Overview

0. Install git and create Github account

1. What is version control?

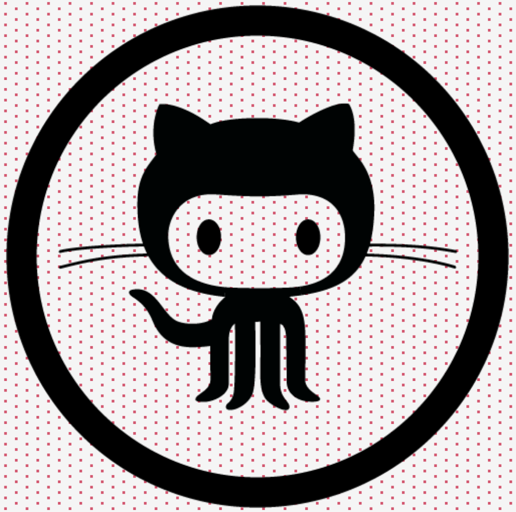
2. What is git?

3. How does git work?

4. What is GitHub?

5. Quick example using git and GitHub

6. Break into teams



Github icon

You can find the slides at:

http://bit.ly/1UBTJpF

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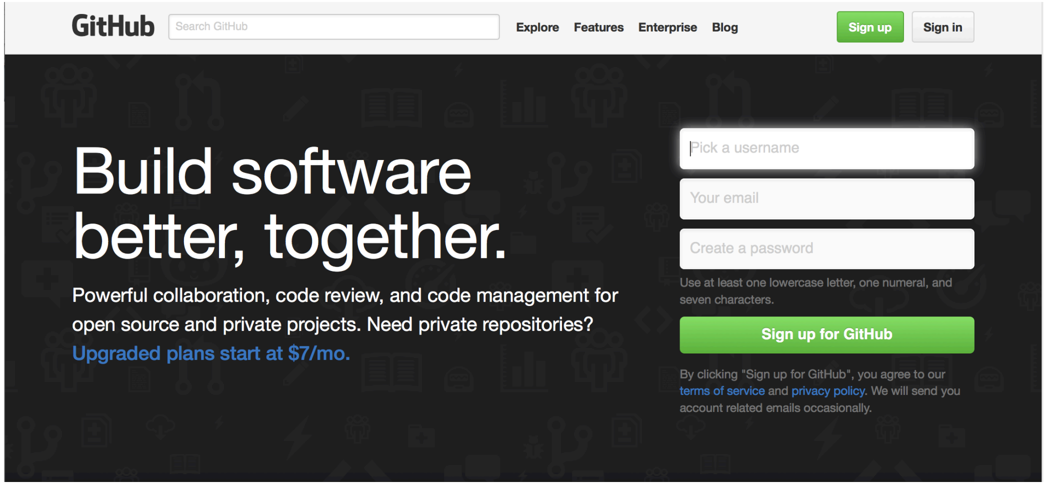
Install git and create GitHub account

Install git

- Linux (Debian)
  - Command: `sudo apt-get install git`
- Linux (Fedora)
  - Command: `sudo yum install git`
- Mac
  - http://git-scm.com/download/mac
- Windows
  - http://git-scm.com/download/win

Create Github account

- www.github.com
- Free for public repositories



Build software better, together.

Powerful collaboration, code review, and code management for open source and private projects. Need private repositories? Upgraded plans start at $7/mo.

Use at least one lowercase letter, one numeral, and seven characters.

