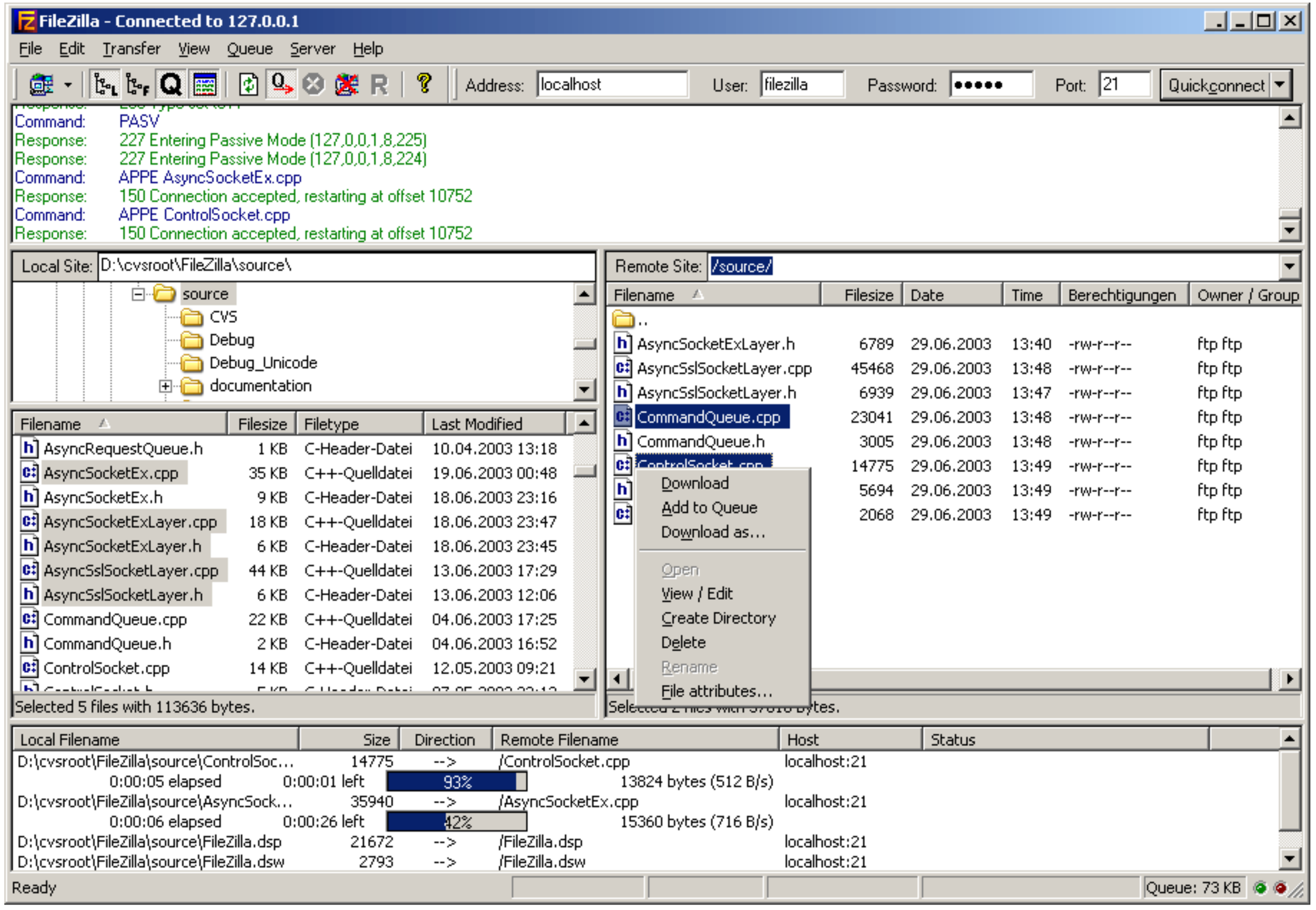
Version control with GIT

A workshop by @goodbytes
workshops.goodbytes.be

How do you share code today? zip? Dropbox? Facebook?

How do you deploy a website today?


