Git

Software Engineering II
WS 2014/15

Outline
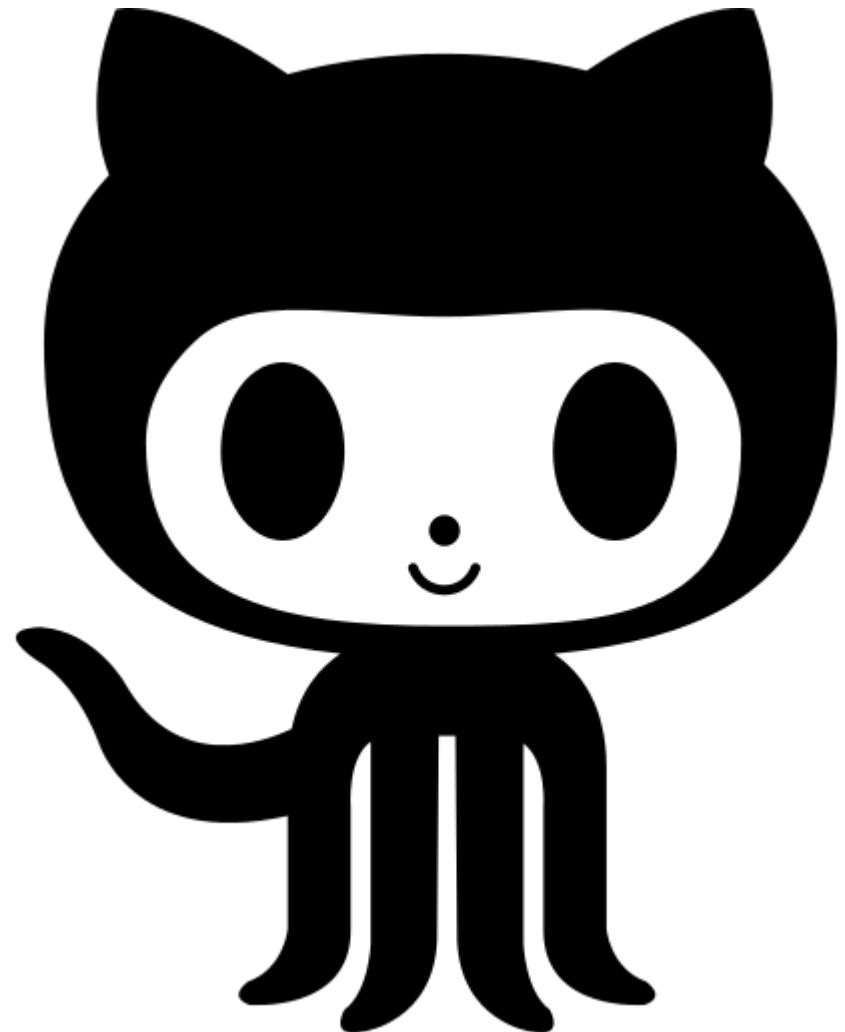
Git Objects

Blob

- Content of a file
- Nothing else
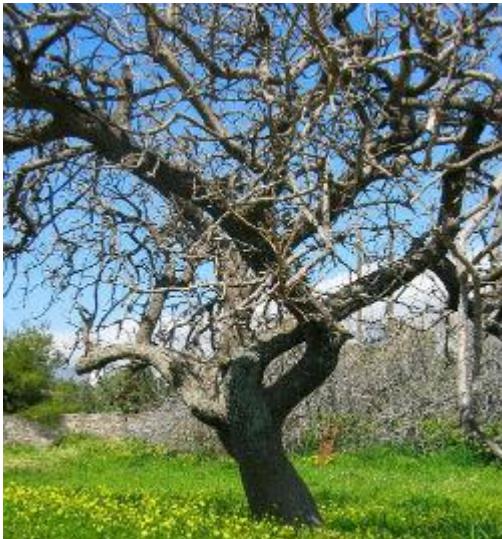
Tree

- Filestructure
- References Blobs

Office Checklist   31.03.11 20:45

Collapse sunshade
Take all pillows to the conference table
Close all windows and doors
Clean up your used glasses and plates
Turn off Nespresso machine
Turn off all lights
Close the door and lock both!!! locks

COMMIT!

Commit

- References Tree object
- Metadata
- 0..* parent commits

WITH LOVE

Tag

- Reference to other object

Commit

Blob Hello World

a3768903ca03f7cccb3c6b6f474f88
f8e9a3bb5b

Tree

hello.txt	A3768903ca03f7cc...
world.txt	A431253jhfdkagfj...

97b49d4c943e3715fe30f141cc6f27a8548cee0e

msg:	initial
tree	97b49d4c943e3715f...
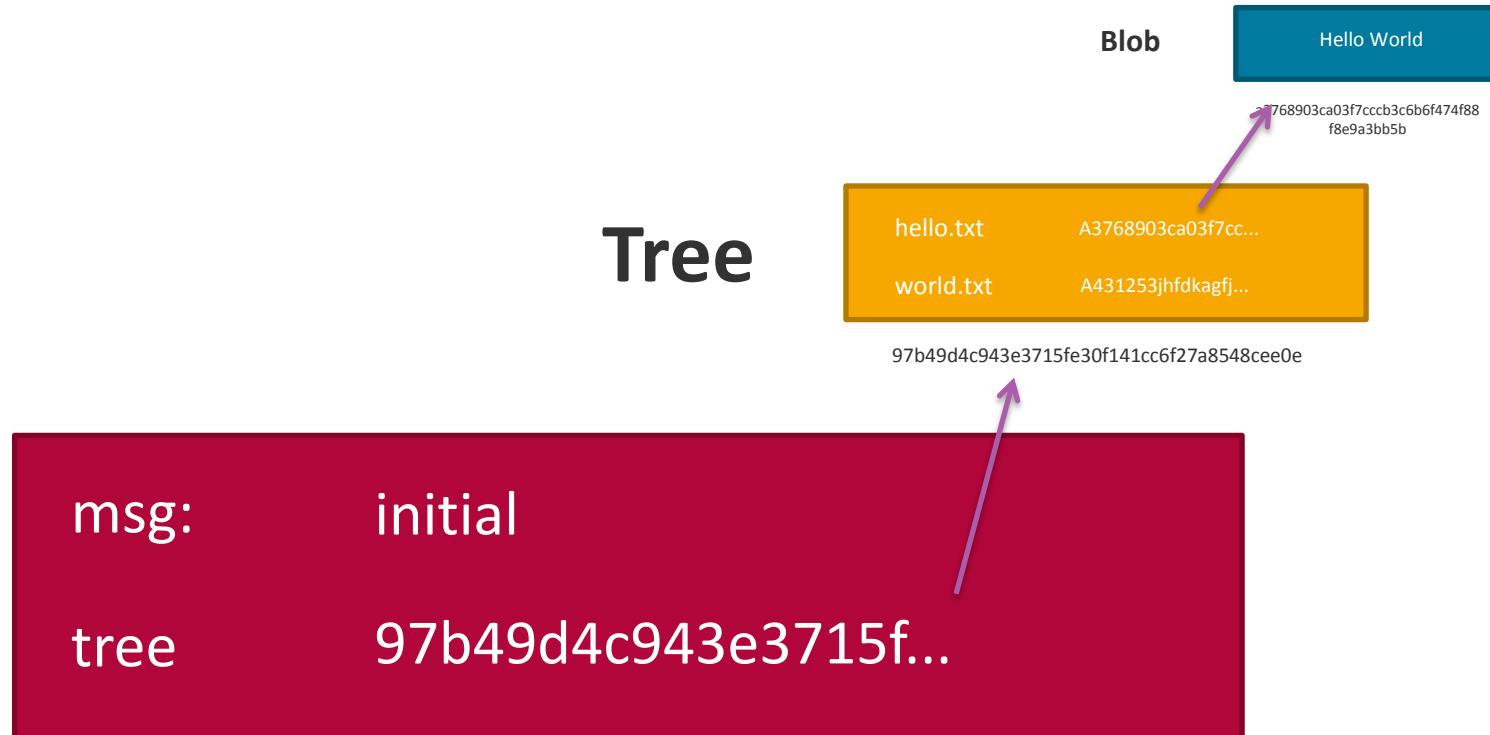
a3768903ca03f7cccb3c6b6f474f88f8e9a3bb5b

