Preamble

https://bit.ly/2IMdGdm

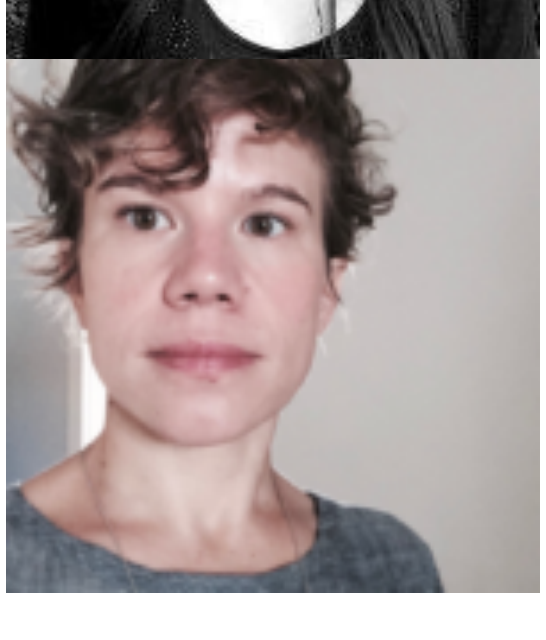
In order to participate, your environment should have: 1. `git` is installed on your computer 2. A text editor (such as `atom`) installed on your computer 3. A `github` account setup 4. You must know your password for `github` and your `email`

Give your Github username to the TAs! Once youâ€™ve been invited, we can get started.

If you didnâ€™t bring a computer, or are unfamiliar with terminal commands, make a friend

Adapted from the OHSU BioData Club â€“ repository was maintained by Philip Robinson

Thanks to Philip, Ted, Lisa, Robin for creating this walkthrough



Intro to Git

https://bit.ly/2IMdGdm

This talk will not cover, or expect, specific programming languages This talk will:

1. Introduce a collaborative demo using git and Github
2. Introduce vocabulary for using git and Github
3. Understand a simple git workflow
4. Talk about access control and Github

 # Goals If you successfully finish workshop, you will - be able to collaborate on simple projects using git and Github - understand basic vocabulary for git - know what to study next and where to find resources

Why should you Care? - No more emailing document revisions - Simpler local directory/file structures - Remote storage - Stable workflow - Easily add new collaborators to project - The worldâ€™s most boring time machine

Your Project!

After I assign you an **issue** of content, - add text contents of **issue** to the `README.md` file - belonging to an **existing repository** - in **alphabetical order**. - Finally, use git to share your changes


```
A is for Amy who fell down the stairs
B is for Basil assaulted by bears
C is for Clara who wasted away
...
Z is for Zillah who drank to much gin
```

What is Git? - Source and version control - Ledger of work - Collaboration tool - Workflow management software

competes with : **hg**, **svn**, **cvs**

What is Github?

- Git service provider
- Account management and access control
- Hosting platform
- Ticket tracker / project management tool

competes with : **GitLab**, **bitbucket**, **coding.net**

What to store in Github? - source code (any language) - markdown / Jupyter / pdf - small public (images & data-sets)