FileZilla - Connected to 127.0.0.1
File Edit Transfer View Queue Server Help
Address: localhost User: filezilla Password: ••••• Port: 21 Quickconnect
Command: PASV
Response: 227 Entering Passive Mode (127,0,0,1,8,225)
Response: 227 Entering Passive Mode (127,0,0,1,8,224)
Command: APPE AsyncSocketEx.cpp
Response: 150 Connection accepted, restarting at offset 10752
Command: APPE ControlSocket.cpp
Response: 150 Connection accepted, restarting at offset 10752
Local Site: D:\cvsroot\FileZilla\source\
source
CVS
Debug
Debug_Unicode
documentation
Filename Filesize Filetype Last Modified
AsyncRequestQueue.h 1 KB C-Header-Datei 10.04.2003 13:18
AsyncSocketEx.cpp 35 KB C++-Quelldatei 19.06.2003 00:48
AsyncSocketEx.h 9 KB C-Header-Datei 18.06.2003 23:16
AsyncSocketExLayer.cpp 18 KB C++-Quelldatei 18.06.2003 23:47
AsyncSocketExLayer.h 6 KB C-Header-Datei 18.06.2003 23:45
AsyncSslSocketLayer.cpp 44 KB C++-Quelldatei 13.06.2003 17:29
AsyncSslSocketLayer.h 6 KB C-Header-Datei 13.06.2003 12:06
CommandQueue.cpp 22 KB C++-Quelldatei 04.06.2003 17:25
CommandQueue.h 2 KB C-Header-Datei 04.06.2003 16:52
ControlSocket.cpp 14 KB C++-Quelldatei 12.05.2003 09:21
Selected 5 files with 113636 bytes.
Remote Site: /source/
Filename Filesize Date Time Berechtigungen Owner / Group
..
AsyncSocketExLayer.h 6789 29.06.2003 13:40 -rw-r--r-- ftp ftp
AsyncSslSocketLayer.cpp 45468 29.06.2003 13:48 -rw-r--r-- ftp ftp
AsyncSslSocketLayer.h 6939 29.06.2003 13:47 -rw-r--r-- ftp ftp
CommandQueue.cpp 23041 29.06.2003 13:48 -rw-r--r-- ftp ftp
CommandQueue.h 3005 29.06.2003 13:48 -rw-r--r-- ftp ftp
14775 29.06.2003 13:49 -rw-r--r-- ftp ftp
5694 29.06.2003 13:49 -rw-r--r-- ftp ftp
2068 29.06.2003 13:49 -rw-r--r-- ftp ftp
Download
Add to Queue
Download as...
Open
View / Edit
Create Directory
Delete
Rename
File attributes...
Local Filename Size Direction Remote Filename Host Status
D:\cvsroot\FileZilla\source\ControlSoc... 14775 --> /ControlSocket.cpp localhost:21
0:00:05 elapsed 0:00:01 left 93% 13824 bytes (512 B/s)
D:\cvsroot\FileZilla\source\AsyncSock... 35940 --> /AsyncSocketEx.cpp localhost:21
0:00:06 elapsed 0:00:26 left 42% 15360 bytes (716 B/s)
D:\cvsroot\FileZilla\source\FileZilla.dsp 21672 --> /FileZilla.dsp localhost:21
D:\cvsroot\FileZilla\source\FileZilla.dsw 2793 --> /FileZilla.dsw localhost:21
Ready
Queue: 73 KB

Throw all files on ftp and let’s hope it works?

Let’s GIT to work

Joeri Claes @joericlaes 35m

Dat git & command-line belangrijk zijn! Zonder kennis van die twee kan je hier op stage niets komen doen :)

•••

Why GIT

- fool-proof coding workflow
- collaboration
- reliable deployment
- backups

First, install git (CLI)

- instructions are here http://git-scm.com/book/en/v2/Getting-Started-Installing-Git
- if you are on windows, this may be handy way to install git and a graphical client in one go: https://windows.github.com/
- we'll start with the CLI or *command line interface*

core concepts

- clone
- add / commit
- push / pull
- branching / checkout
- merge / rebase


git


github
SOCIAL CODING


Atlassian
Bitbucket

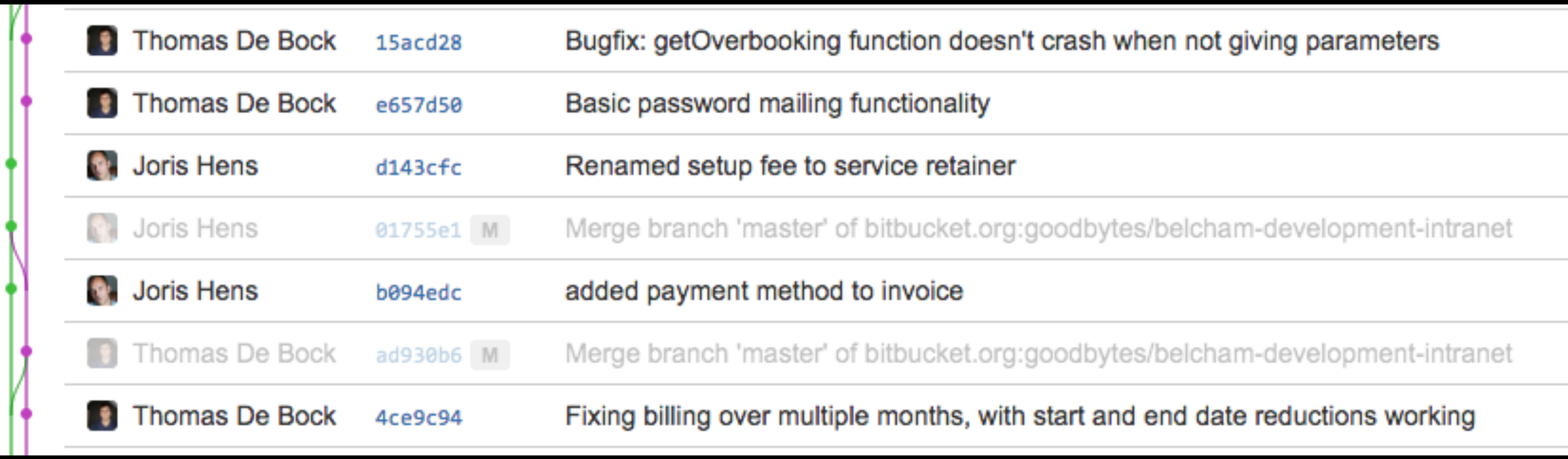
clone

- copy a repository to your local development system
- usually done when setting up a project
- `git clone git@github.com:iamgoodbytes/2imd-webtech2-labs.git somedirectory`