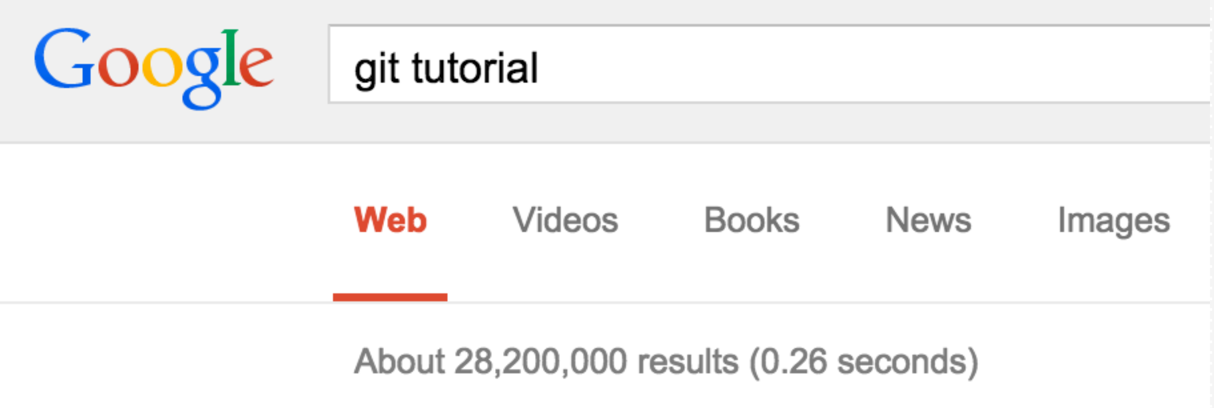
By clicking "Sign up for GitHub", you agree to our terms of service and privacy policy. We will send you account related emails occasionally.

Please email your GitHub user names to:

- **git101.hubspot@gmail.com**
- Needed to add everyone as collaborators of the tutorial repository

A quick request...

Ask questions!



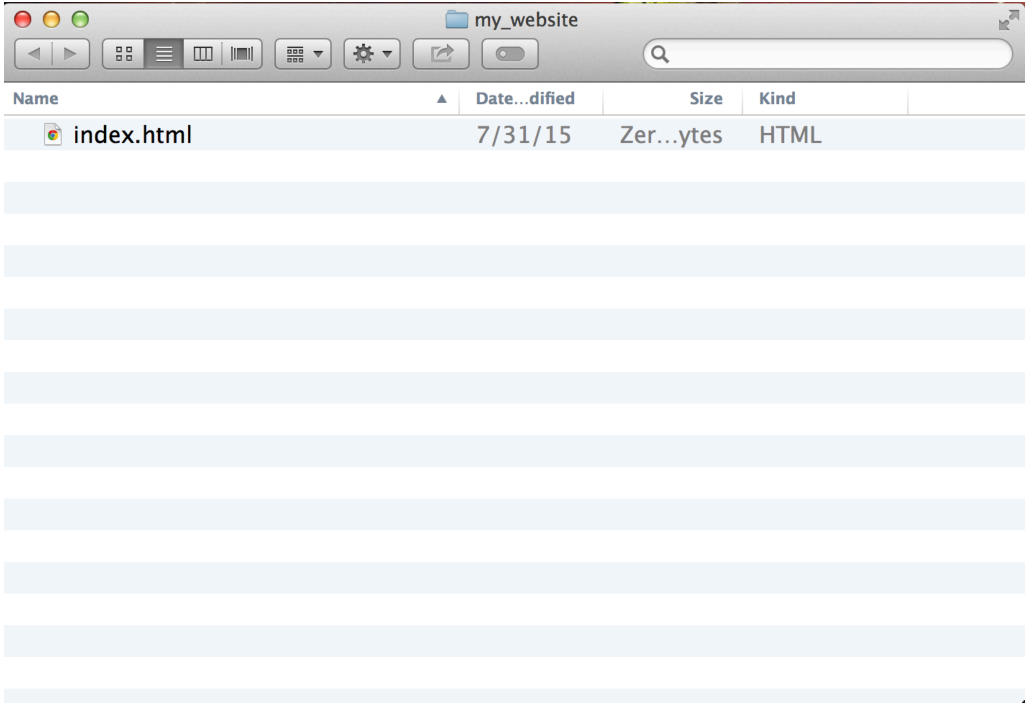
git tutorial

About 28,200,000 results (0.26 seconds)