Local Operations
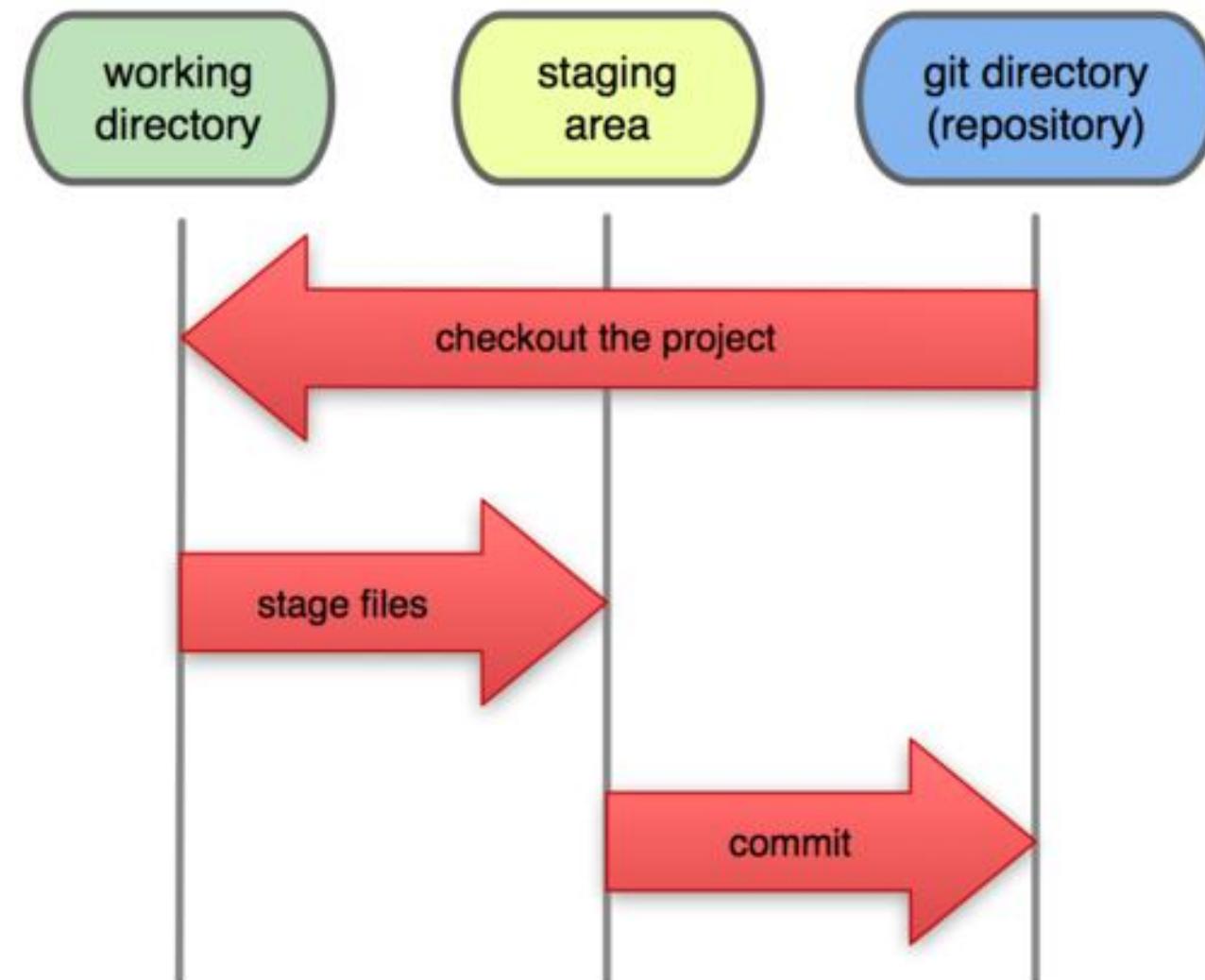
File Status Lifecycle
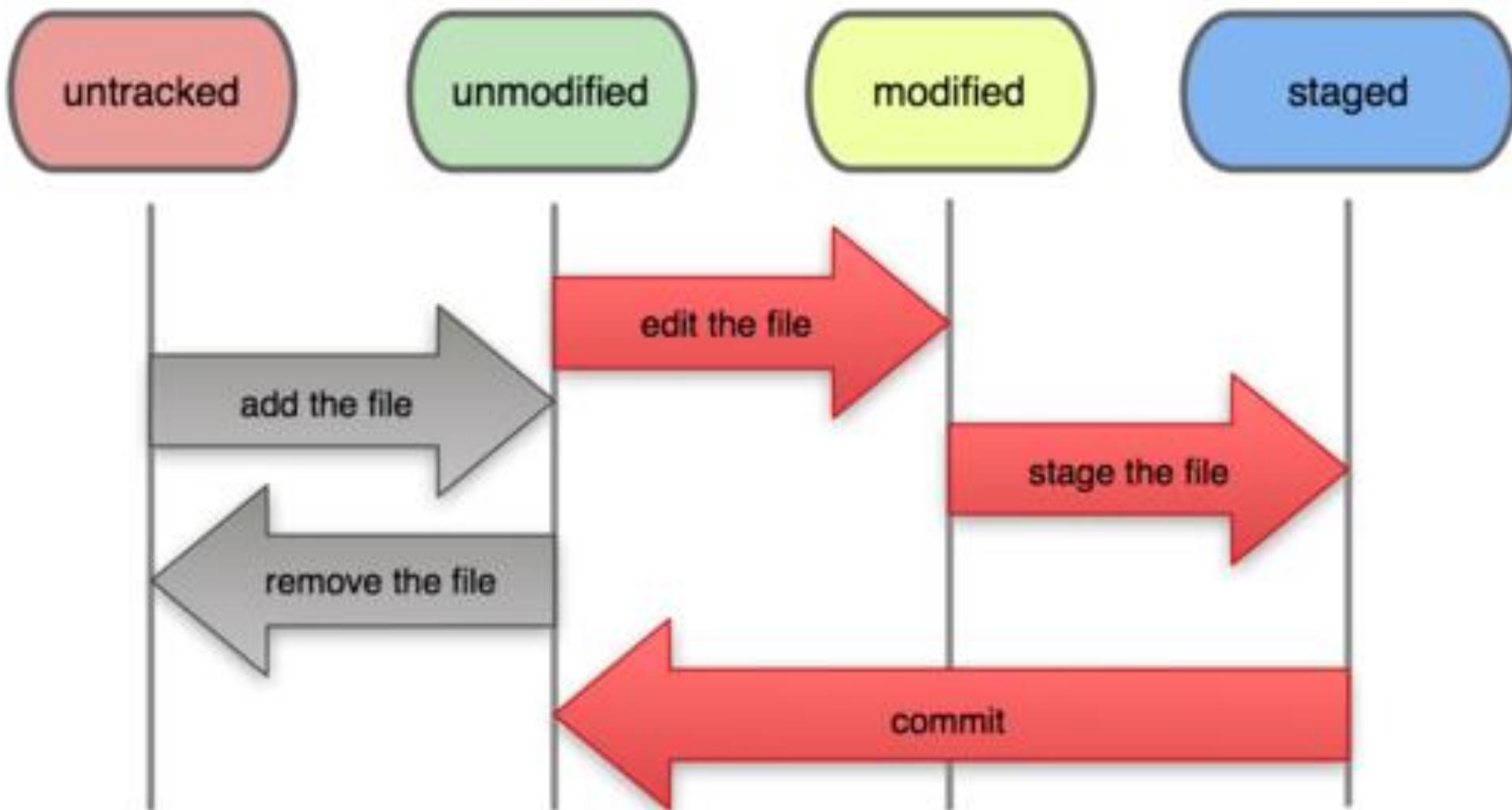
Commit Parent

$ git commit -m "v 2.1"

```
msg: "Initial"  ←  msg: "v 2.0"  ←  msg: "v 2.1"
```
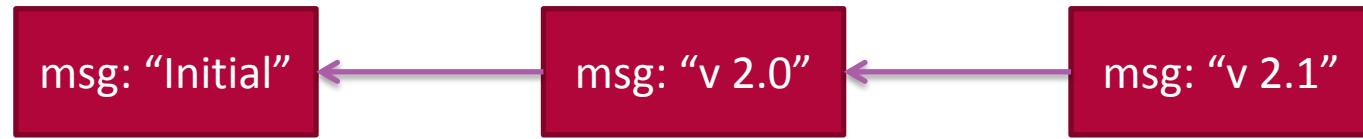
Branches & Tags

$ git commit -m "v 2.1"
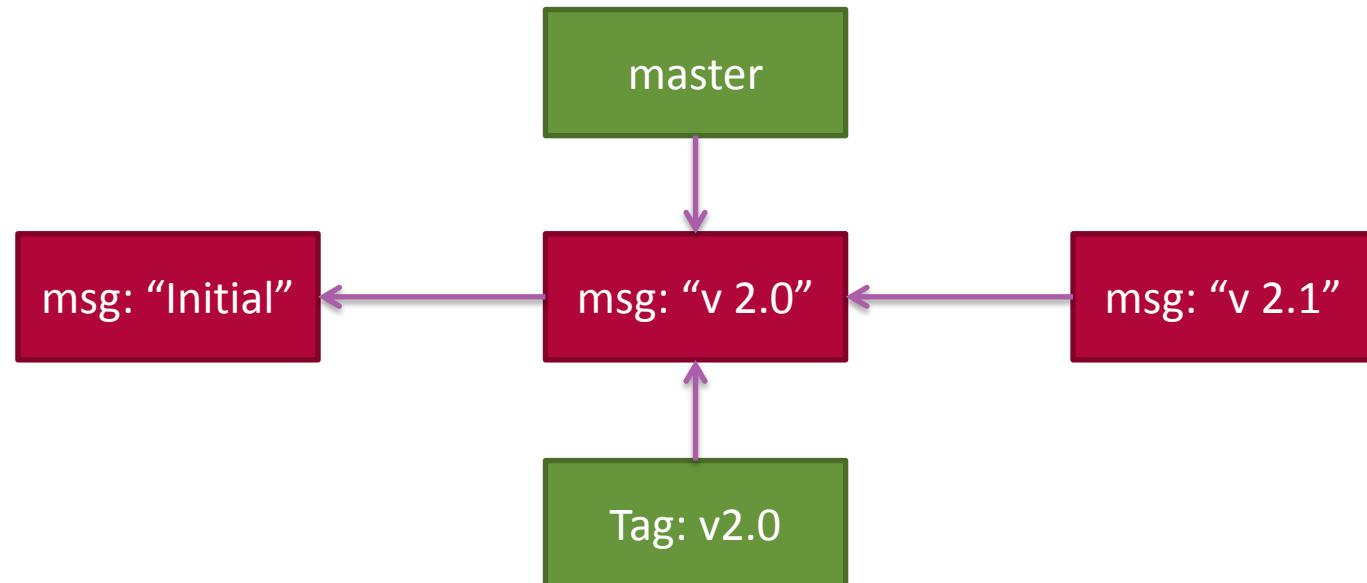
Head

$ git commit -m "v 2.1"