add & commit files

command	what it does
git add index.html	add the file index.html to version control
git commit -m “commit message”	commit the changes
git status	show what files are ready to be committed or what changes are pending

commit


Thomas De Bock 15acd28 Bugfix: getOverbooking function doesn't crash when not giving parameters
Thomas De Bock e657d50 Basic password mailing functionality
Joris Hens d143cfc Renamed setup fee to service retainer
Joris Hens 01755e1 M Merge branch 'master' of bitbucket.org:goodbytes/belcham-development-intranet
Joris Hens b094edc added payment method to invoice
Thomas De Bock ad930b6 M Merge branch 'master' of bitbucket.org:goodbytes/belcham-development-intranet
Thomas De Bock 4ce9c94 Fixing billing over multiple months, with start and end date reductions working

pushing & pulling

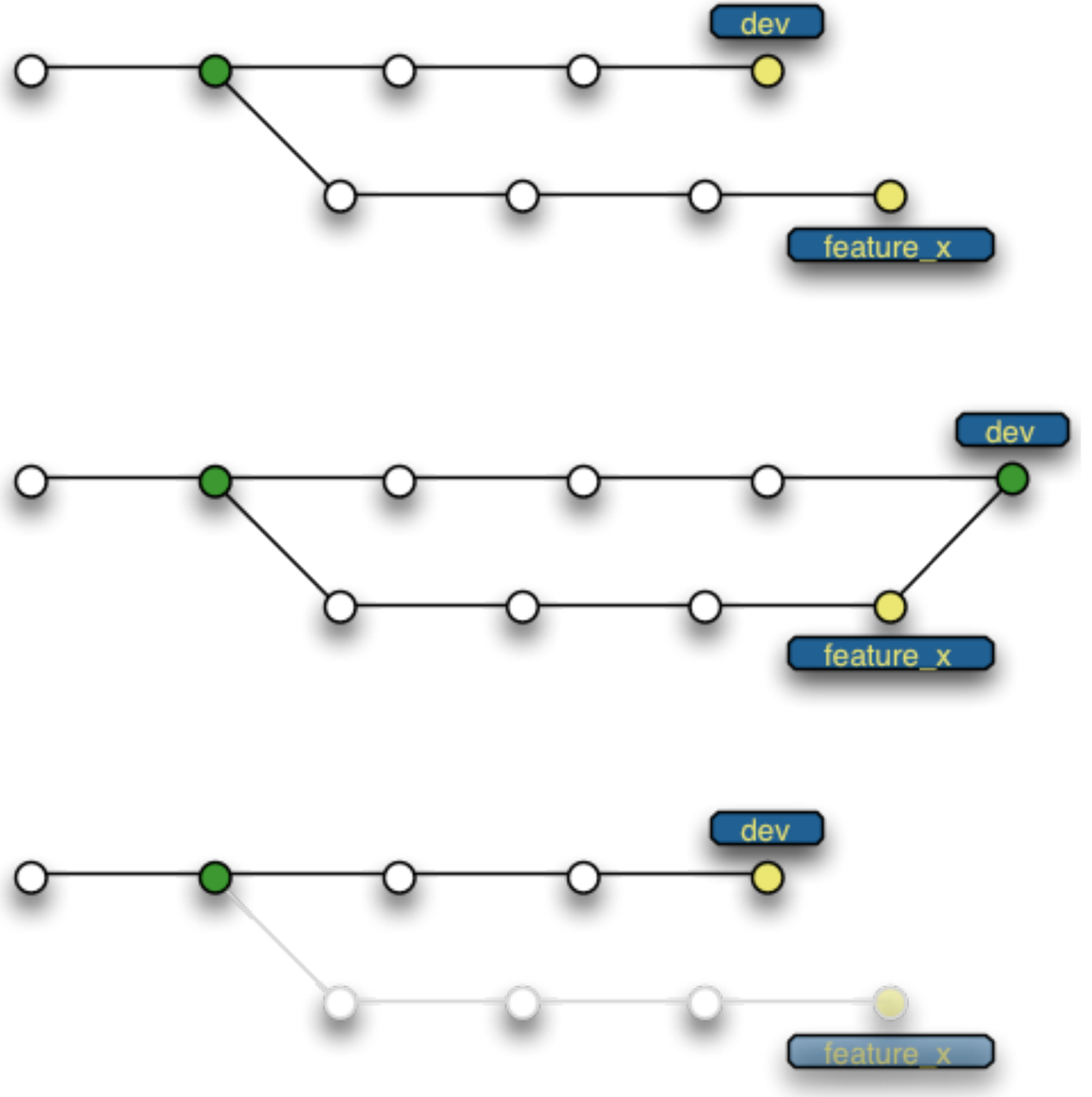
command	what it does
git pull *[alias] [branch]*	fetch+merge latest changes from a repository
git push *origin master*	push your commits to the repository at alias *origin* and to the branch *master*

branching

- **PROBLEM:** *Version 1.1 of your web app is online. You are halfway through working on 1.2 but there are still bugs and missing features. An urgent bug surfaces in version 1.1 that requires fixing immediately.*
- We can't simply fix the bug in the file (e.g. index.php) where we are working on version 1.2 and ship all that. Why not? What are our options?

branching

- use branches religiously
  - new features
  - bug fixes
  - new ideas
  - …



http://gitguru.com/2009/02/18/branching-strategies-overview/

simple daily git workflow

go this way!