1 What is version control?

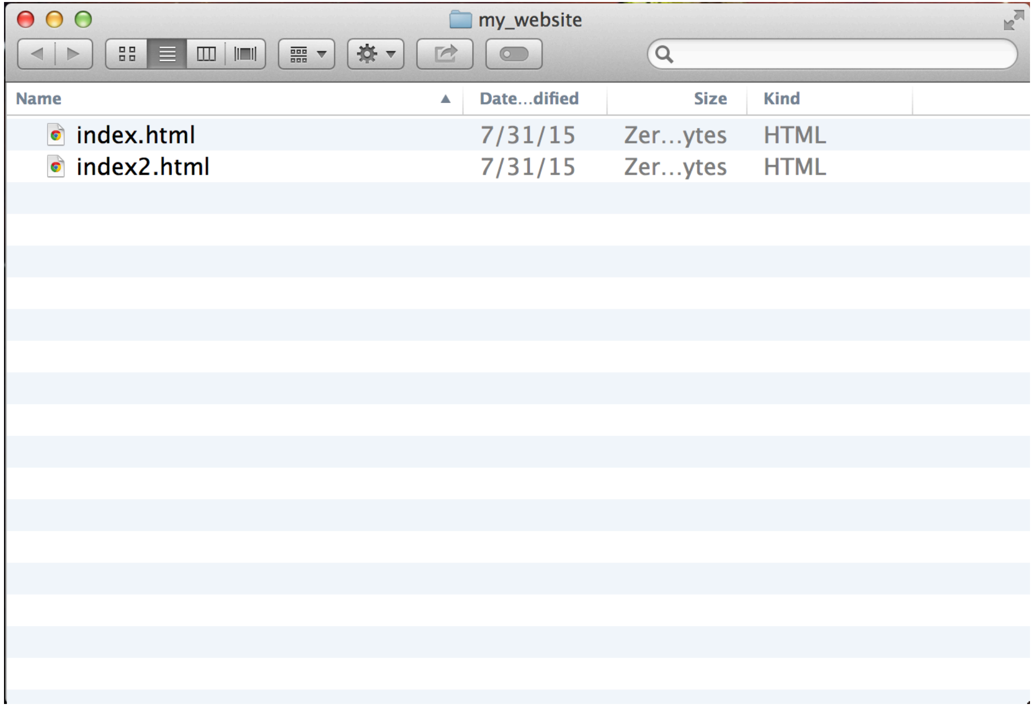
A world without version control

A world without version control



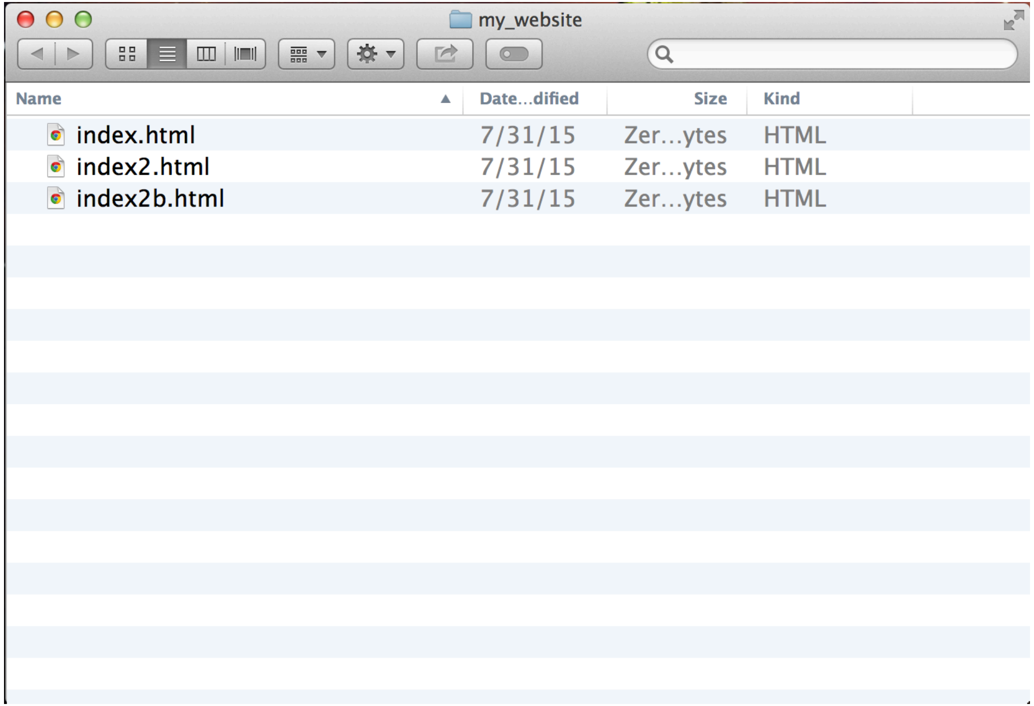
Name	Date...dified	Size	Kind
index.html	7/31/15	Zer...ytes	HTML