Detached Head

$ git checkout v2.0

HEAD

↓

master

↓

msg: "Initial" ← msg: "v 2.0" ← msg: "v 2.1"

↑

Tag: v2.0

HPI
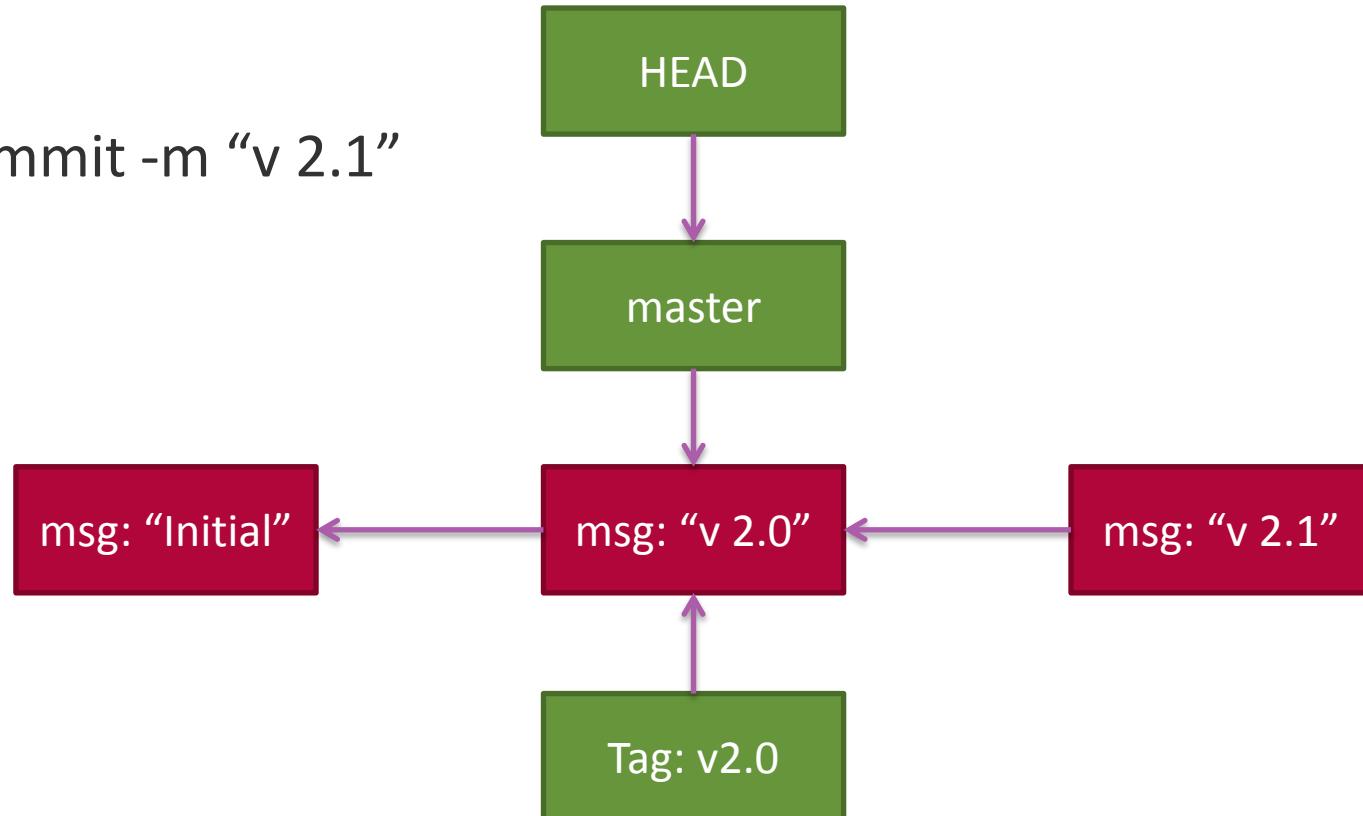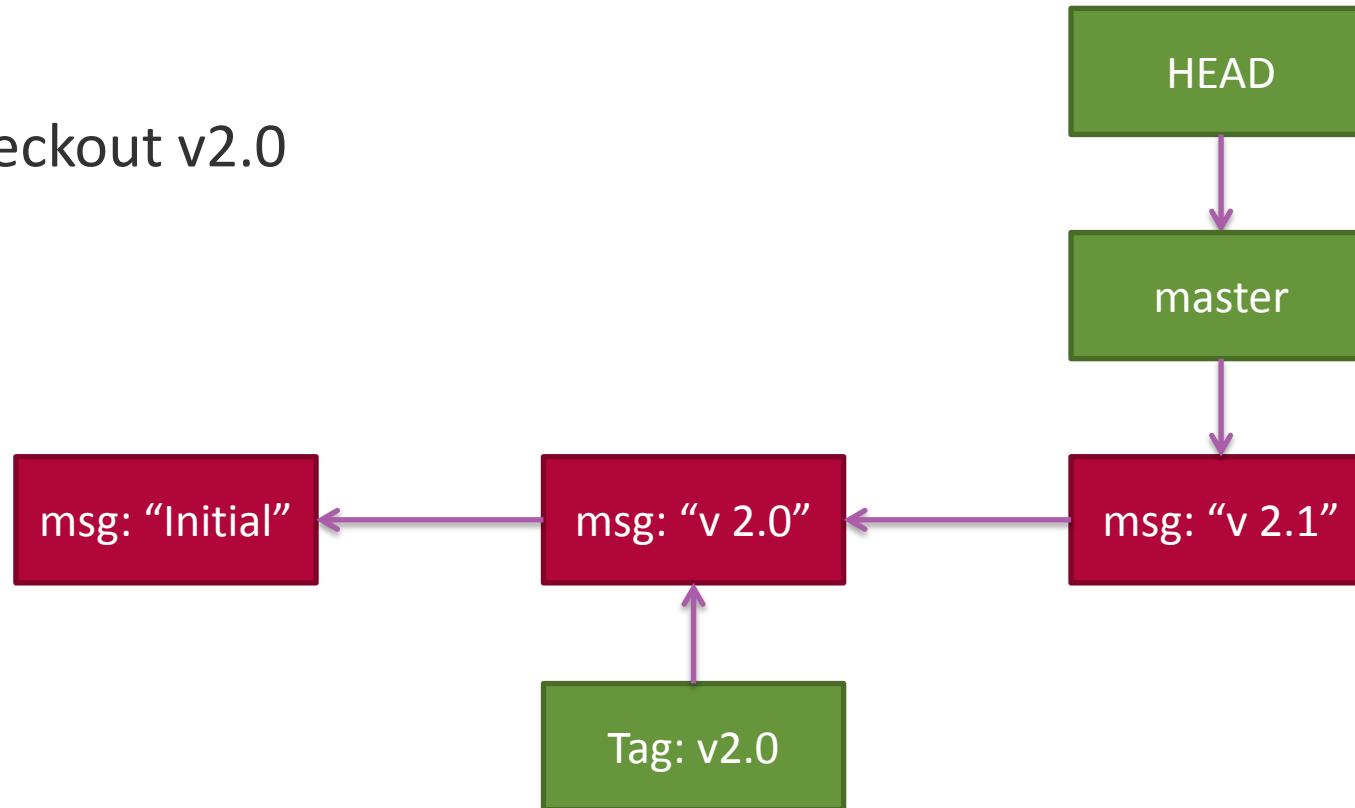
Detached Head