git pull

pull all the changes from the remote repository

git checkout -b branch-name-here

create a new branch for your bug/feature/issue

DO YOUR WORK HERE

keep it in small chunks, the smaller your commits the better, in case things go wrong

git add .

and any new files you've created

git status and/or git diff

see the changes you're going to commit

git commit -m "Detailed message here"

make the commit with a nice detailed message

commit loop

git checkout master

switch back to the master branch when the feature is done, your tests pass right?

git merge branch-name-here

update the master branch to update the master with all your changes

feature loop

git push

send your changes up to the remote repository

branching

command	what it does
git checkout -b 0.1	create and switch to a branch called 0.1
git checkout 0.1	switch to a branch called 0.1
git branch	show the branch we are currently on

merge

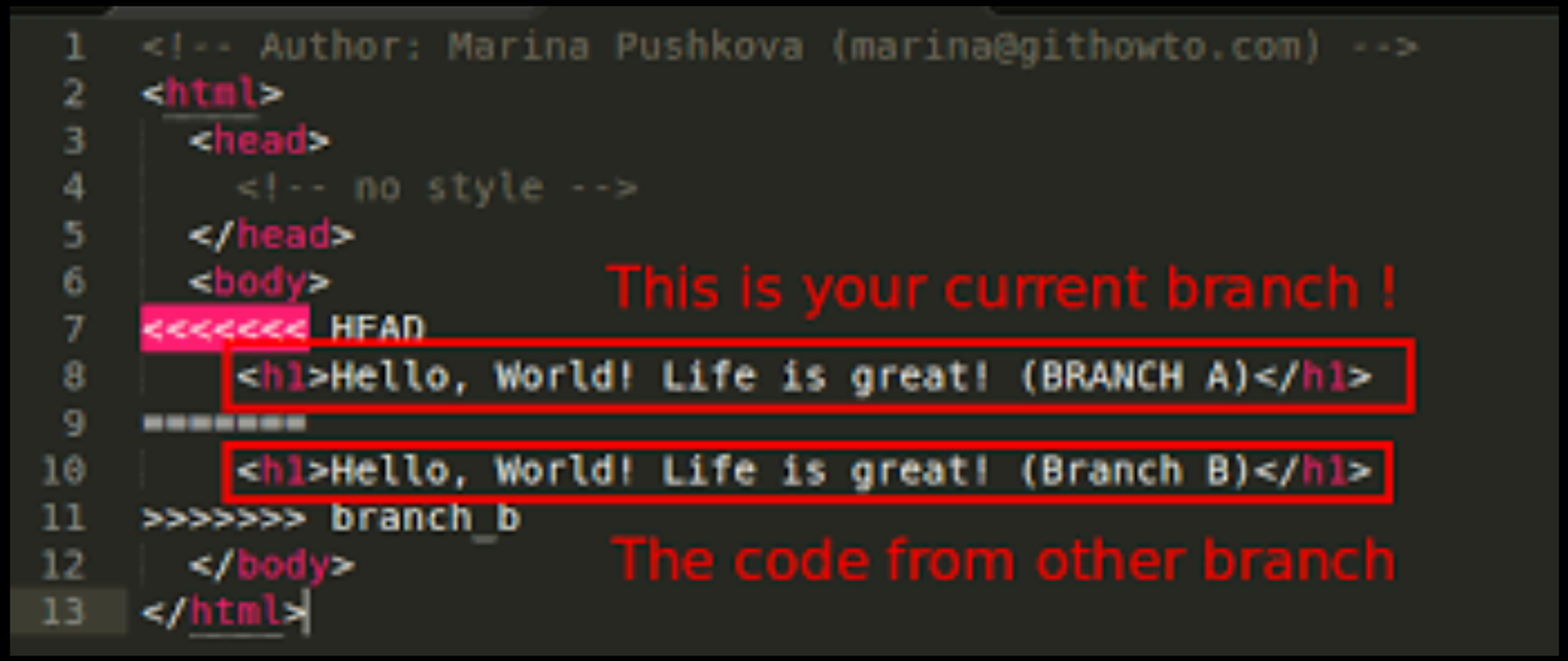
- merge your own branch with another (e.g. the master) branch
- you have tested your code right?
- to merge, switch to the branch where you want to merge the changes (typically your production or *master* branch), then issue the following command
- `git merge branchname`

rebase

- rebase can be useful if you want to bring a local branch up to date with your master branch
- rebasing will fast forward your work on top of the latest version of the master if you use the command below
- compared to merging, rebasing doesn't create a new commit, which can keep your git history cleaner
- `git checkout yourbranch`
  `git rebase master`