A world without version control



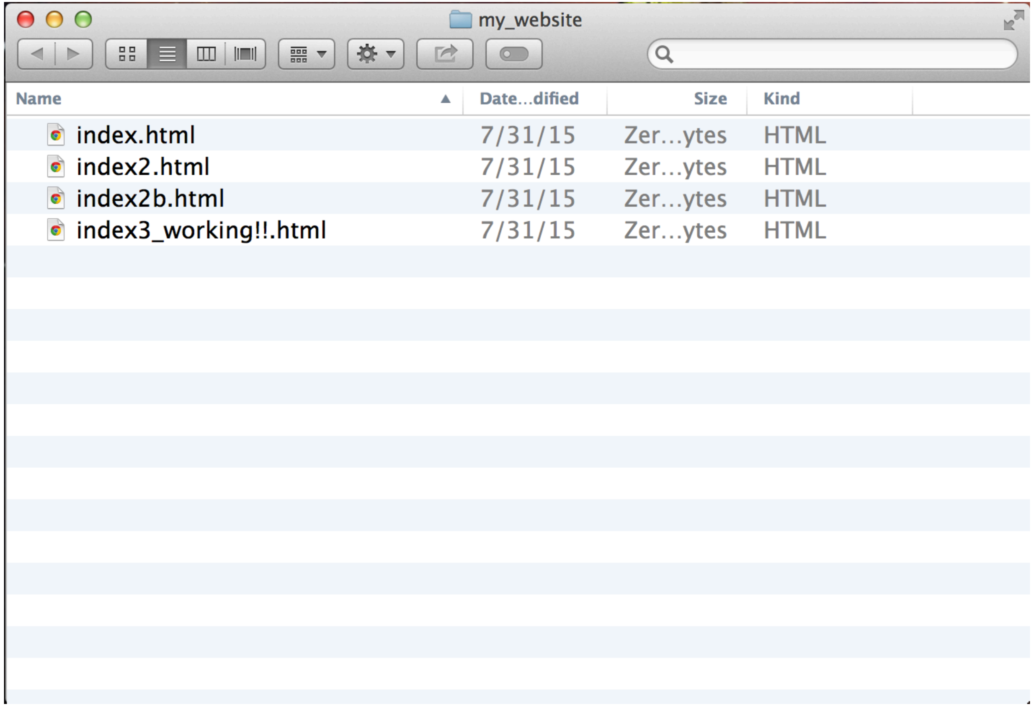
Name	Date...dified	Size	Kind
index.html	7/31/15	Zer...ytes	HTML
index2.html	7/31/15	Zer...ytes	HTML

A world without version control



Name	Date…dified	Size	Kind
index.html	7/31/15	Zer…ytes	HTML
index2.html	7/31/15	Zer…ytes	HTML
index2b.html	7/31/15	Zer…ytes	HTML

A world without version control



Name	Date...dified	Size	Kind
index.html	7/31/15	Zer...ytes	HTML
index2.html	7/31/15	Zer...ytes	HTML
index2b.html	7/31/15	Zer...ytes	HTML
index3_working!!.html	7/31/15	Zer...ytes	HTML

What is version control?

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What is version control?

- A system that keeps records of your changes
- Allows for collaborative development
- Allows you to know who made what change, when
- **Allows you to revert any changes and go back to a previous state**

2 What is git?

What is version control?

- Distributed version control
- Users keep entire code and history on their location machines.
  - Users can make any changes without internet access
  - (except pushing and pulling changes from a remote server)

What is git?

- Started in 2005
- Created by Linus Torvald to aid in Linux kernel development

Git icon

What is git?

- Git isn’t the only version control system

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What is git?

- Git isn’t the only version control system

- But it’s the best [citation needed]

3 How does git work?

How does git work?

