Tools & Environment Setup

Mobile Web Services

Olivier Liechti & Yannick Iseli

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du Canton de Vaud

Initiate downloads....

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- **Step 1: download Netbeans 8**
  - https://netbeans.org/downloads/index.html
  - Select either the “Java EE” bundle or the “All” bundle

- **Step 2: download apache maven**
  - http://maven.apache.org/download.cgi

- ***And now that bits are being moved around... let’s get to work!***

Git & Github

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- **Step 1: install Git**
  - http://git-scm.com/downloads
  - http://git-scm.com/book/en/Getting-Started-Installing-Git
  - Check point: are you able to invoke the git command from the shell?
- **Step 2: configure Git**
- https://help.github.com/articles/set-up-git
- Step 3: configure SSH
  - http://guides.beanstalkapp.com/version-control/git-on-windows.html#installing-ssh-keys

Using Git locally

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```
$ mkdir my-project
$ cd my-project
$ git init
$ ls -al
```

- **You do not *have to* use a server**: Git is already useful to manage versions of your files on your local machine.
- The `git init` **command** creates a **local repository**. If you look carefully, you will see **a hidden `.git` directory**, where Git keeps all of his data.
- **Important**: your `my-project` directory is your **working directory**. If you simply create files in it, they will not immediately be part of your repository!

Using Git locally

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```
$ echo "text a" > a.txt
$ git status
$ git add a.txt
$ git commit -m “First version of a.txt”
$ echo “my mod on text a” > a.txt
$ git status
```

- A **commit** is a **snapshot** of your repository. Git maintains a **graph of commits** and you can always **recover the state** of a particular commit.
- When **you have modified files in your working directory**, you need to specify which ones should be **part of the next commit**.
- You use the `git add` command to add a file to the so-called **staging area**. It will be part of the next commit.
- You use the `git status` command to **check the content** of your working directory and of your staging area.

More info: http://git-scm.com/book/en/Git-Basics-Recording-Changes-to-the-Repository

Working Dir, Staging Area & Repository

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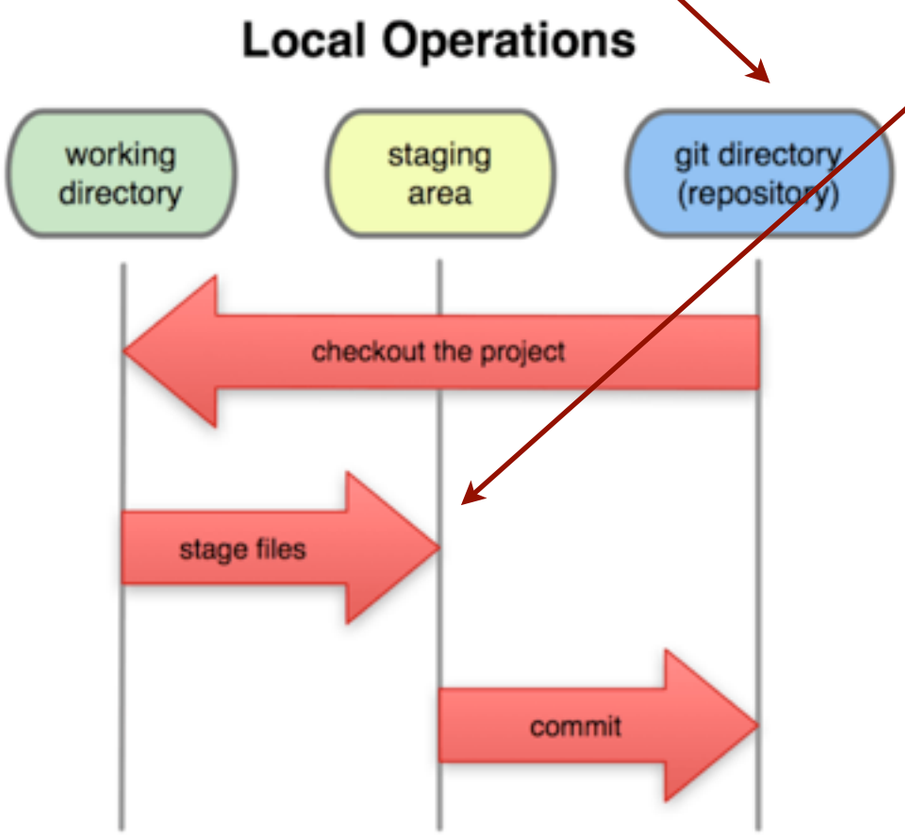
This is a local directory, not a remote server!