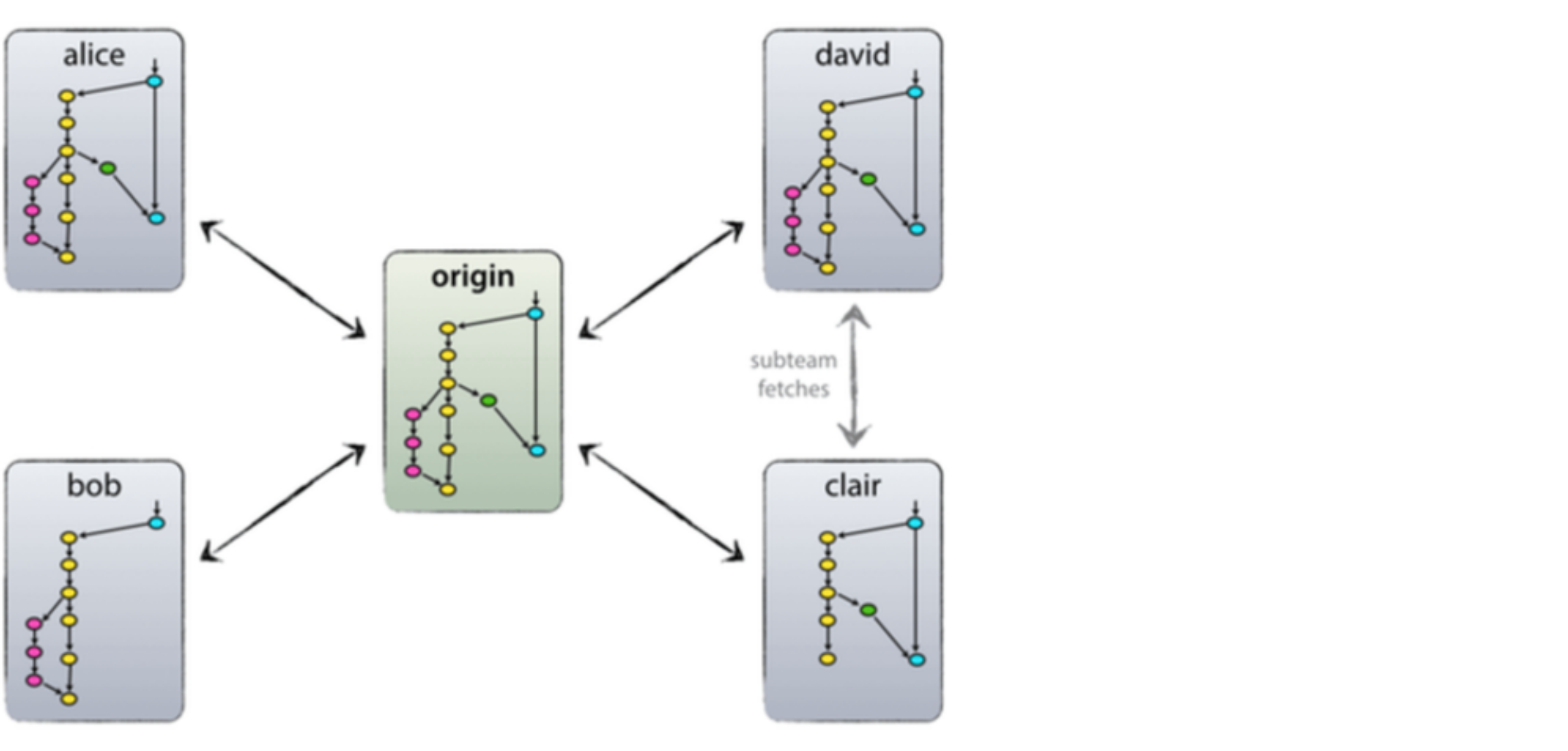
What NOT to store? - PASSWORDS, access tokens, or private keys - PHI, large images, large data-sets - compiled binaries - Non-pars-able documents (Word, Photoshop, â€¦)

Vocabulary (I)

- **Working Copy** - version of files I can currently edit
- `diff`, `status`, `log` - What state am I in?
- `checkout` - swaps current working copy to specific `commit`

Vocabulary (II)

- `remote` **labels that alias another location (host)**



Vocabulary (III)

- `init` / `clone` - Starts a Project
- `add`/`commit` add to ledger history - Tracks Changes
- `fetch`/`merge` Join multiple ledgers and handle merge conflicts
- `push` - Share Changes