merge conflicts

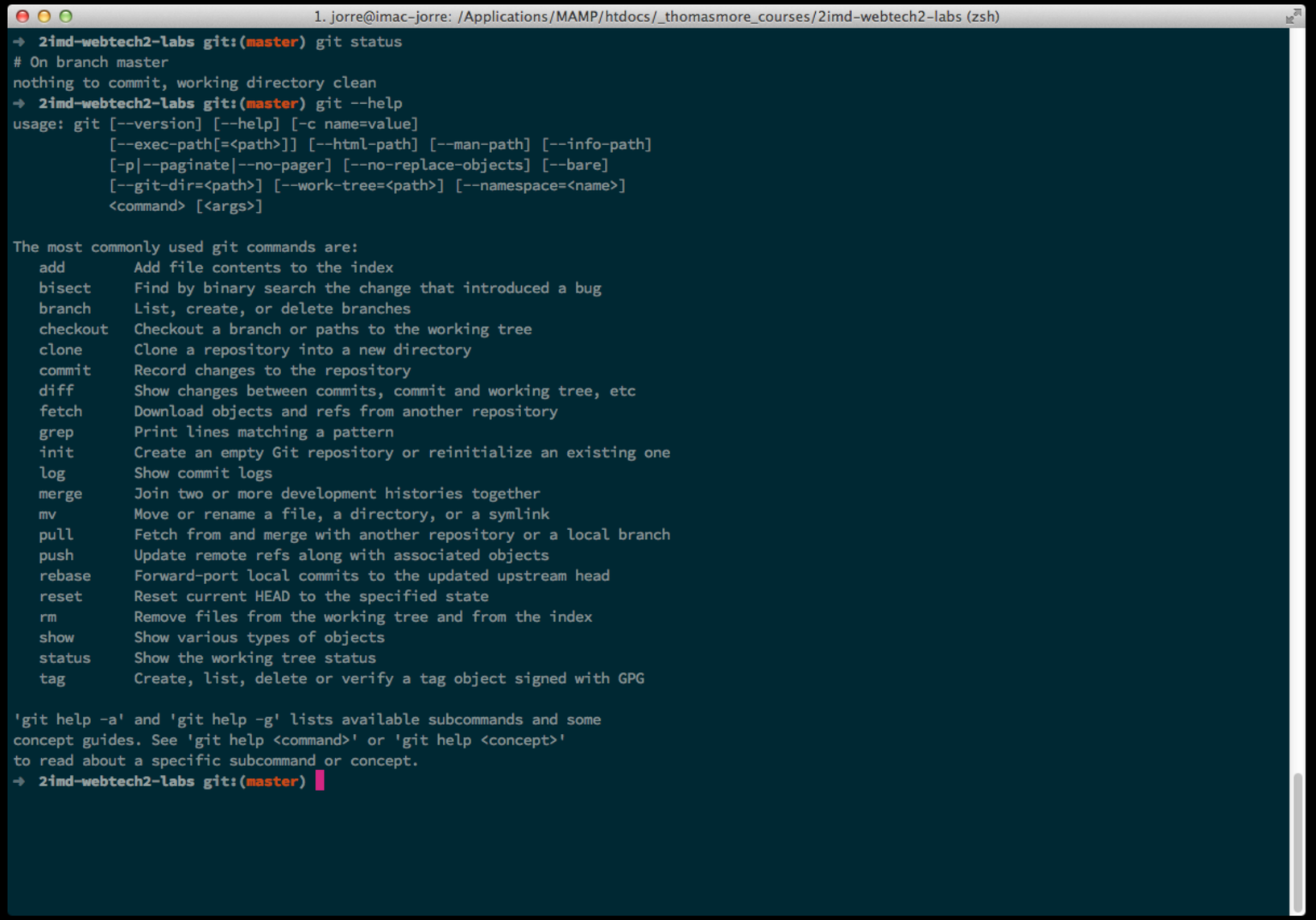
- merge conflicts can occur if two branches you are trying to merge have conflicting code, e.g. by editing the same line of code with different contents
- it's impossible for git to know which version of the code you want to keep, so we'll have to handle that manually
- edit the conflicting file(s) manually and commit them to resolve conflicts
- https://help.github.com/articles/resolving-a-merge-conflict-from-the-command-line




```
git mergetool
// change your files and commit again
```

Git tools

- The command line (cmder on windows!)
- Github for Windows/Mac
- Tower for Mac
- Mergetools like FileMerge, Kaleidoscope, P4Merge (free), Diffmerge (free)
- …
- Learn the command line first, before you switch to a graphical tool


1. jorre@imac-jorre: /Applications/MAMP/htdocs/_thomasmore_courses/2imd-webtech2-labs (zsh)
➜ 2imd-webtech2-labs git:(master) git status
On branch master
nothing to commit, working directory clean
➜ 2imd-webtech2-labs git:(master) git --help
usage: git [--version] [--help] [-c name=value]
[--exec-path[=<path>]] [--html-path] [--man-path] [--info-path]
[-p|--paginate|--no-pager] [--no-replace-objects] [--bare]
[--git-dir=<path>] [--work-tree=<path>] [--namespace=<name>]
<command> [<args>]
The most commonly used git commands are:
add Add file contents to the index
bisect Find by binary search the change that introduced a bug
branch List, create, or delete branches
checkout Checkout a branch or paths to the working tree
clone Clone a repository into a new directory
commit Record changes to the repository
diff Show changes between commits, commit and working tree, etc
fetch Download objects and refs from another repository
grep Print lines matching a pattern
init Create an empty Git repository or reinitialize an existing one
log Show commit logs
merge Join two or more development histories together
mv Move or rename a file, a directory, or a symlink
pull Fetch from and merge with another repository or a local branch
push Update remote refs along with associated objects
rebase Forward-port local commits to the updated upstream head
reset Reset current HEAD to the specified state
rm Remove files from the working tree and from the index
show Show various types of objects
status Show the working tree status
tag Create, list, delete or verify a tag object signed with GPG
'git help -a' and 'git help -g' lists available subcommands and some
concept guides. See 'git help <command>' or 'git help <concept>'
to read about a specific subcommand or concept.
➜ 2imd-webtech2-labs git:(master)