`git add` is used for both



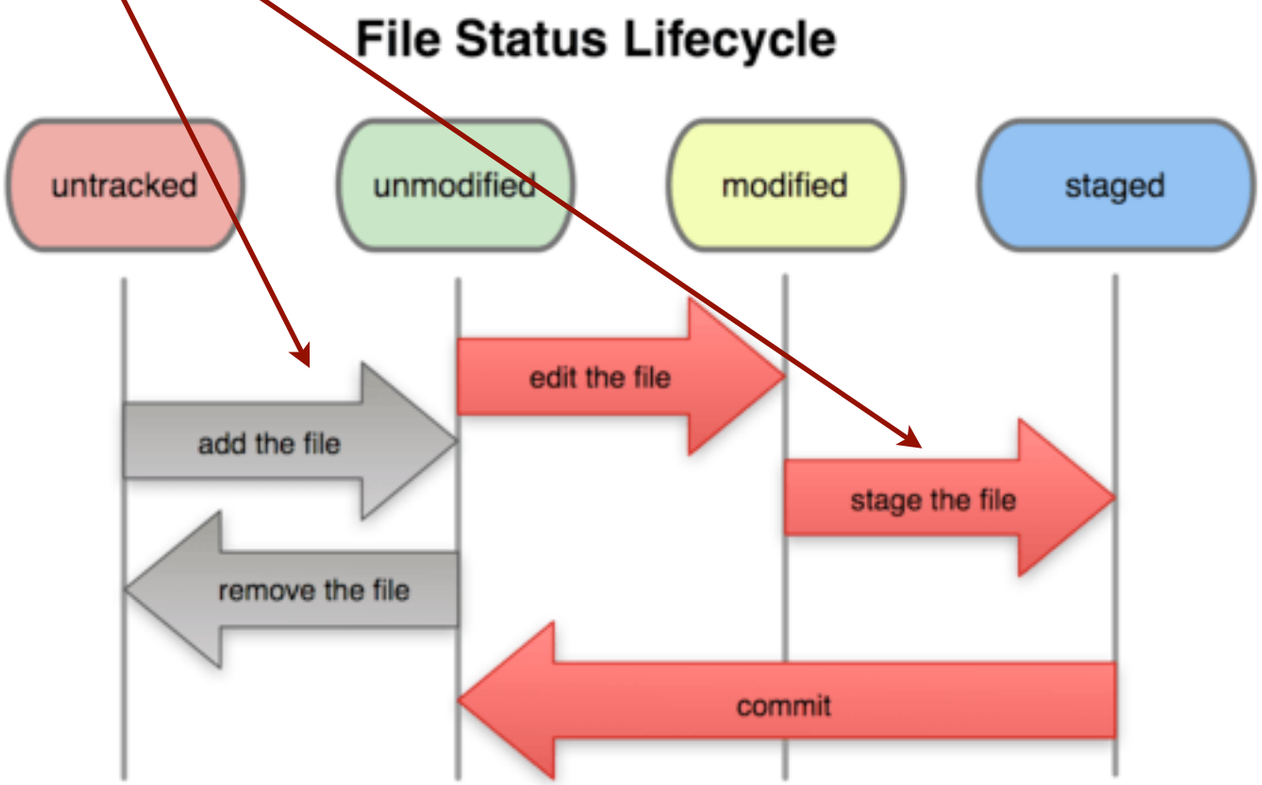


Figure 1-6. Working directory, staging area, and git directory.

Figure 2-1. The lifecycle of the status of your files.

Source: http://git-scm.com/book/en/Getting-Started-Git-Basics

Git Commits & Snapshots

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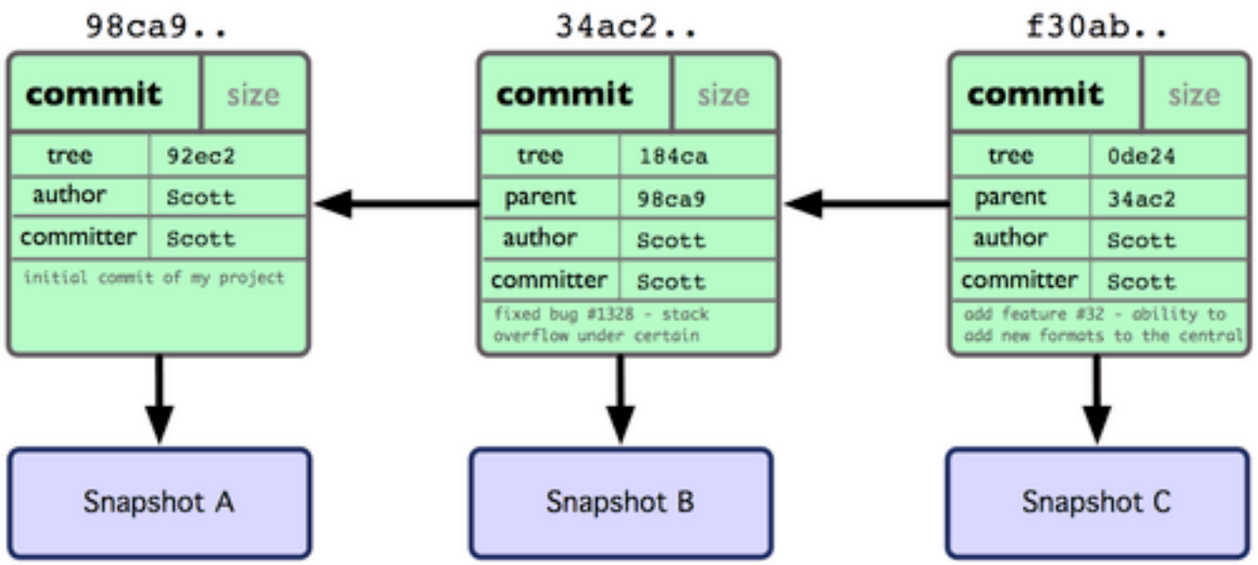

Figure 3-2. Git object data for multiple commits.