- Can be complicated at first, but there are a few key concepts
- Important git terminology in following slides are blue

Key Concepts: Snapshots

- The way git keeps track of your code history
- Essentially records what all your files look like at a given point in time
- You decide when to take a snapshot, and of what files
- Have the ability to go back to visit any snapshot
  - Your snapshots from later on will stay around, too

Key Concepts: Commit

- The act of creating a snapshot
- Can be a noun or verb
  - “I commited code”
  - “I just made a new commit”
- Essentially, a project is made up of a bunch of commits

Key Concepts: Commit

- Commits contain three pieces of information:

1. Information about how the files changed from previously
2. A reference to the commit that came before it
   - Called the "parent commit"
3. A **hash code** name
   - Will look something like: fb2d2ec5069fc6776c80b3ad6b7cbde3cade4e

Key Concepts: Repositories

- Often shortened to ‘repo’
- A collection of all the files and the history of those files
  - Consists of all your commits
  - Place where all your hard work is stored

Key Concepts: Repositories

- Can live on a local machine or on a remote server (GitHub!)
- The act of copying a repository from a remote server is called cloning
- Cloning from a remote server allows teams to work together

Key Concepts: Branches

- All commits in git live on some branch
- But there can be many, many branches

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Key Concepts: Branches

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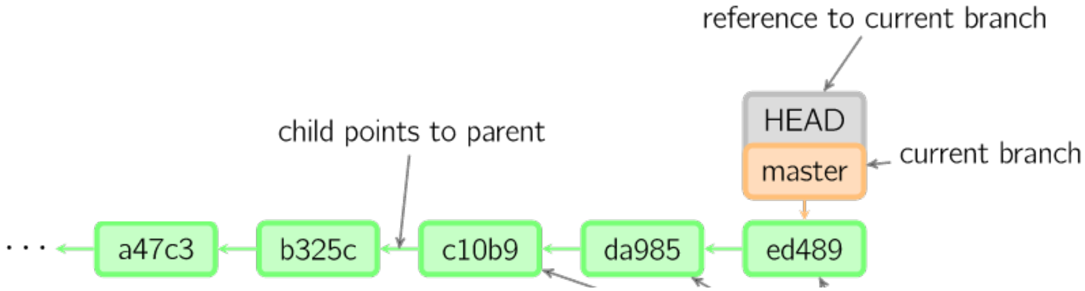
- But there can be many, many branches
- The main branch in a project is called the master branch

So, what does a typical project look like?

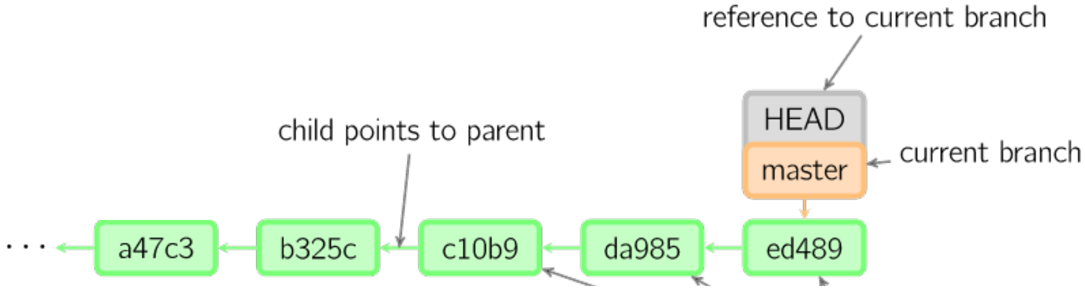
- A bunch of commits linked together that live on some branch, contained in a repository
- Following images taken and modified from:
  - http://marklodato.github.io/visual-git-guide/index-en.html
  - Also a good tutorial!

So, what does a typical project look like?