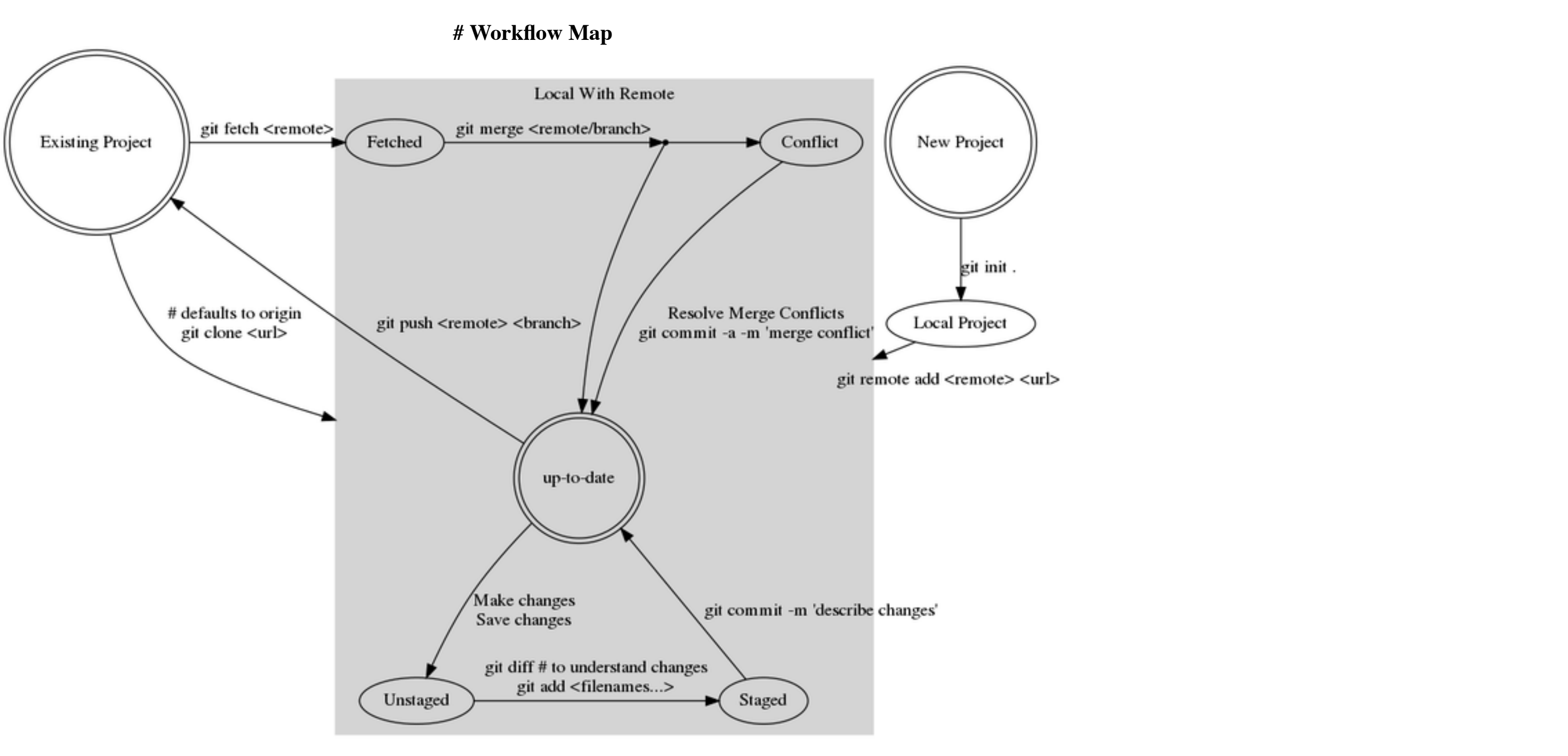
Merge Conflicts

```
$ git status
# On branch branch-b
...
# both modified:

$ cat styleguide.md
If you have questions, please
email a contributor.

$ cat styleguide.md
If you have a question, please open an issue on
github. If you have a solution, please submit
a pull request.
```

 # Workflow Map



Message Flag and Editor

If you donâ€™t use the `-m` message flag, you will likely be subject to `vim`. `vim` can be a very frustrating file editor, if you donâ€™t bother to learn it.

Look into how to change your default `EDITOR` for your operating system.