Every commit has a parent

A branch points to a commit

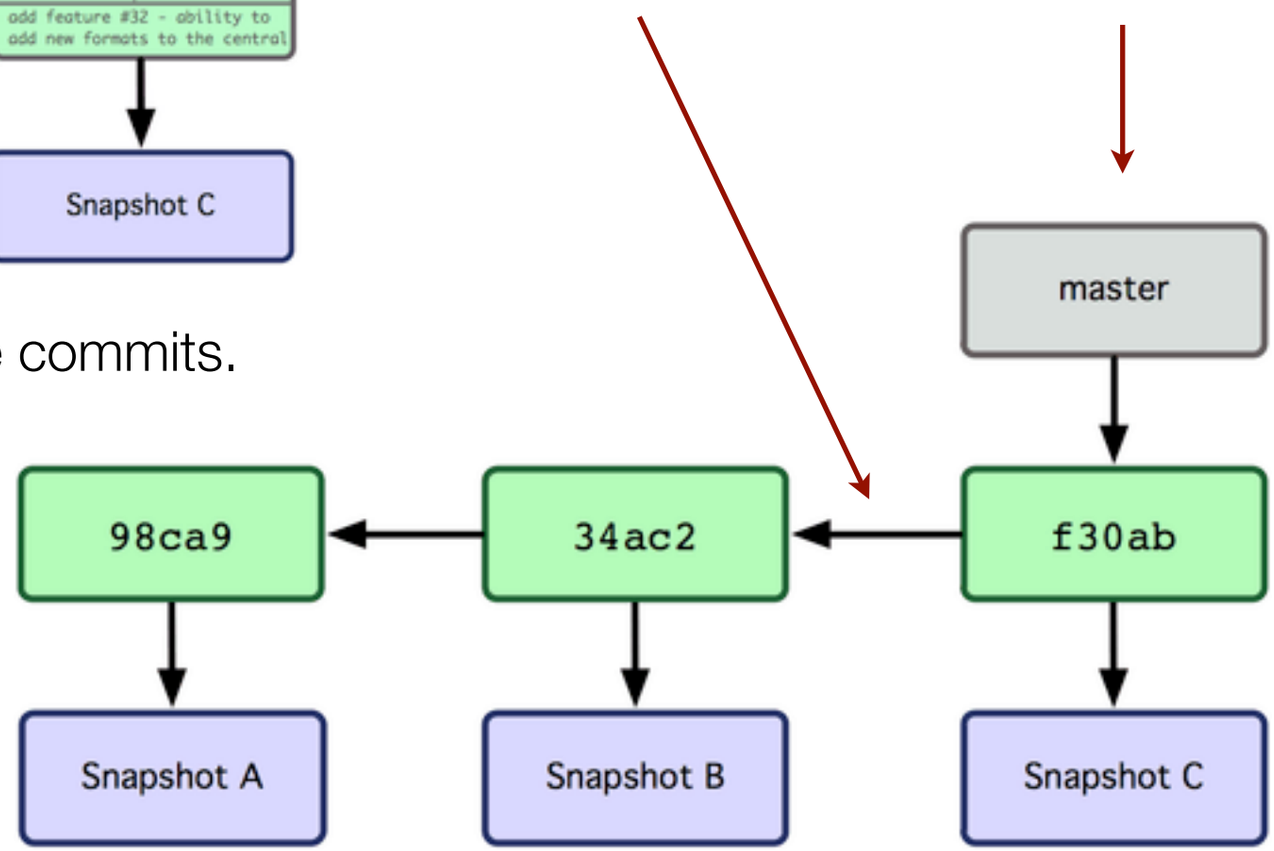

Figure 3-3. Branch pointing into the commit data's history.

Source: http://git-scm.com/book/

Git Branches & Workflows

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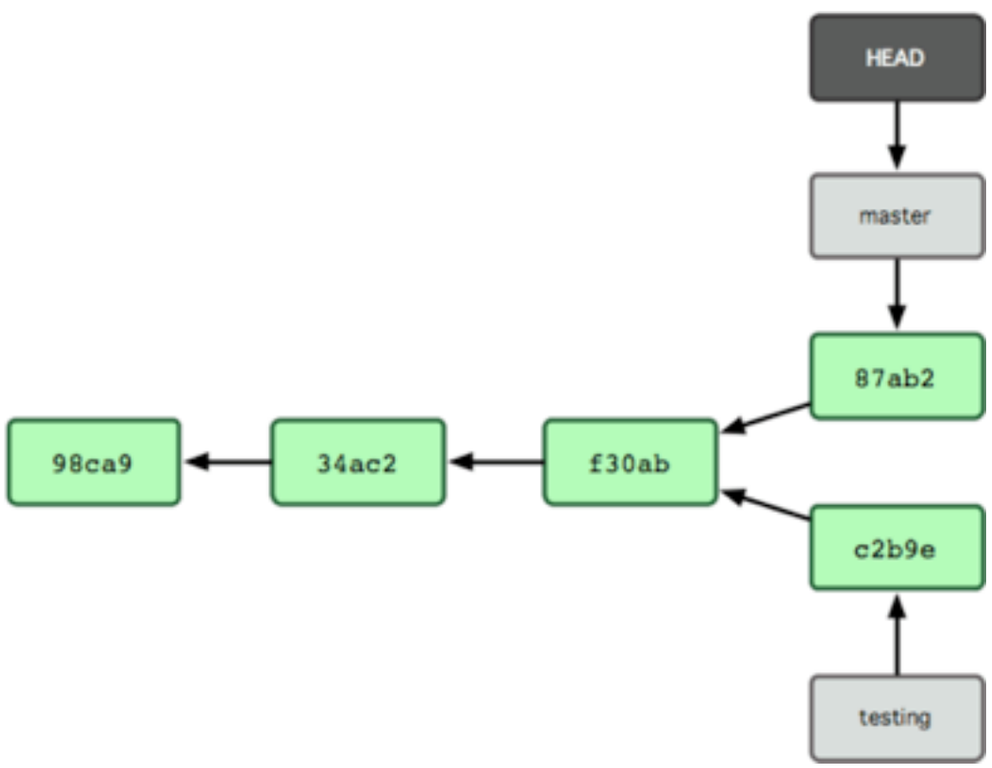

Figure 3-3. Branch pointing into the commit data's history.

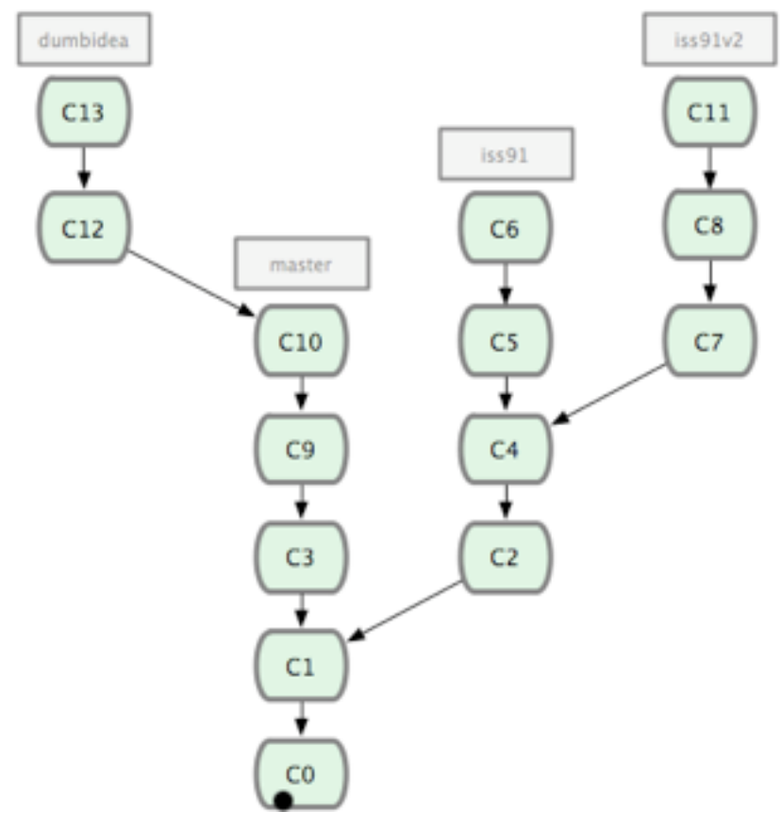

Figure 3-20. Your commit history with multiple topic branches.