$ git checkout v2.0
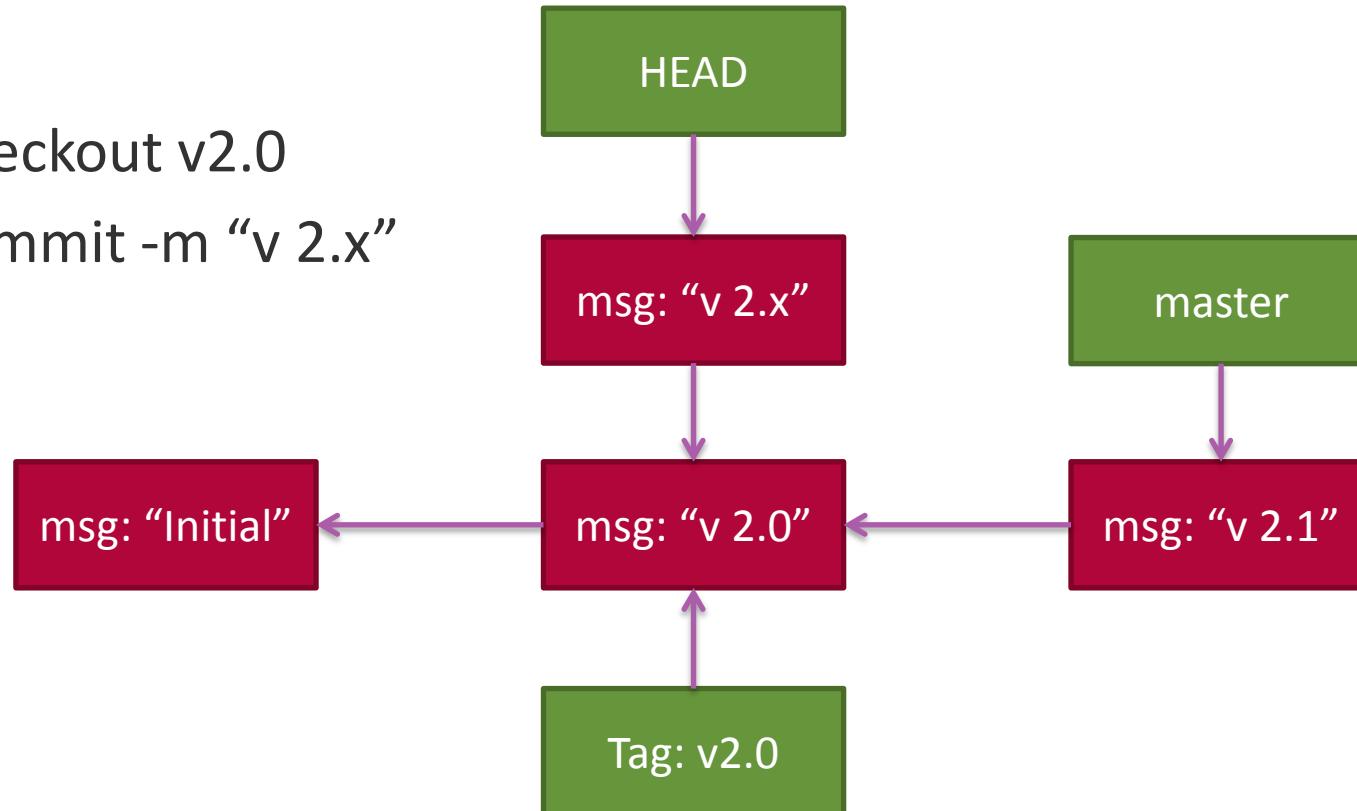
$ git commit -m "v 2.x"

Detached Head

$ git checkout v2.0

$ git commit -m "v 2.x"

$ git checkout master

```
                                          ┌──────────┐
                                          │   HEAD   │
                                          └──────────┘
                                               │
                                               ▼
                        ┌──────────┐      ┌──────────┐
                        │ msg: "v  │      │  master  │
                        │   2.x"   │      └──────────┘
                        └──────────┘           │
                             │                 ▼
  ┌──────────┐         ┌──────────┐      ┌──────────┐
  │   msg:   │ ◄────── │   msg:   │ ◄──── │   msg:   │
  │ "Initial"│         │ "v 2.0"  │       │ "v 2.1"  │
  └──────────┘         └──────────┘      └──────────┘
                             ▲
                             │
                        ┌──────────┐
                        │ Tag: v2.0│
                        └──────────┘
```
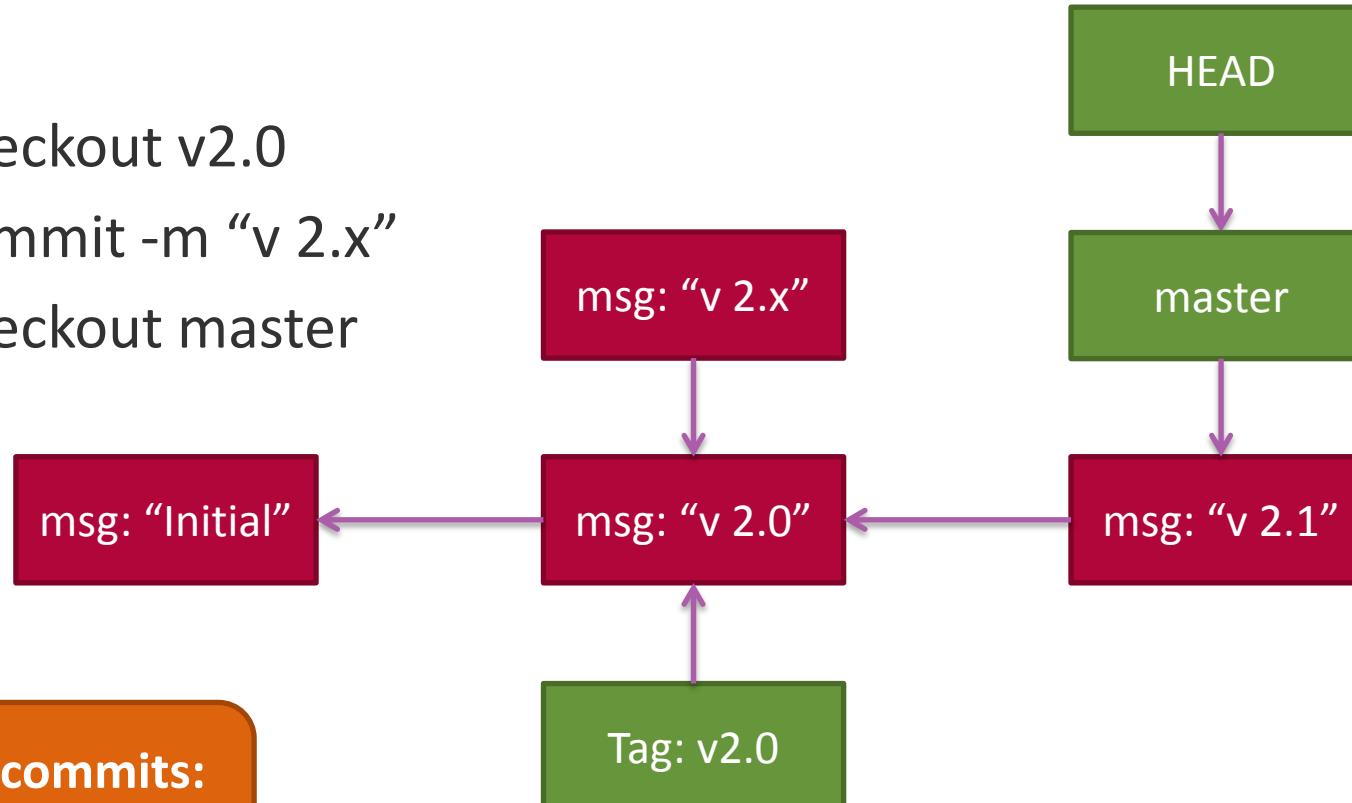
List all commits:

git reflog

Fast-forward

$ git merge branch_b

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Merge

$ git merge branch_b

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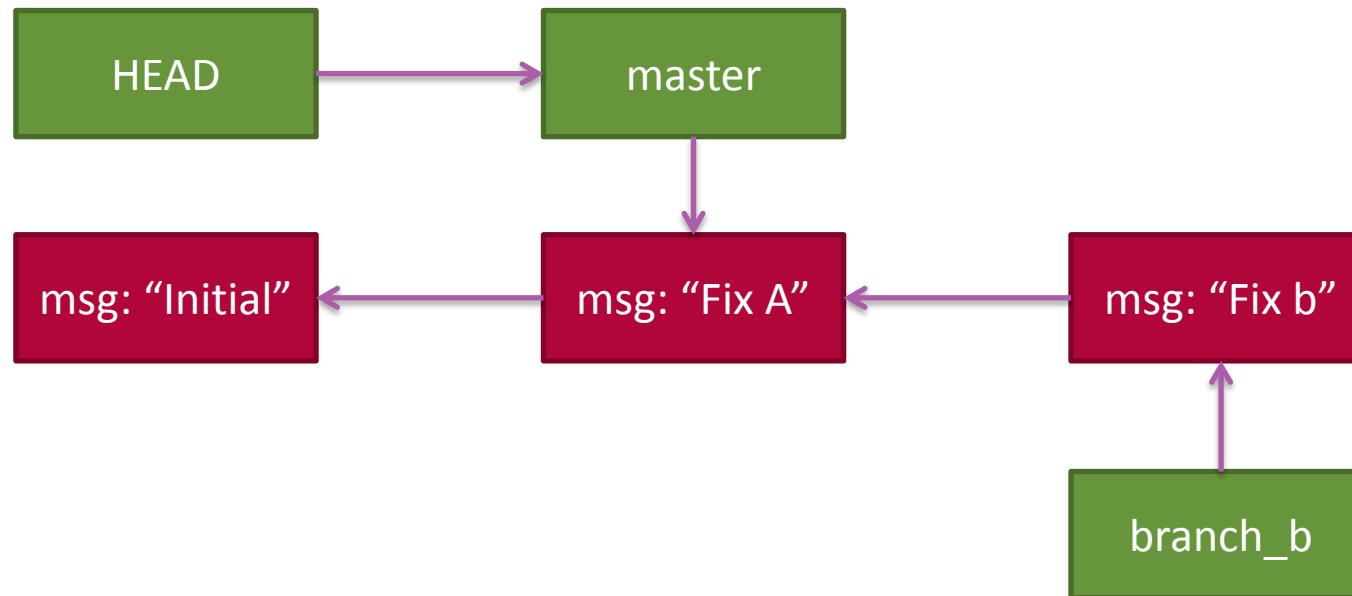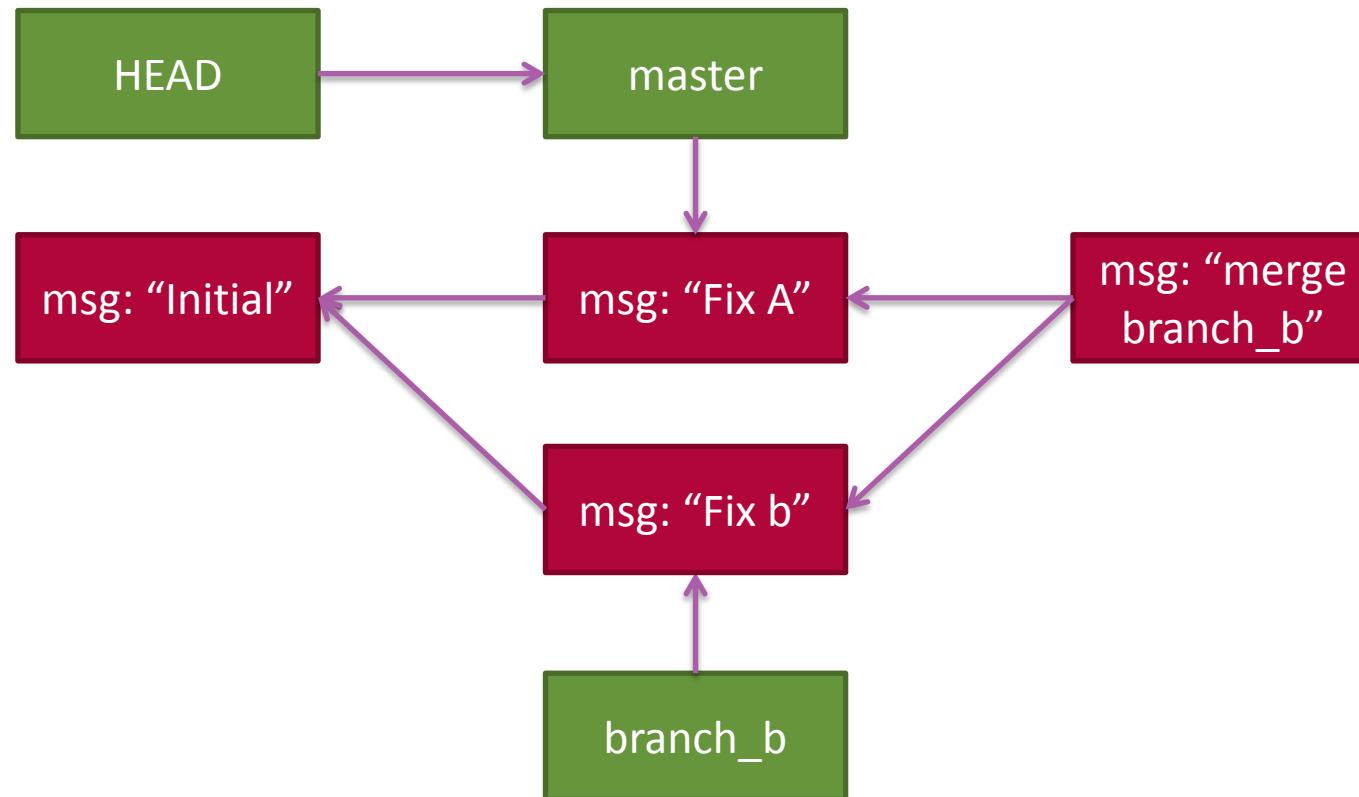
Collaboration
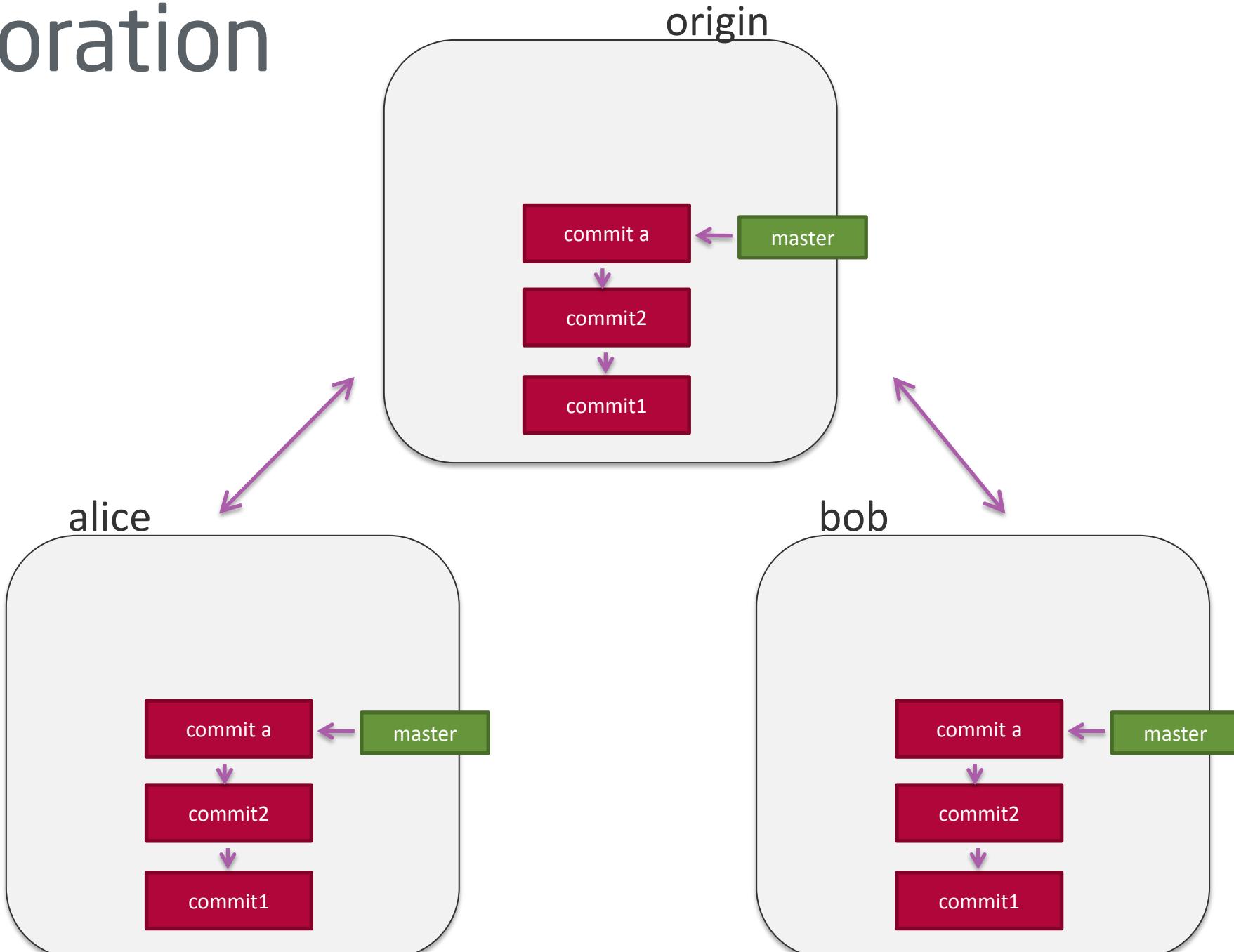
Push