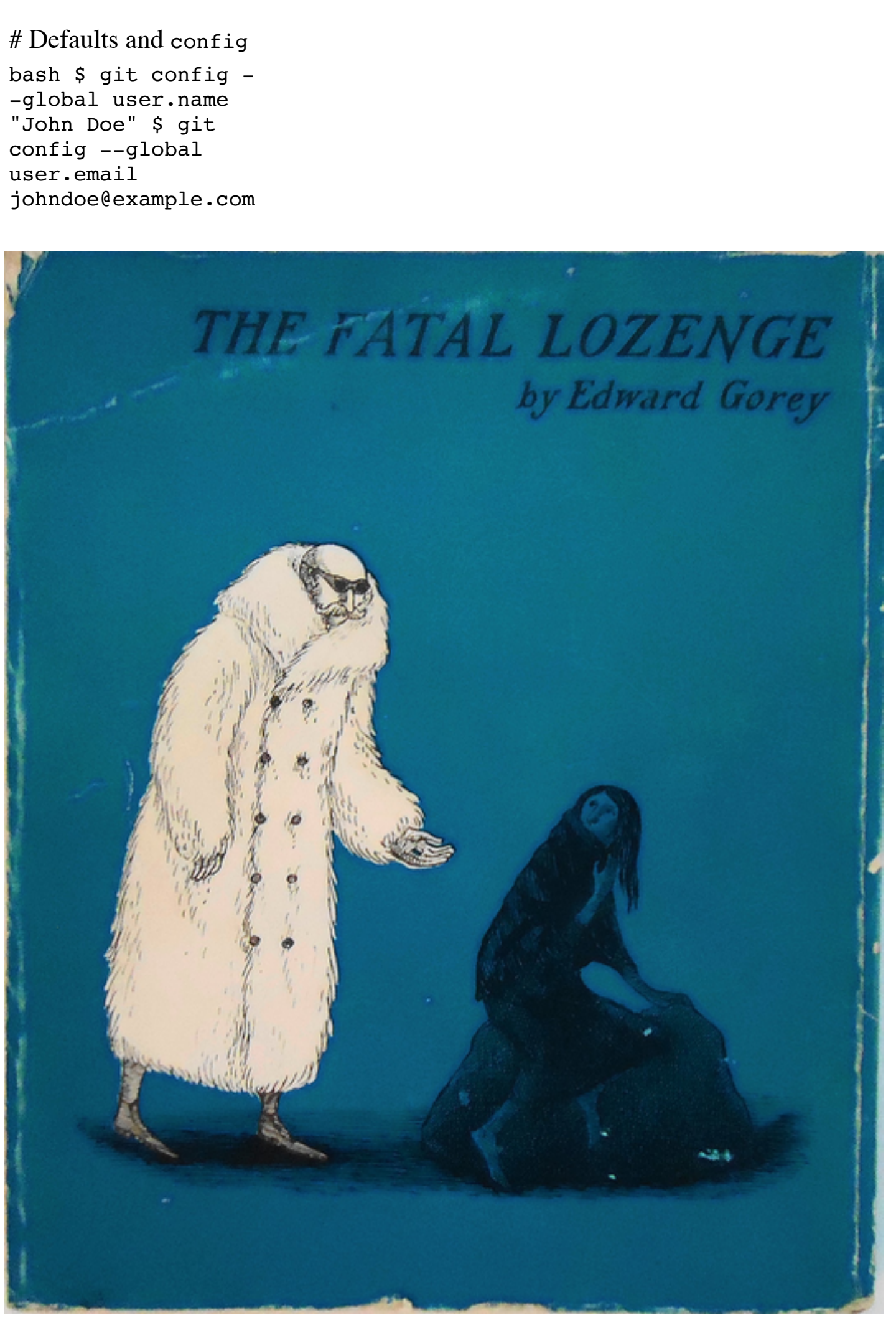
Vim

To exit `vim`, Hit the `Esc` key to enter â€œCommand modeâ€. Then you can type `:` to enter â€œCommand-line modeâ€. A colon (`:`) will appear at the bottom of the screen and you can type in one of the following commands. To execute a command, press the `Enter` key.

- `:q` to quit (short for `:quit`)
- `:q!` to quit without saving (short for `:quit!`)
- `:wq` to write and `quit`

Defaults and `config`

```
bash $ git config --global user.name "John Doe" $ git config --global user.email johndoe@example.com
```



.gitignore

Can specify file types or specific files to not commit

Each line is a file type or filename

- can use wildcard patterns: `.csv` - donâ€™t save my `secrets.json`

```
*.csv
secrets.json
```

Passwords

```
$ cat secrets.json # this file should not be committed
{
    "password":"MySuperNeatoPassword!#"
}
```

```
import json

# this file should be committed

with open('secrets.json') as fd:
    pwd = json.load(fd)['password']

print(pwd)
```

 # Github activities - Code reviews - Create / destroy user and organization accounts - Access control - Create / destroy repository - Issue creation / assignment / management - Gists

Collaborating without Permission *Collaboration within a team is different than from outside, as a consequence of access control.*

- `fork` - Copies repository - `pull request` - Shares changes back to source

Steps

1. `fork` repository on Github
2. `clone` forked repository to local directory
3. `add upstream` directed toward original repository
4. Edit files, save, `commit`, then `push` changes in forked repository
5. `pull request` against original repository

 # Branching Branching allows - encapsulation of features - simple `diffs` between features - easier `pull requests`

Collaboration Etiquette - Look for a `CONTRIBUTORS.md` file - Look for style guides - Read documentation before collaborating - Take code review feedback seriously and not personally - Identify an appropriate `issue` for your skill level - `rebase -i` to encapsulate solution to single `issue`

To Learn Next

- `checkout` - use another version as working copy
- `branch` - encapsulate work
- `rebase`/`rebase -i` - edit branch history
- Learn about branching models
- Learn about version numbers

Additional Resources

- `GitFlow` http://nvie.com/posts/a-successful-git-branching-model/
- *Cheatsheet* https://the-awesome-git-cheat-sheet.com/
- *Data Camp* https://www.datacamp.com/courses/introduction-to-git-for-data-science
- *Udacity* https://www.udacity.com/course/how-to-use-git-and-githubâ€“ud775