Source: http://git-scm.com/book/

Git & Remote Repositories

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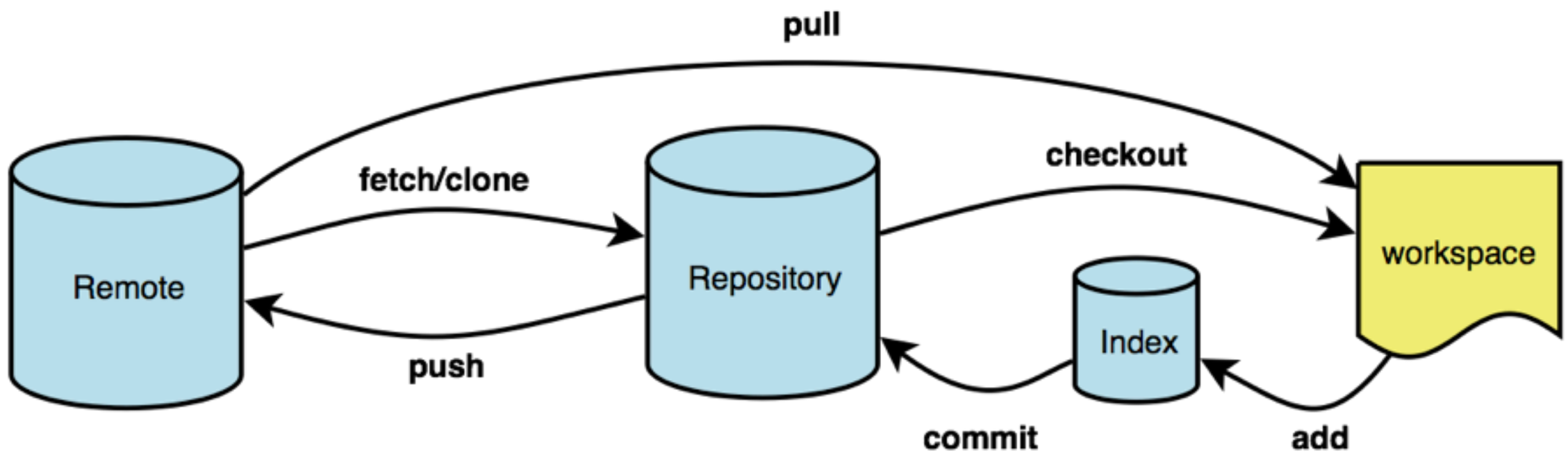

Source: http://illustrated-git.readthedocs.org/en/latest/

Source: http://bramus.github.io/ws2-sws-course-materials/xx.git.html#/4/1

Going Back To The Future

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```
$ git add a.txt
$ git commit -m “Modif on a.txt”
$ git log
$ cat a.txt
$ git checkout 2c2363929018ffca88e53a801711f9f31fd2a7d7 .
$ cat a.txt
```

- If you have committed your working directory several times, you repository will contain **several snapshot** (remember: one commit = one snapshot).
- Each commit has a **unique identifier** (**hash**)
- With the `git checkout` command, you can retrieve a particular commit (based on its hash).
- After running the command, your **working directory** will now contain files in the state that they were at in that particular point in time.

Github Setup

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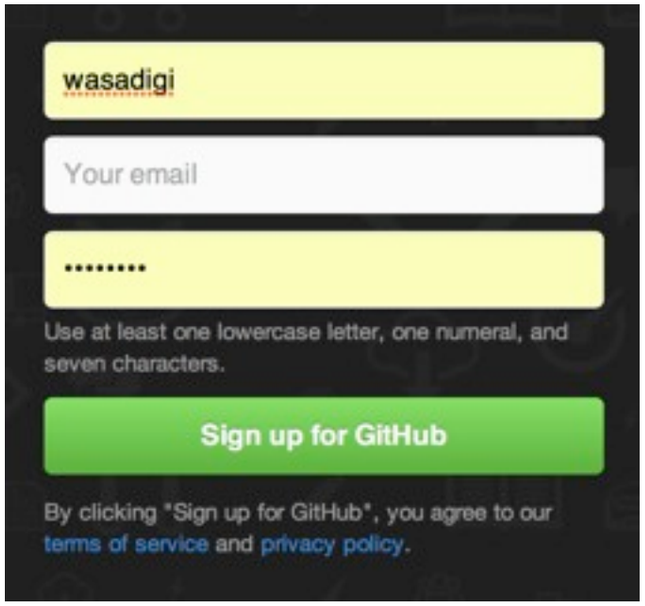
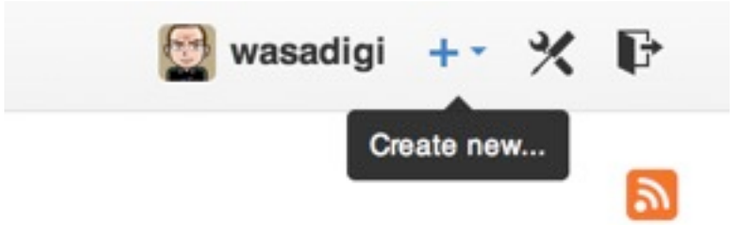
- **Sign up** for GitHub and get your own account:
  - Go to http://www.github.com
- Add your **SSH key**:
  - Go to your accounts settings. You will find an option to manage your SSH keys.
  - If you don't have a SSH key yet, follow the instructions in the online help.
  - If you are using windows, you will need to use Git BASH.
- **Create** your first repo, hosted on Github.
- **Copy the SSH URL** of the repo.





Validate your setup

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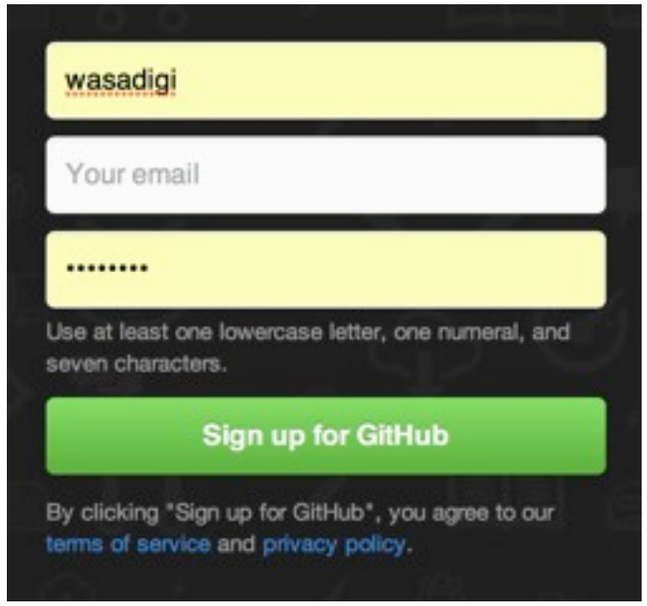
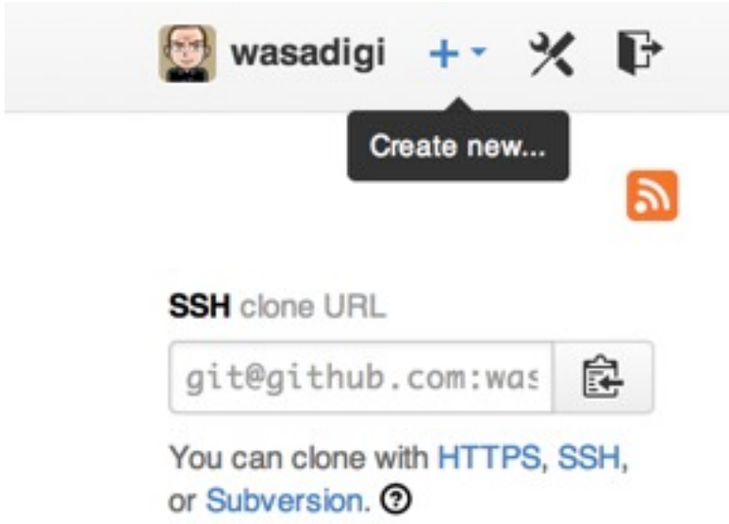
- **Clone your repo to your laptop**
  - Open a **terminal window** (Terminal on Mac OS, Git BASH on Windows, etc.)
  - Create a **new directory** to host your clone of the repo and get into it.
  - **Clone** the repo, using the **SSH URL**.
  - **Create** a file, **add** it to the staging area, **commit** the changes and finally **push** the commit Github.