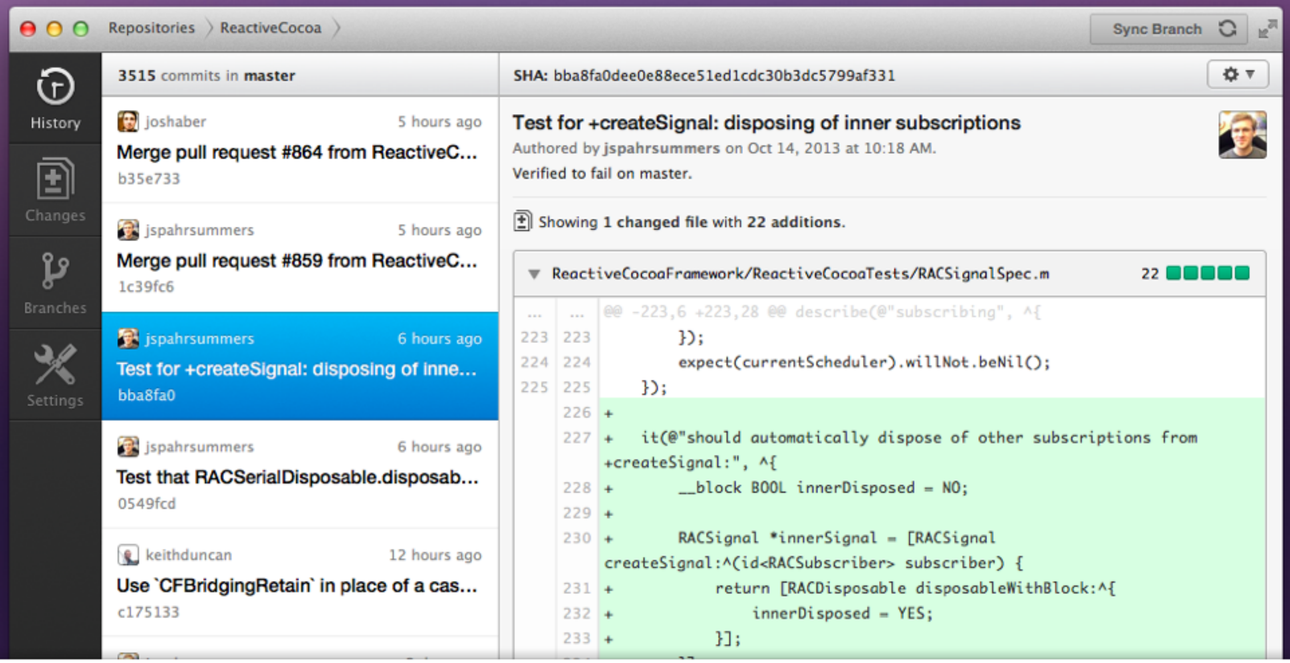
GitHub Mac

Overview Help Release Notes

The easiest way to use GitHub on Mac.