Time going forward

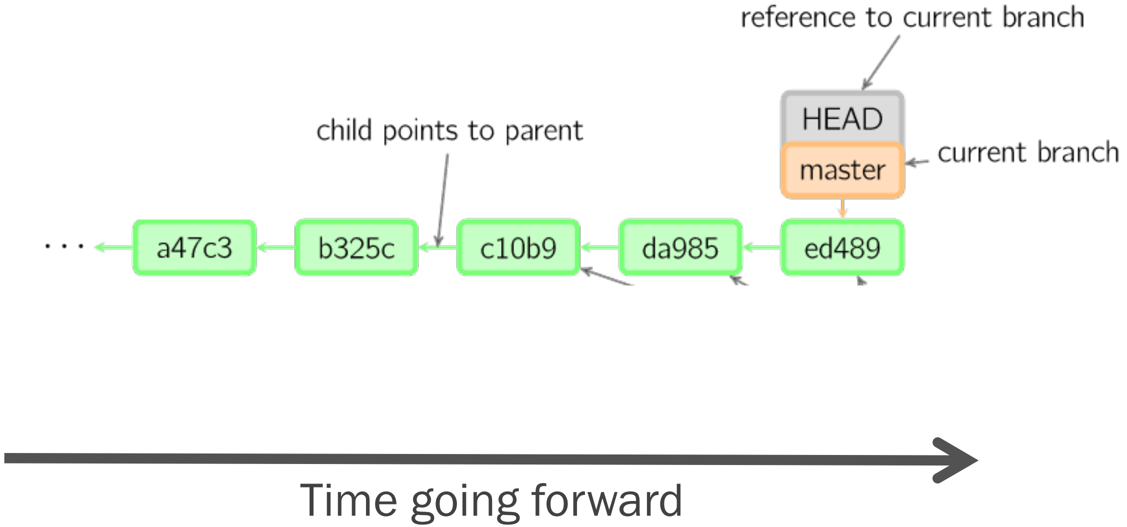
So, what is HEAD?



Time going forward

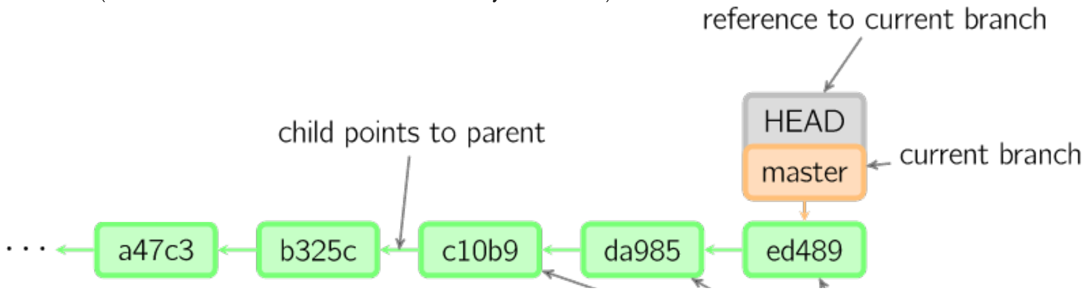
So, what is HEAD?

- A reference to the most recent commit



So, what is HEAD?

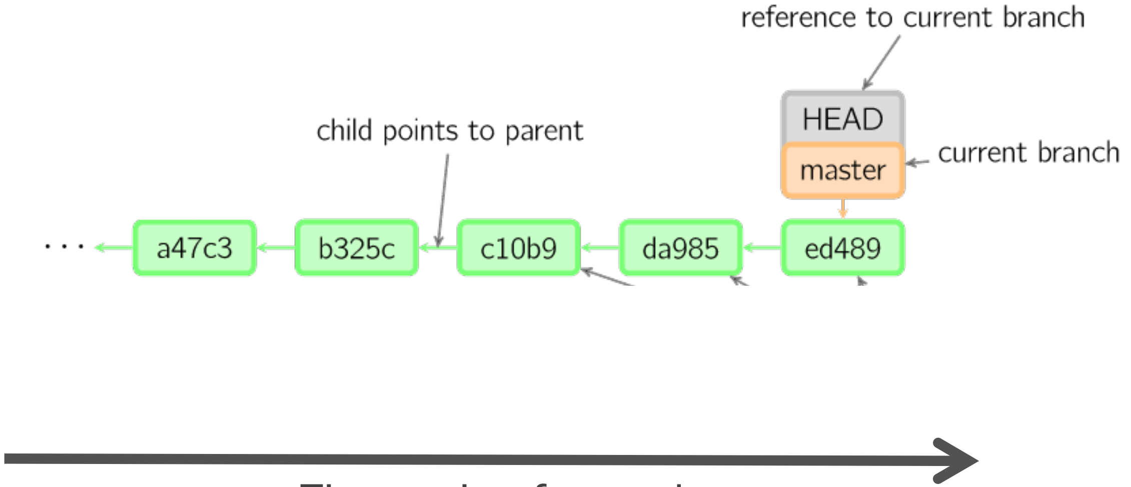
- A reference to the most recent commit
  - (in most cases – not always true!)