```
$ mkdir myspace
$ cd myspace
$ git clone git@github.com:UUUUU/RRRRR.git
$ git touch firstFile.txt
$ git add firstFile.txt
$ git commit -m “I have added my first file”
$ git push
```

Forks & Clones

If you do this, you will have YOUR clone of MY repo hosted on Github

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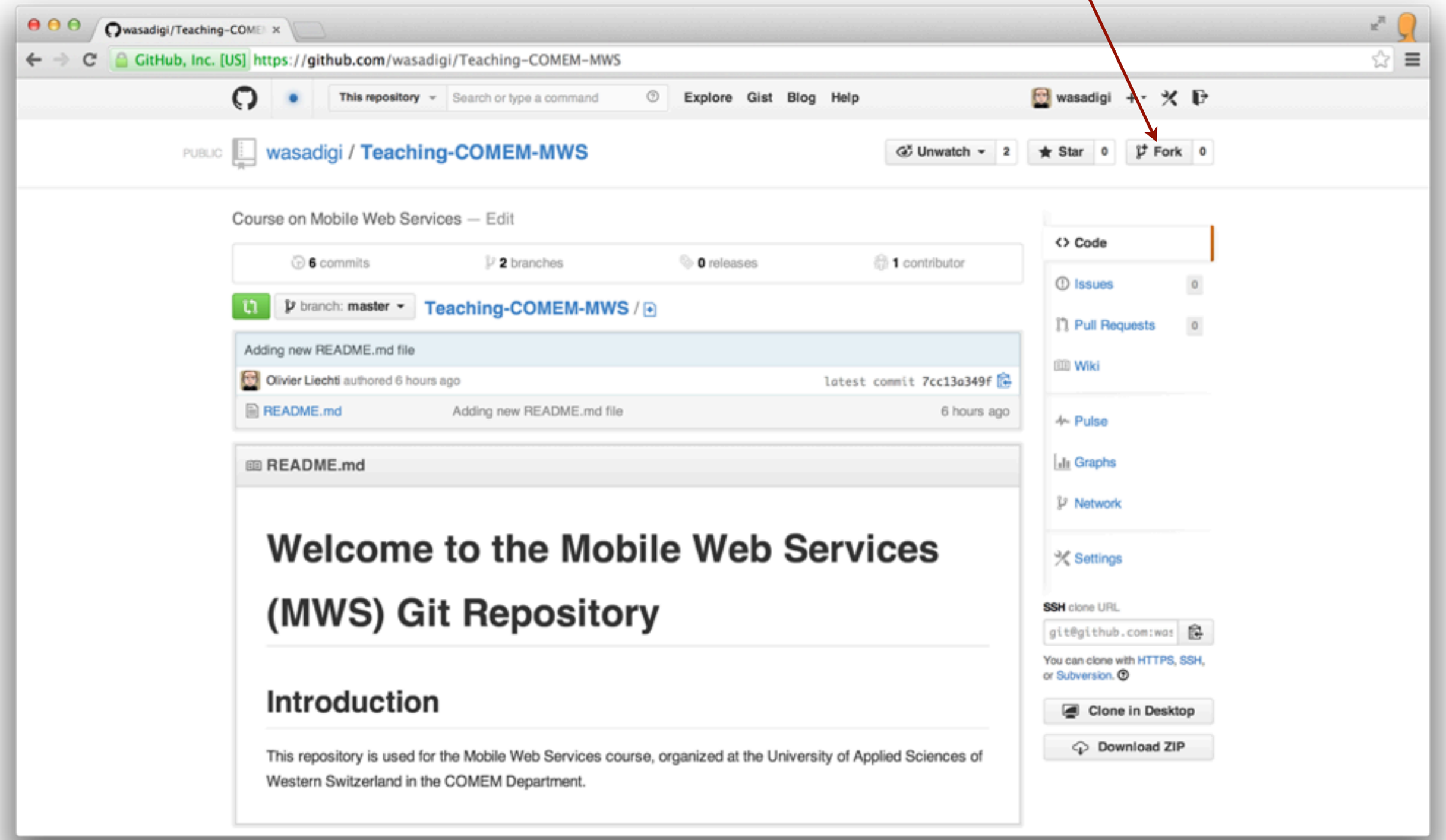

Forking My Repo on Github

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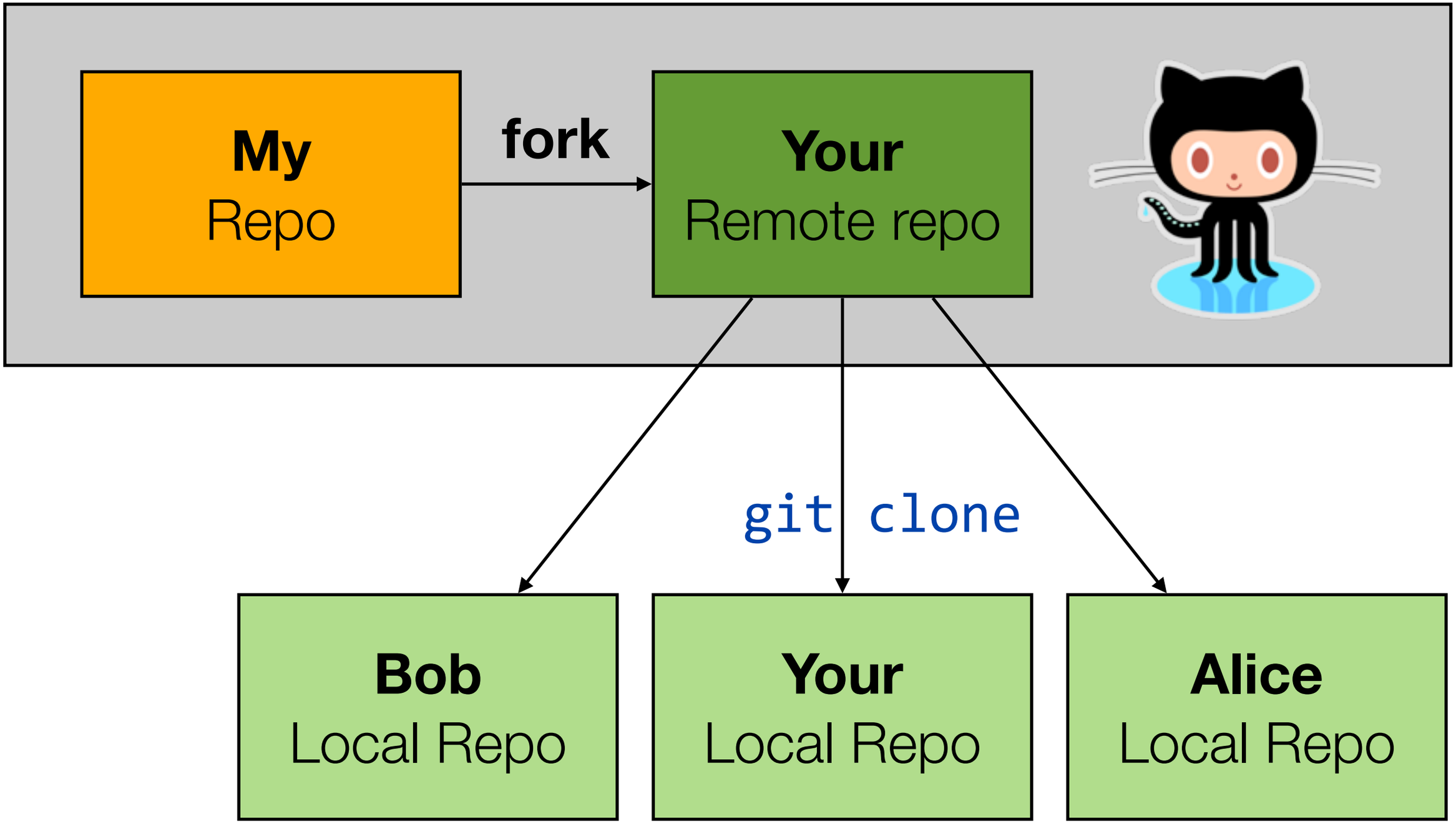

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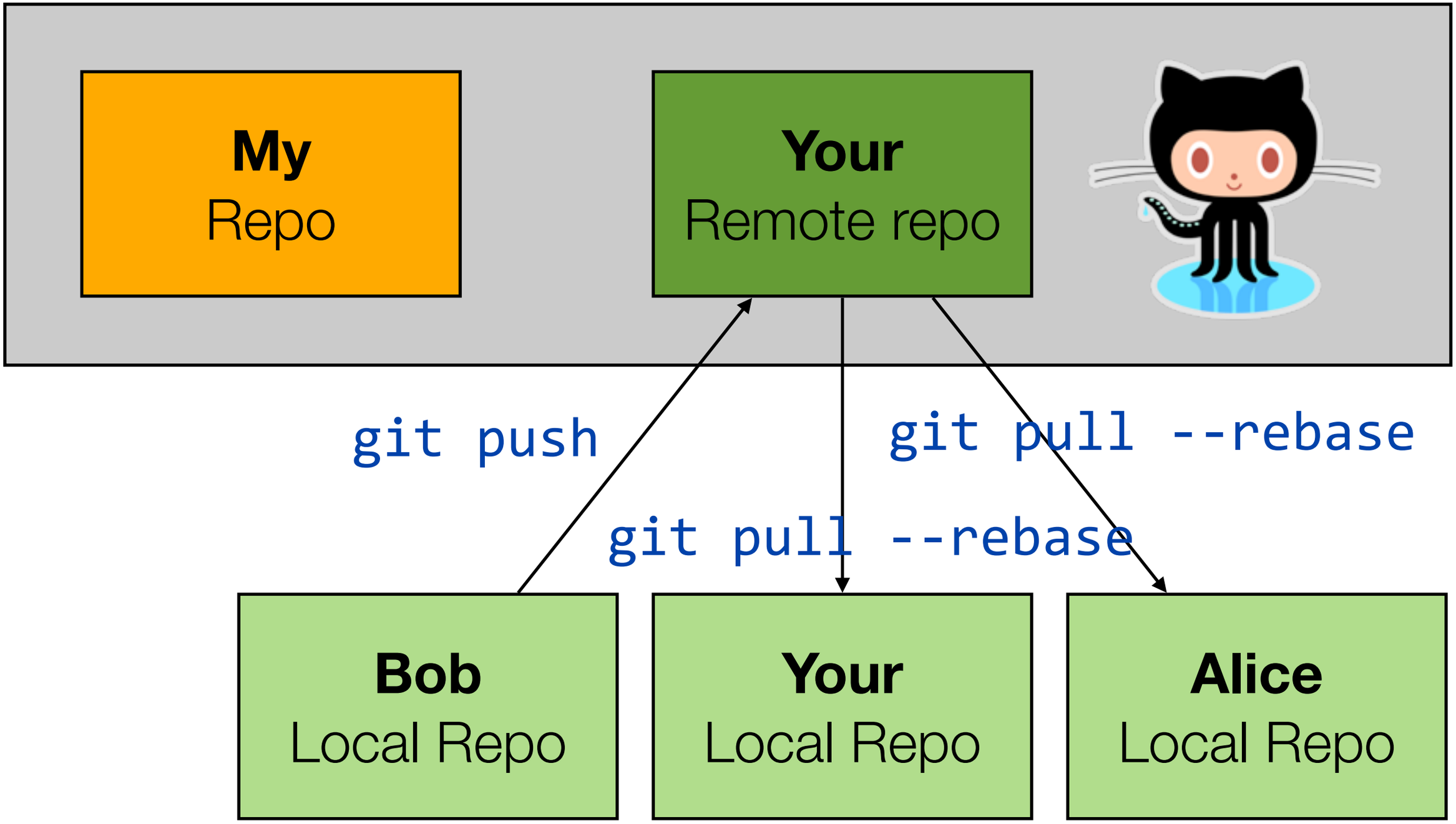

Setup Your Forks