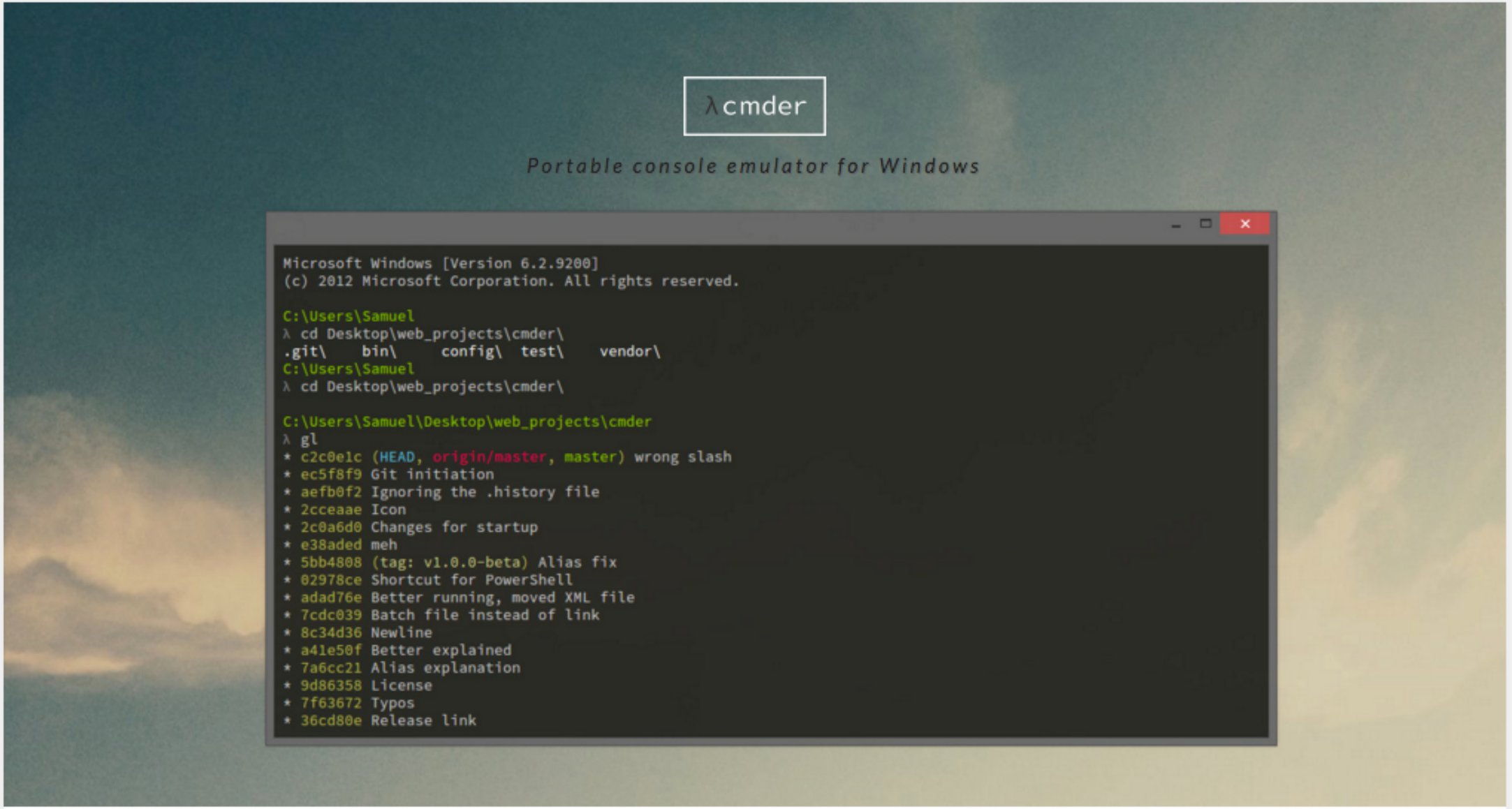
Download GitHub for Mac

OS X 10.7 or later



✓ Clone repositories ✓ Browse history ✓ Commit changes ✓ Branch code ✓ Share code on github.com

Sharing code should be as simple as possible.



Cmder is a software package created out of pure frustration over the absence of nice console emulators on Windows. It is based on amazing software, and spiced up with the Monokai color scheme and a custom prompt layout. Looking sexy from the start.

READ OUR BLOG

TOWER

the most powerful Git client for Mac

Download Trial

Free for 30 days. All features.

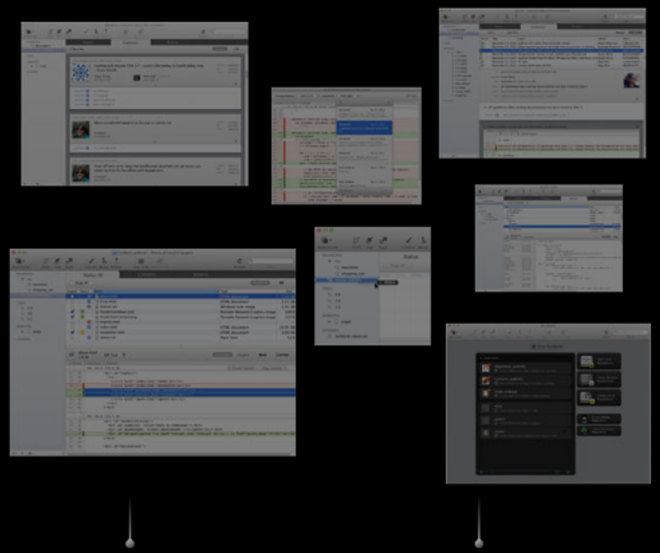
Download trial for Mac OS 10.5

Buy Now

Version 1.5.2 release notes

Version control with Git - made easy.

Git is the future of version control. But using it on the command line can be difficult.
Make your life easier with Tower - the most powerful Git client for your Mac.



Screencast

Tower in 2 minutes.

From Beginner...

Learn Git with Tower. With its **easy-to-use interface** you'll be up to speed in no time. Tower takes the pain out of Git and makes complex tasks **simple**.