Time going forward

So, what is MASTER?

- The main branch in your project
- Doesn’t *have* to be called master, but almost always is!

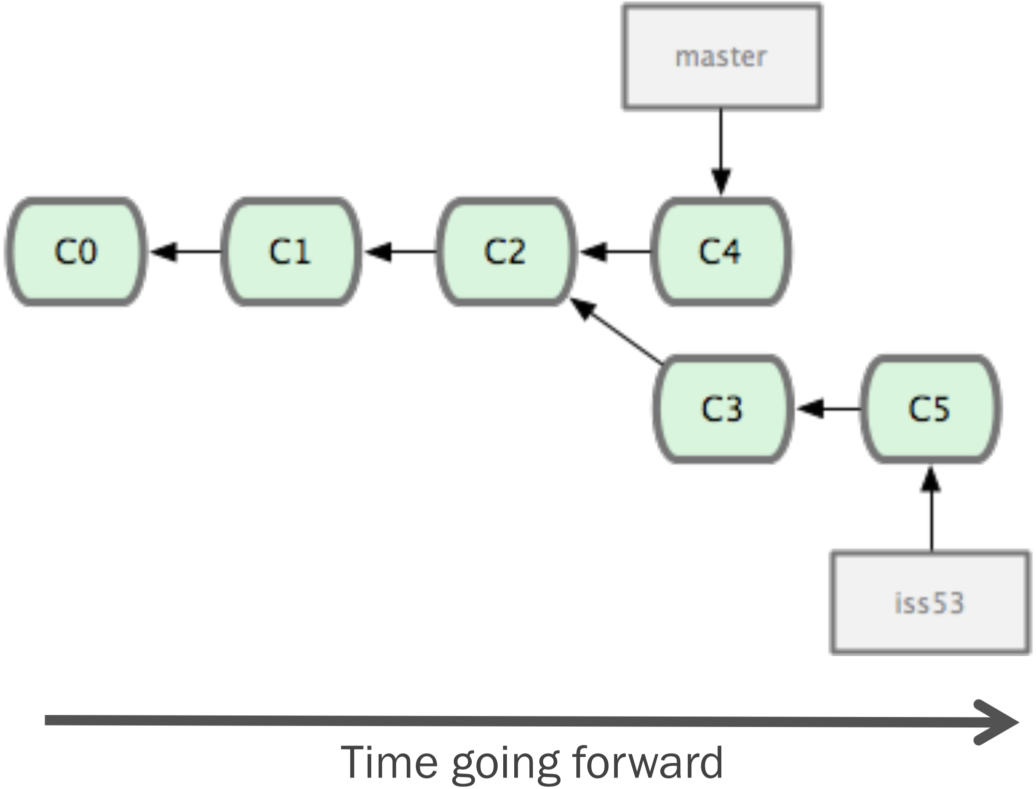


Time going forward

Key Concepts: **Branching off of the master branch**

- **The start of a branch points to a specific commit**
- **When you want to make any changes to your project you make a new branch based on a commit**
  - Okay, you don’t *strictly* have to, but it’s good practice.

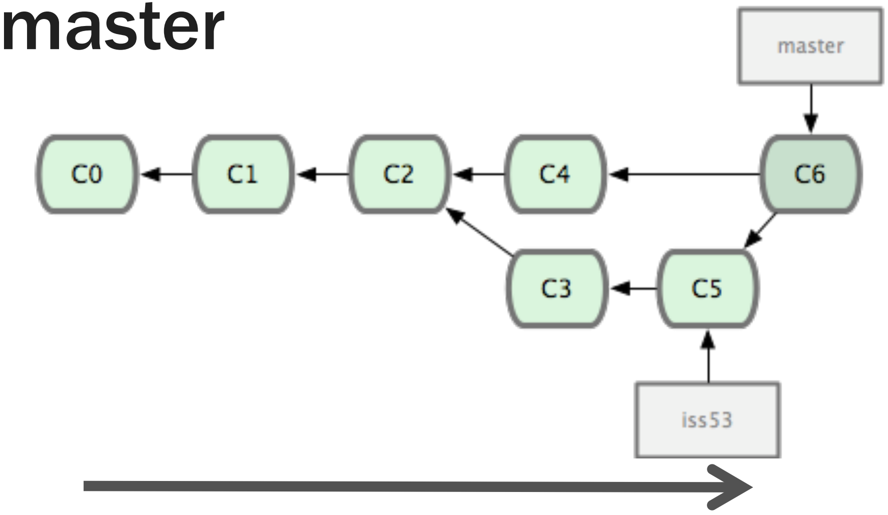
Key Concepts: Branching off of the master branch



