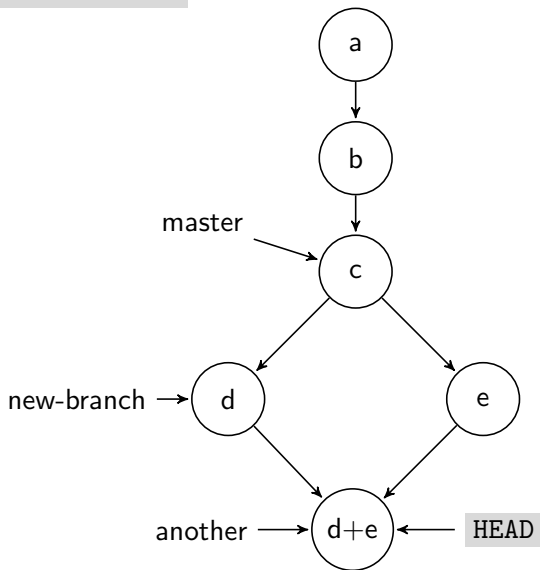
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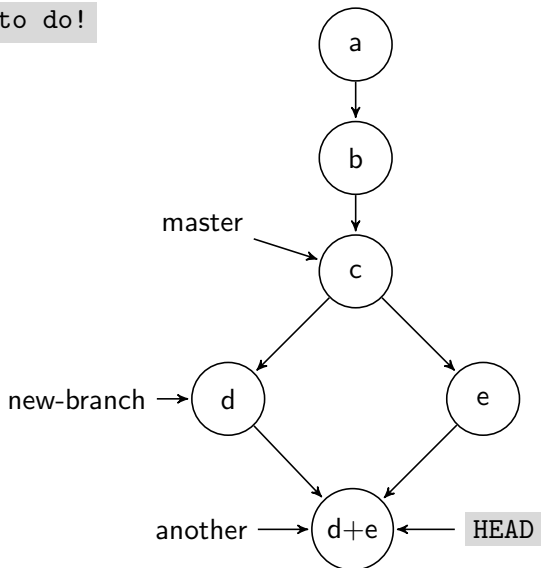
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```



Merging

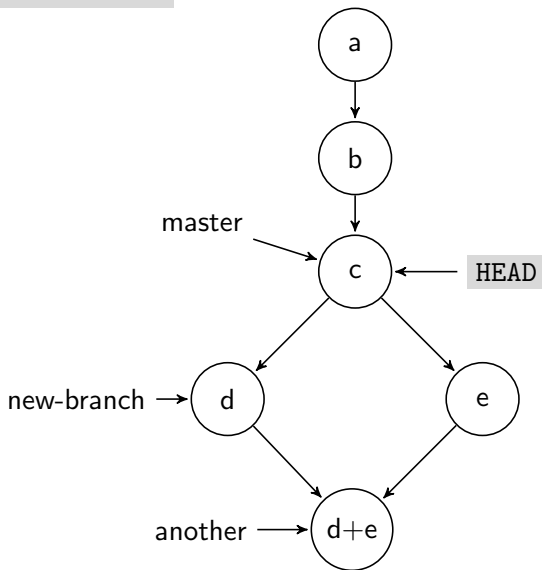
```
git merge master
```

Nothing to do!



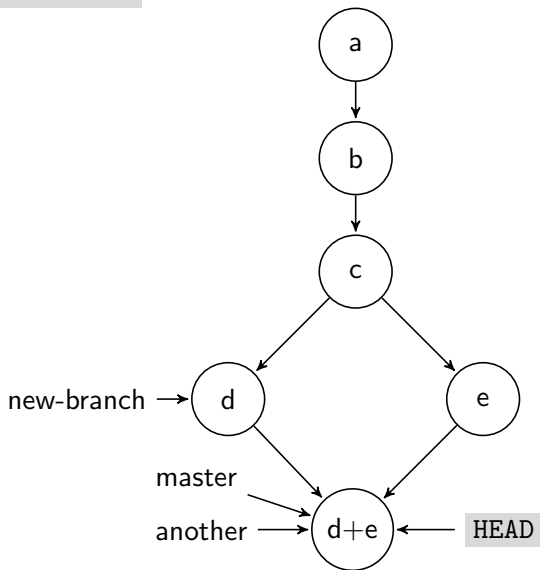
Merging

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git checkout master
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Merging

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git merge another
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Merge conflicts

```
CONFLICT (content): Merge conflict in the-file.txt
Automatic merge failed; fix conflicts and then commit
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```
In the-file.txt:
```

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<<<<<< HEAD
```

```
The current branch's contents
```

```
=====
```

```
Stuff from the branch you're merging
```

```
>>>>>> new-branch
```

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Stuff from the branch you're merging
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```
>>>>>> new-branch
```

```
git add the-file.txt and git commit
```

Looking at stuff

- ▶ `git log` Show a log of commits
 - ▶ `--graph` Neat ASCII graph
 - ▶ `-p` Show what changed in each commit

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 - ▶ `--graph` Neat ASCII graph
 - ▶ `-p` Show what changed in each commit
- ▶ `git diff` Show uncommitted changes
- ▶ `gitk` Graphical log
- ▶ `git gui` Graphical tool for committing

Working with remotes

- ▶ `git clone REPO_LOCATION` makes a copy of a repository.

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- ▶ `git push` Pushes changes from your current branch to the remote branch it tracks.
- ▶ `git pull` Pulls changes from the remote branch and merges them into your current branch.

Working with remotes

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- ▶ `git push` Pushes changes from your current branch to the remote branch it tracks.
- ▶ `git pull` Pulls changes from the remote branch and merges them into your current branch.
- ▶ `git remote add REMOTE_NAME REPO_LOCATION` adds a remote to an existing repository.

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- ▶ Make your commit messages descriptive!
- ▶ Don't add generated files (like `a.out`) to your repo.
- ▶ You can ignore certain files by putting their names in a `.gitignore` file in your repo.
- ▶ When collaborating, work on separate branches and merge as you go along.