alice$ git push origin master

Fetch

bob$ git fetch

origin

commit b ← master
commit a
commit2
commit1
Unreferenced commit

alice

commit b ← master
commit a
commit2
commit1

bob

origin/master →
commit a ← master
commit2
commit1
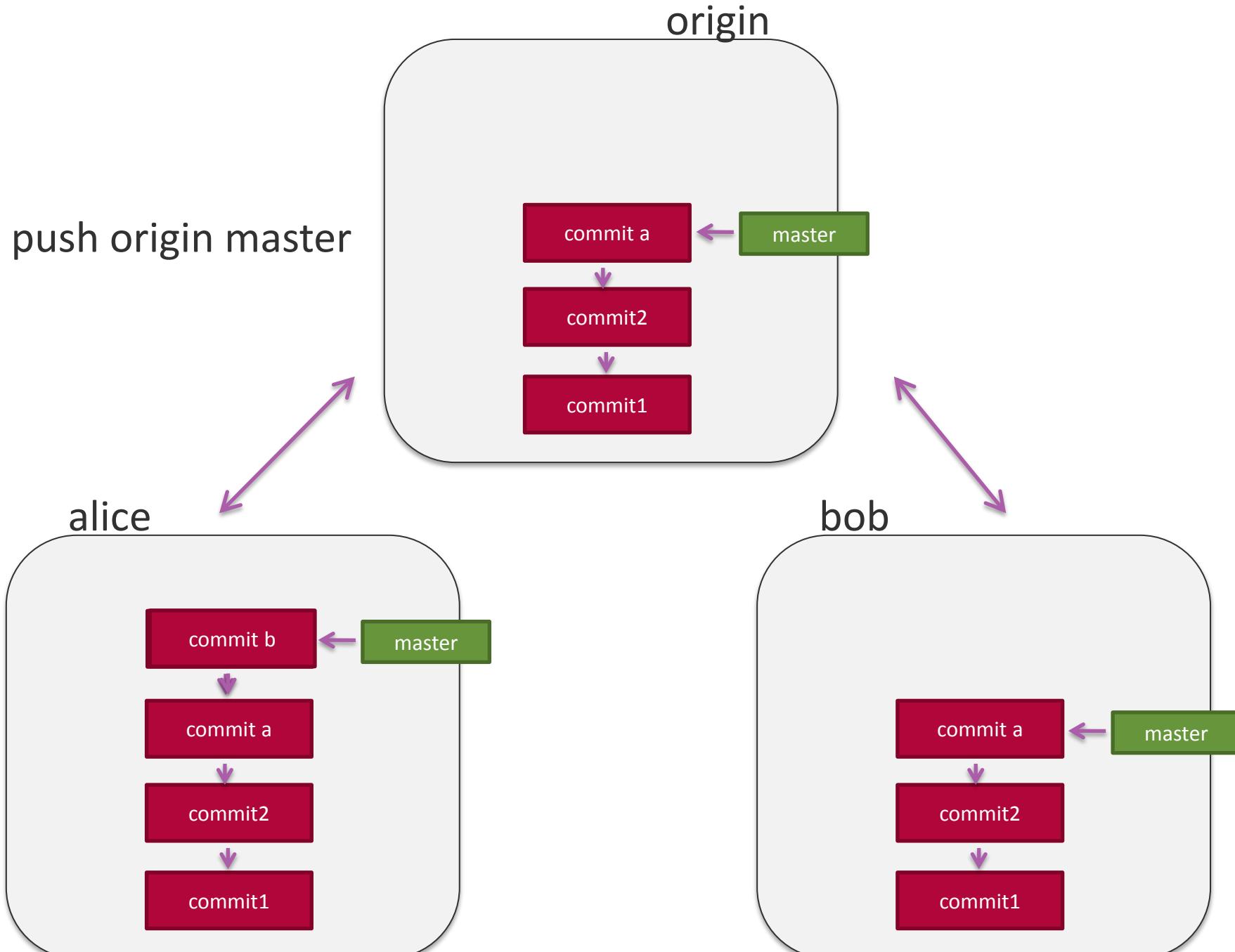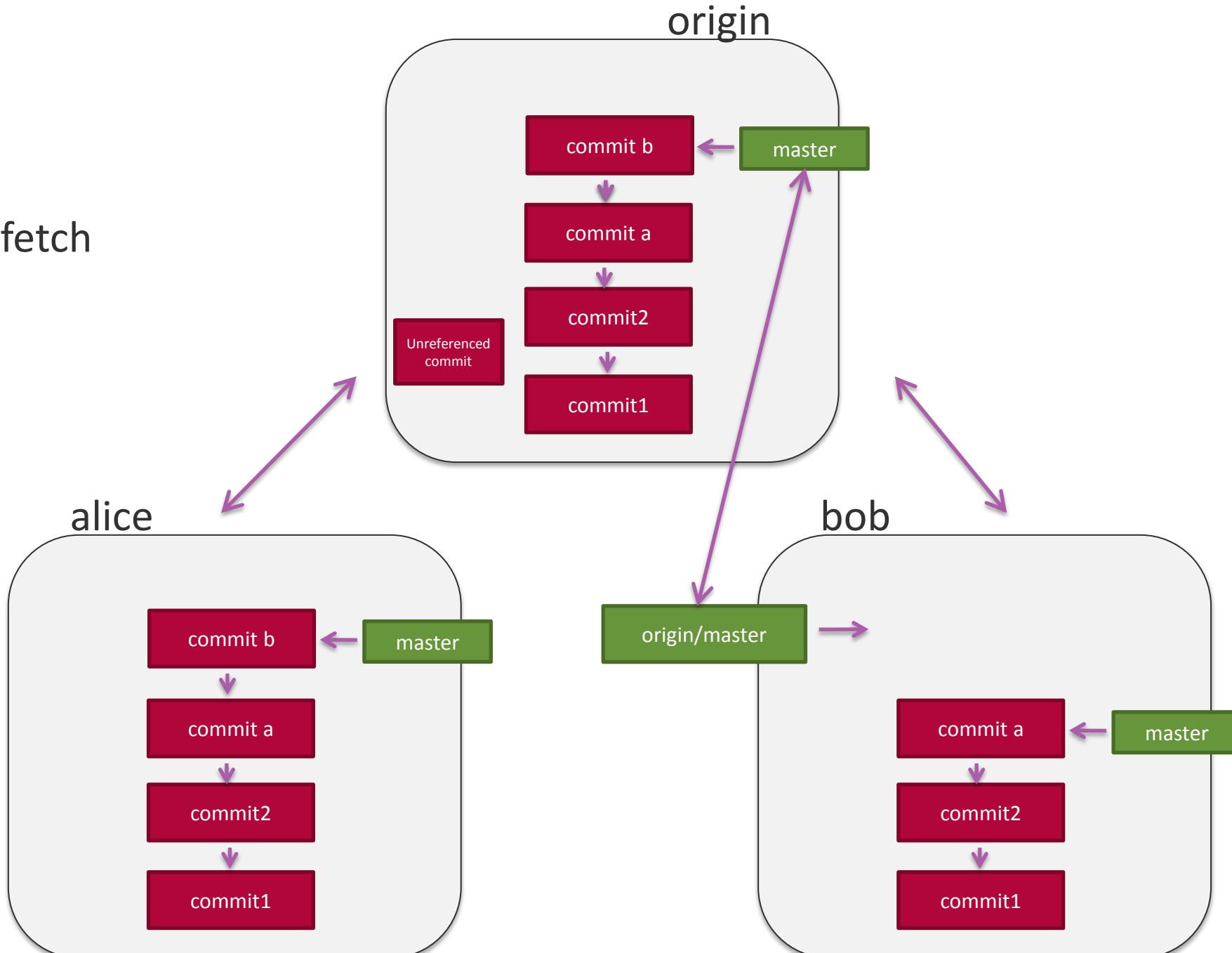
Pull