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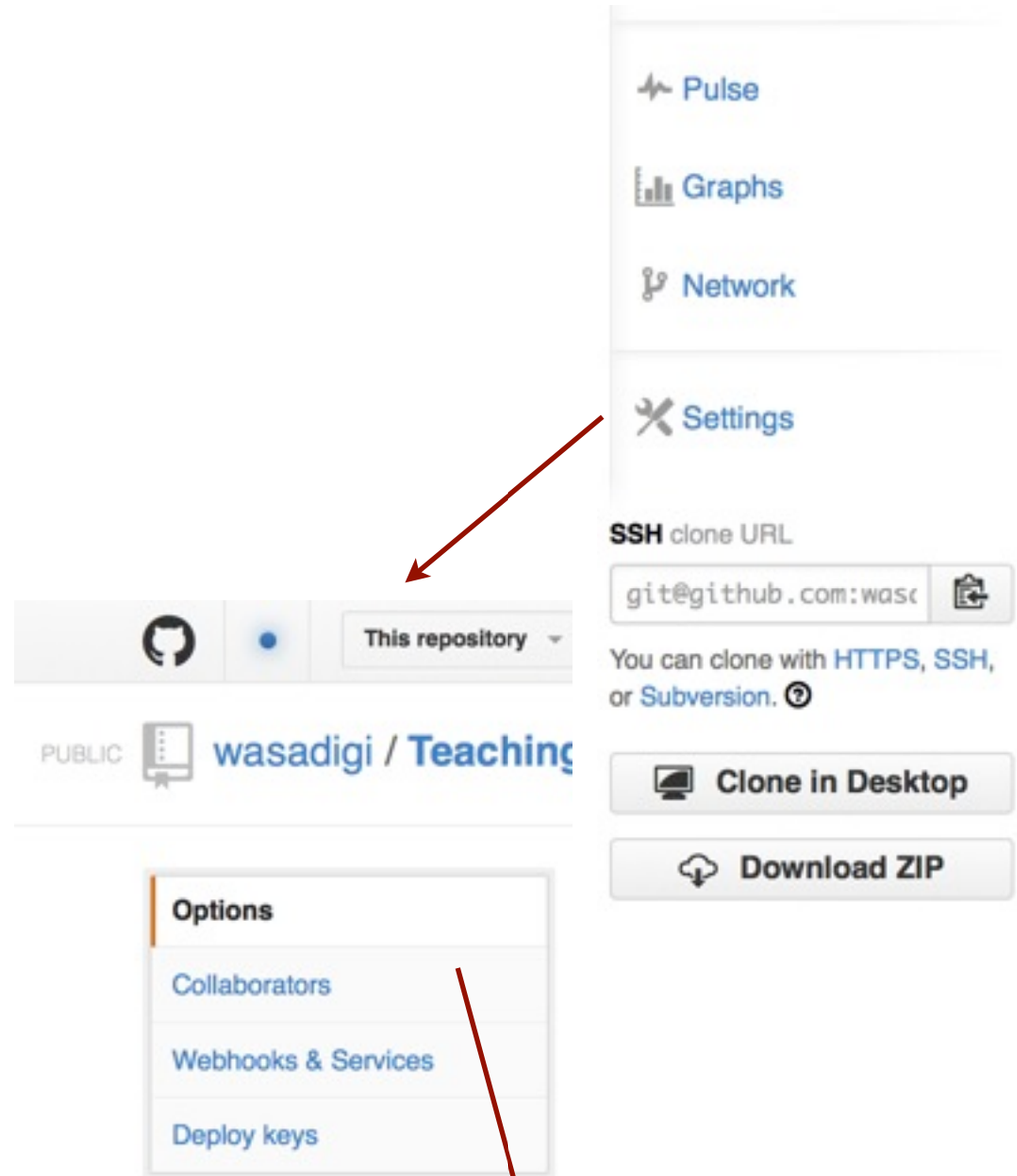
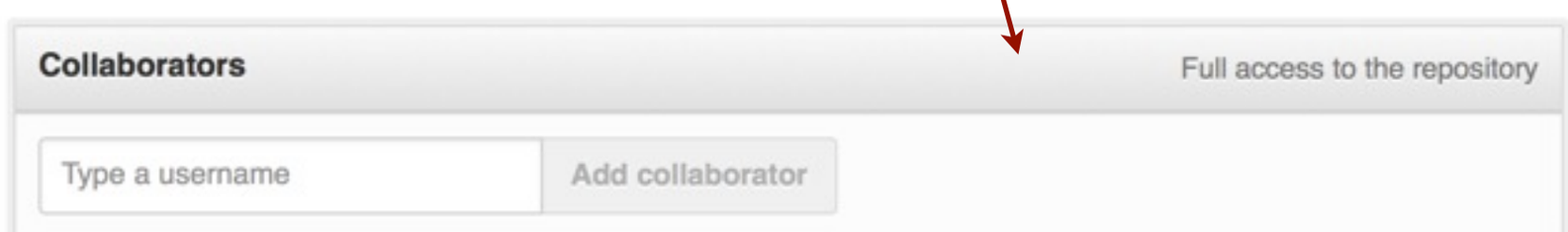
- **Setup the Project Team**
  - In each group, **one person** (and only one) needs to fork my repo.
  - Nominate the person and let him/her **fork my repo**.
  - Go to the settings of your fork and **add the Github users** of your team members.
  - This will allow everyone in the team to **push commits** to the fork.
- Everyone on the Team should then **clone** your fork on their laptop.





Validate the Setup

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- **In each Team, every member should:**
  - make sure that the fork has **cloned** your fork on their machine.
  - **create a file** named firstName-lastName.txt (containing “hello”)
  - **add** this file to the staging area and **commit** the change
- **Now, the fun part: share your work. Everybody should:**
  - start by **fetching** the changes done on the remote (your fork). This will not change your local repository
  - apply the changes to your local repo by doing a **`git pull --rebase`**; this should not create any conflict
  - send your own commit to your fork, by doing a **`git push`**
- **Check the commit history on the GitHub web interface** AND **`git with a git log`**