...to Master

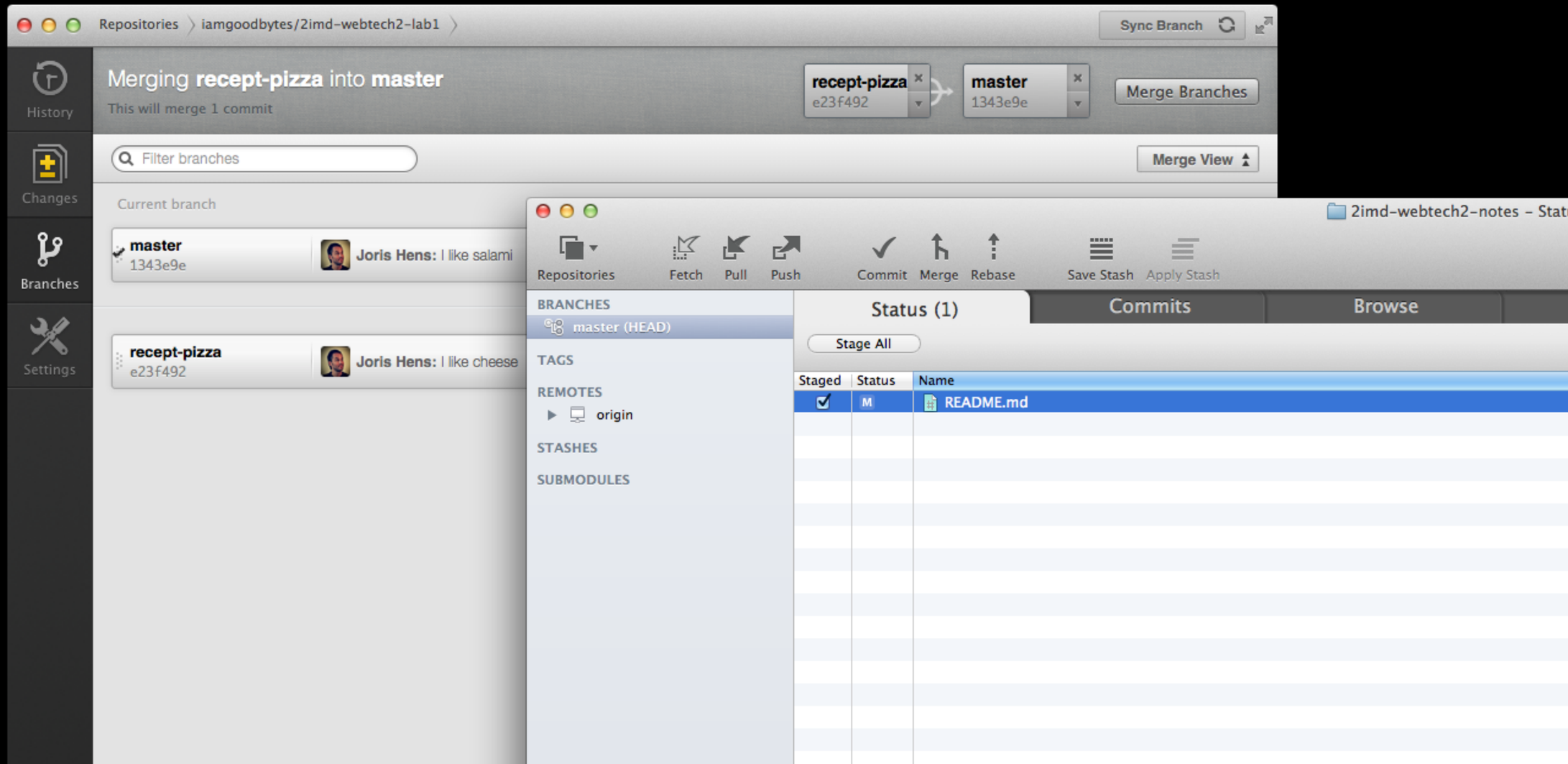
Tower has all of Git's **advanced features** waiting for you: single line staging, submodule support, file history...
Increase your productivity - without missing Git's power.

From Confidence

to Productivity

Git is the Future

same flow, different UI



pull requests

- contribute to projects on GitHub
- a pull request notifies a project owner that you want to submit changes to their project
- always try to use a feature branch when creating pull request
- **Assignment: Lab1**

pull requests

1. ***fork*** the repository you want to contribute to on github.com (this will create a copy of the project on your own GitHub account)
2. (if you want you can add a git remote called *upstream* that references the original project in order to pull in updates. Run `git fetch upstream` and `git merge upstream/master` to do so)
3. make changes in a feature branch and publish the branch when ready
4. go to GitHub and issue your pull request
5. the repository owner will evaluate and merge your code

deployment

- overview of how real life deployment works
- example: atelier.belcham.org
- *no more FTP!*

Course notes

- clone + pull them from github
- be an active contributor to this course via pull requests and earn extra credits / contribute by adding interesting links
- https://github.com/iamgoodbytes/2imd-webtech2-notes

Pull request tryout?

Help keep the course notes up to date

1. *remove the part about “Backbone.js”, we won’t need that*
2. *remove the chapter about animating with CSS*
3. *remove the chapter about grunt.js*
4. *add a chapter about vue.js and add a couple of interesting links*
5. *add a chapter about flexbox and add a couple of interesting links*

To pass this level you…

- can explain all core Git concepts to a newbie
  - we will organise a workshop for the designer this Thursday, who's in?
- can use Git to manage a real word project by using branches
- can contribute to a project by using pull requests on GitHub.com
- know what a centralised vs a distributed version control system is
- have successfully finished your Lab1 assignment (see toledo)
- have completed the intro at https://try.github.io


THIS IS GIT. IT TRACKS COLLABORATIVE WORK ON PROJECTS THROUGH A BEAUTIFUL DISTRIBUTED GRAPH THEORY TREE MODEL.
COOL. HOW DO WE USE IT?
NO IDEA. JUST MEMORIZE THESE SHELL COMMANDS AND TYPE THEM TO SYNC UP. IF YOU GET ERRORS, SAVE YOUR WORK ELSEWHERE, DELETE THE PROJECT, AND DOWNLOAD A FRESH COPY.

GitHub Student Developer

https://education.github.com/pack

GitHub Education

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Student Developer Pack

The best developer tools, free for students

Learn to ship software like a pro

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There's no substitute for hands-on experience, but for most students, real world tools can be cost prohibitive. That's why we created the GitHub Student Developer Pack with some of our partners and friends: to give students free access to the best developer tools in one place so they can learn by doing.

Get your pack

THE TOOLS

1.1 · Got 15 minutes and want to learn Git?

Git allows groups of people to work on the same documents (often code) at the same time, and without stepping on each other's toes. It's a distributed version control system.

Our terminal prompt below is currently in a directory we decided to name "octobox". To initialize a Git repository here, type the following command:

git init