bob$ git fetch
bob$ git merge origin/master

fetch + merge

= pull
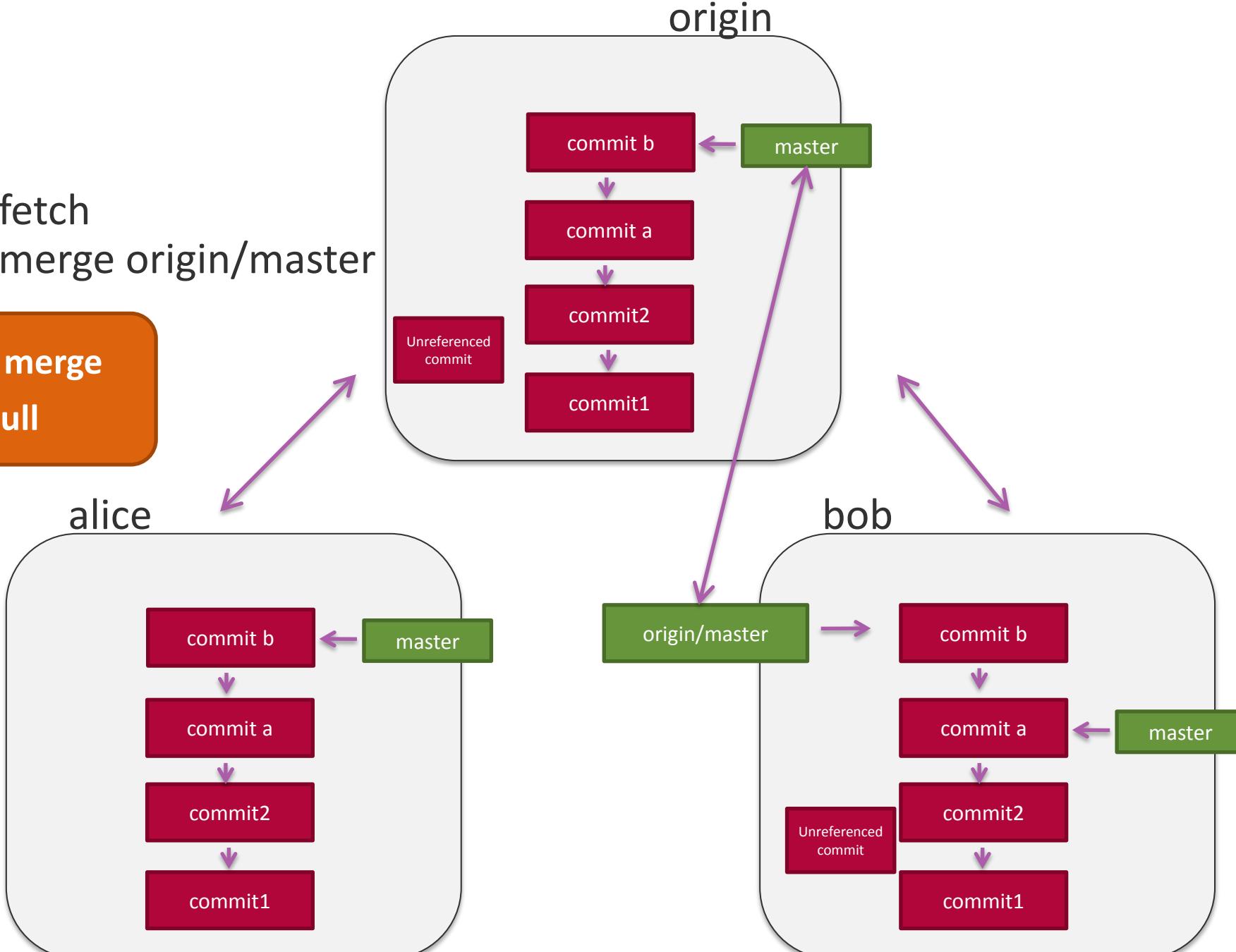
Push with Conflicts

alice$ git push origin master

! [rejected] master ->
master (non-fast-forward)
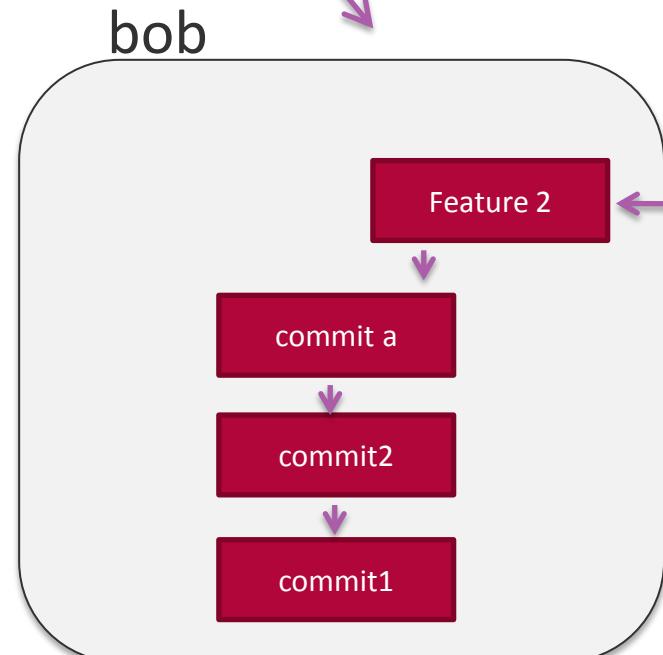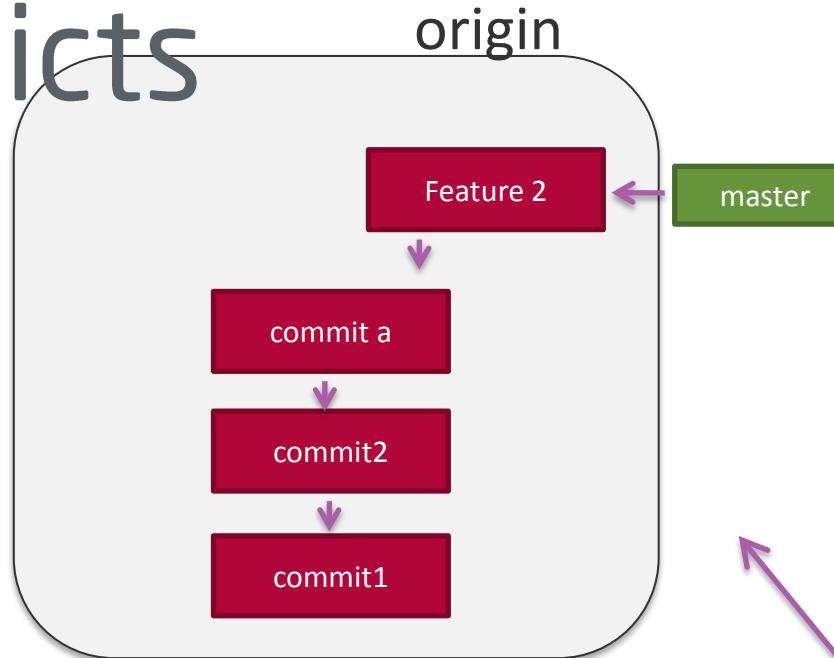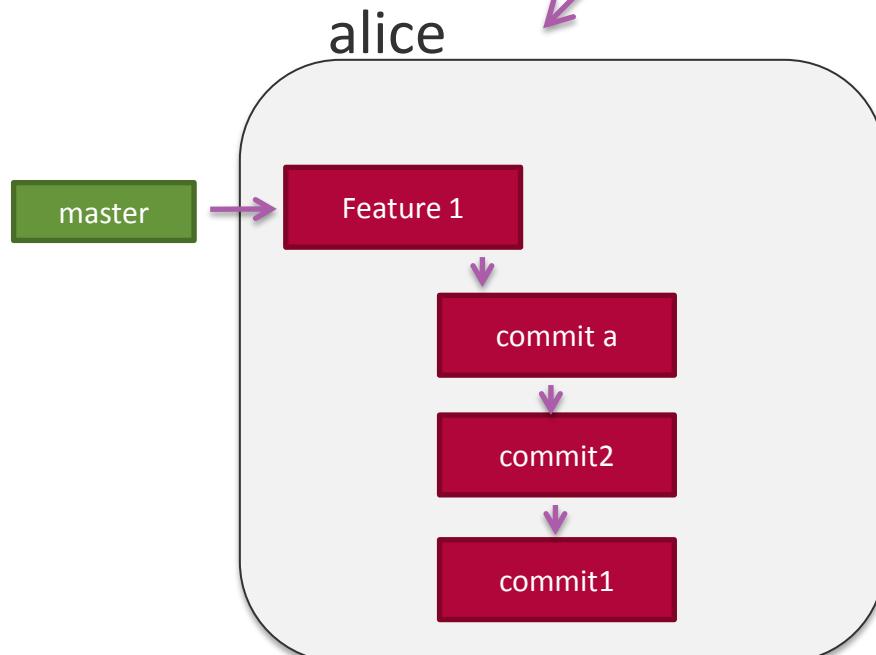
Push --force

alice$ git push --f origin master

master	Feature 2

commit a

commit2

Never **EVER** push --force

master	Feature 1

commit a

commit2

commit1

Feature 2	master

commit a

commit2

commit1

20
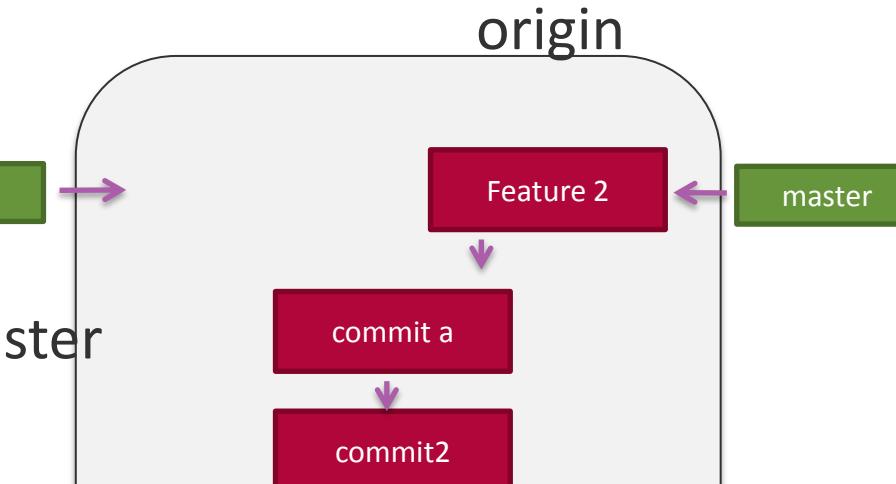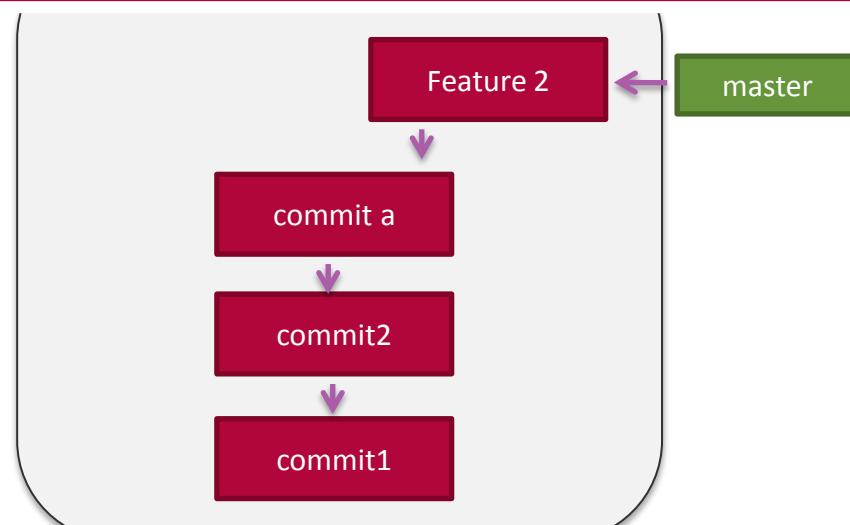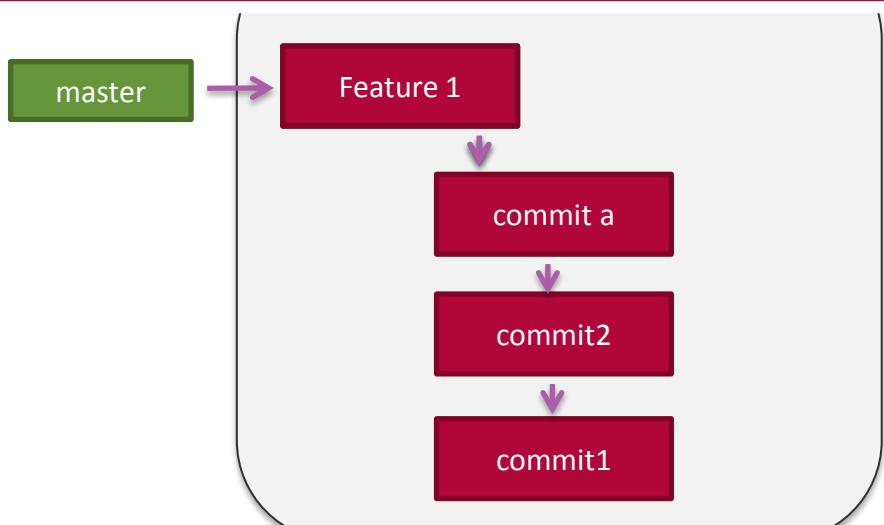
Commit → Pull → Push