```
$ git fetch
$ git pull --rebase
$ git push
```

How Do Will You Get **My** Updates?

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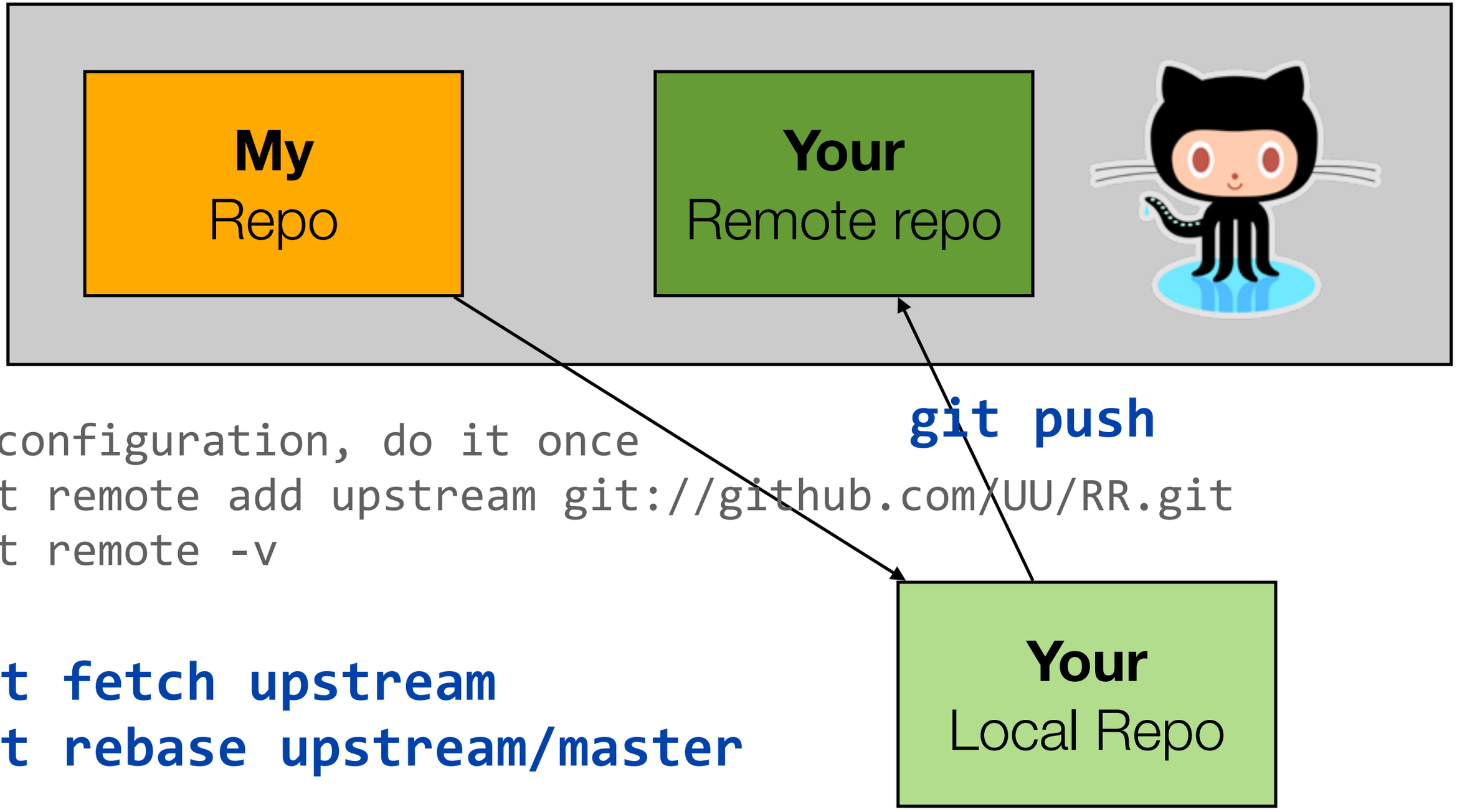


```
# configuration, do it once
git remote add upstream git://github.com/UU/RR.git
git remote -v
```

```
git fetch upstream
git rebase upstream/master
```

Validate the Setup

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- **Let me do a change in my original GitHub repo**
- **Connect your local repo to my GitHub repo**

```
$ git remote add upstream git@github.com:wasadigi/Teaching-COMEM-MWS.git
$ git remote -v
$ git push
```

- **Fetch and apply my changes**

```
$ git fetch upstream
$ git rebase upstream/master
$ git pull --rebase
$ git commit -m “Applying Olivier’s changes”
$ git push
```