alice$ git pull origin
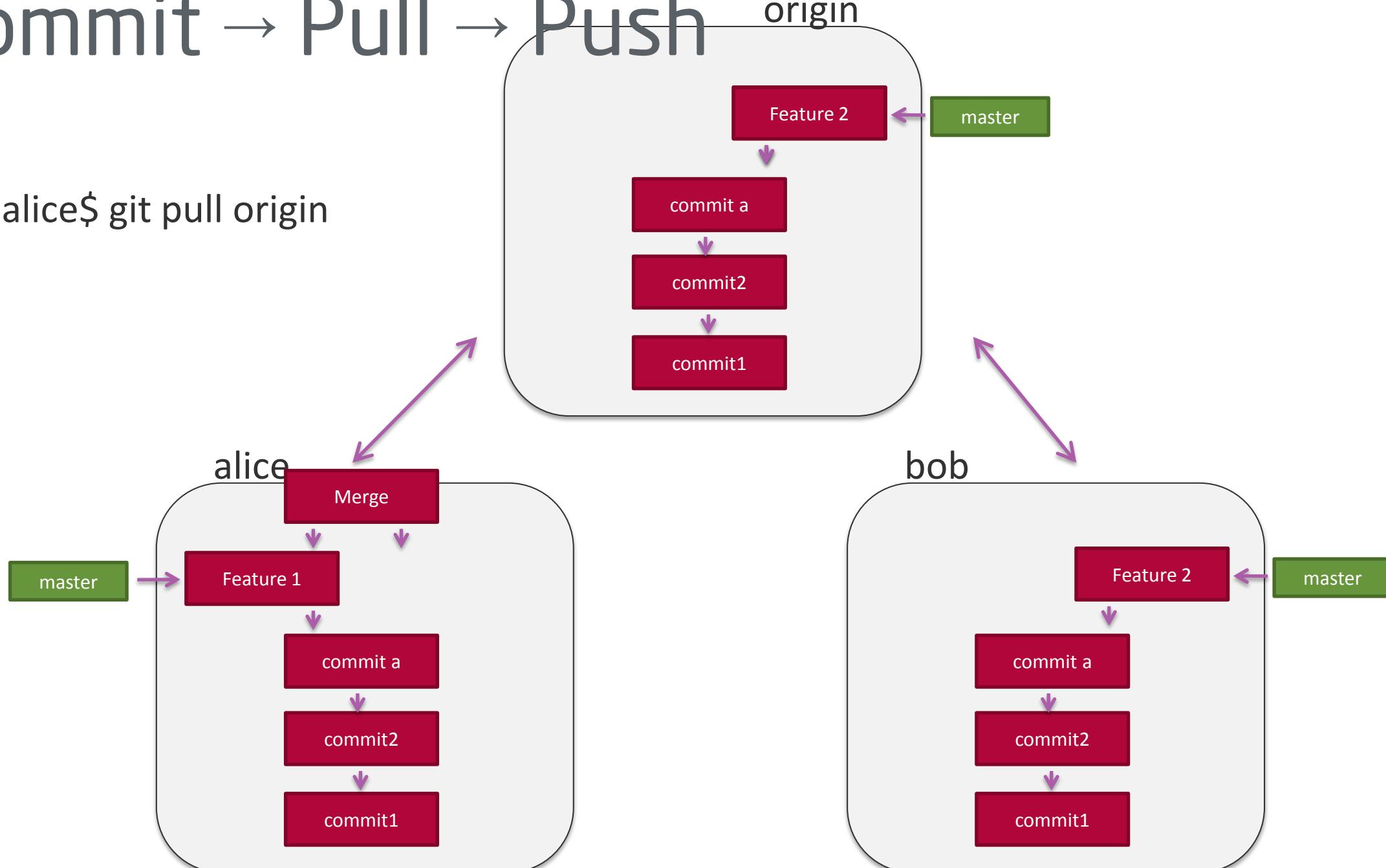
What happened?

- git log
- git diff
- git blame

Outline

1. Basics
   - Objects
2. Local
   - Checkout
   - Add
   - Commit
3. Collaboration
   - Pull
   - Push

Image Credits

- https://www.flickr.com/photos/98701585@N02/9351589556/
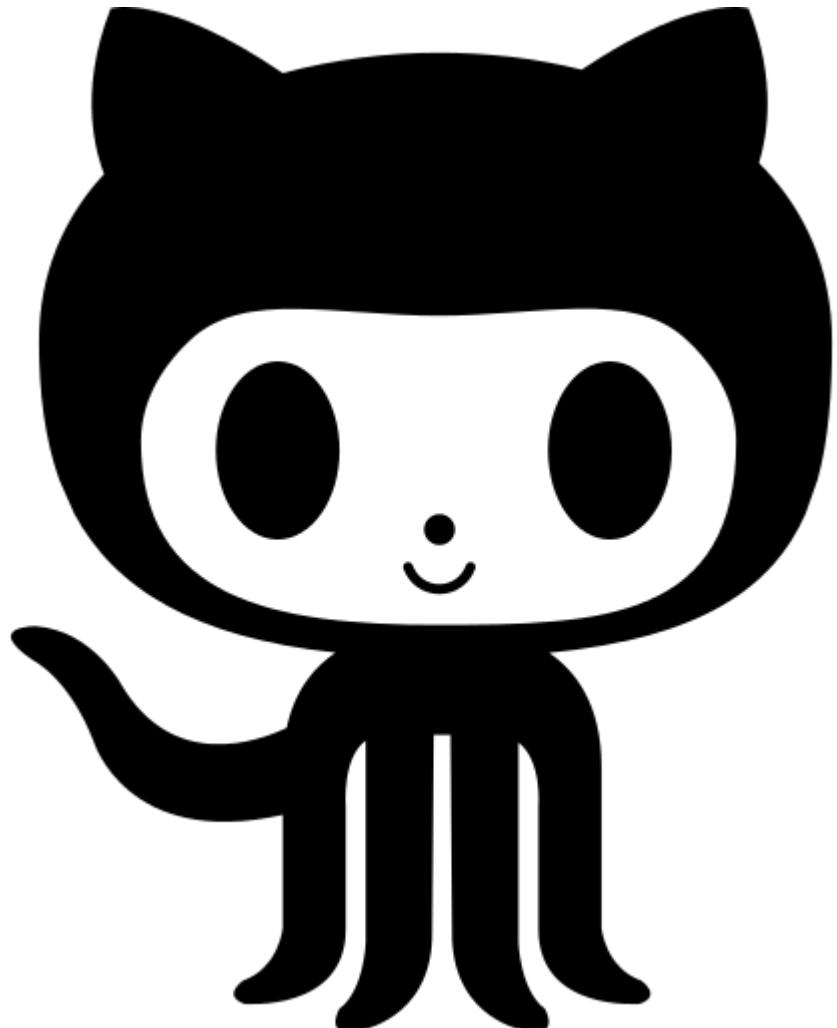
- "Olive tree Karystos". Licensed under Public domain via Wikimedia Commons - http://commons.wikimedia.org/wiki/File:Olive_tree_Karystos.jpg#mediaviewer/File:Olive_tree_Karystos.jpg

- http://christmasstockimages.com/free/ideas_concepts/slides/gift_tag.htm

Next Weeks' Schedule

Week 1 (Oct 13 – Oct 17)

- Introduction lectures

Week 2 (Oct 20 – Oct 24)

- Find teams, **enroll**!
- Code School exercise
- Lecture on Scrum
  - ☐ Important exercise after Lunch!
- Project Infrastructure

Week 3 (Oct 27 – Oct 31)

- POs: Customer meeting
- Code School exercise
- No lecture

Week 4 (Nov 3 – Nov 7)

- PO Vision (~30min)
  - ☐ Mo 15:15
  - ☐ … or propose other date
- Start of project