Images from: http://codingdomain.com/git/merging/

Key Concepts: Merging

- Once you're done with your feature, you merge it back into master



Time going forward

Key Concepts: How do you make a commit anyway?

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- Local on your computer: the ‘working directory’
- When a file is ready to be put in a commit you add it onto the ‘index’ or ‘staging’

Key Concepts: How do you make a commit anyway?

- There are a lot of ‘states’ and ‘places’ a file can be
- Local on your computer: the ‘working directory’
- When a file is ready to be put in a commit you add it onto the ‘index’ or ‘staging’
  - Staging is the new preferred term – but you can see both ‘index’ and ‘staging’ being used.

Key Concepts: How do you make a commit anyway?

- All git commands start with ‘git’

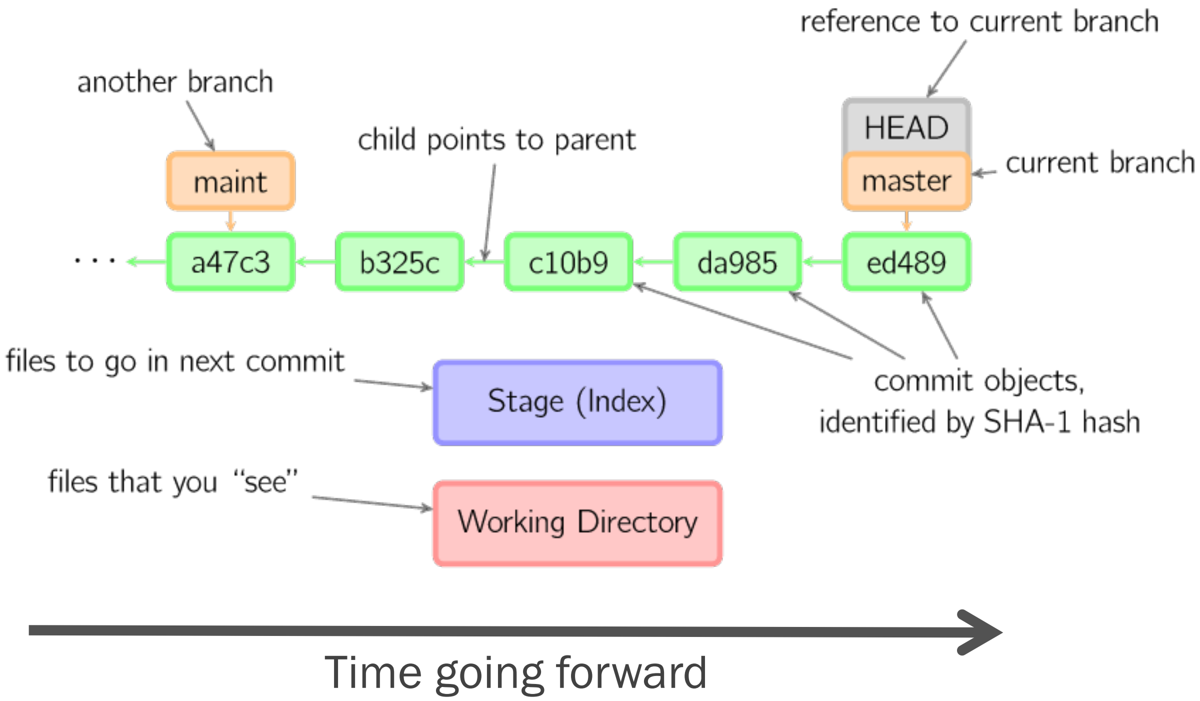
Key Concepts: How do you make a commit anyway?

- **The process:**
  - Make some changes to a file
  - Use the ‘`git add`’ command to put the file onto the staging environment

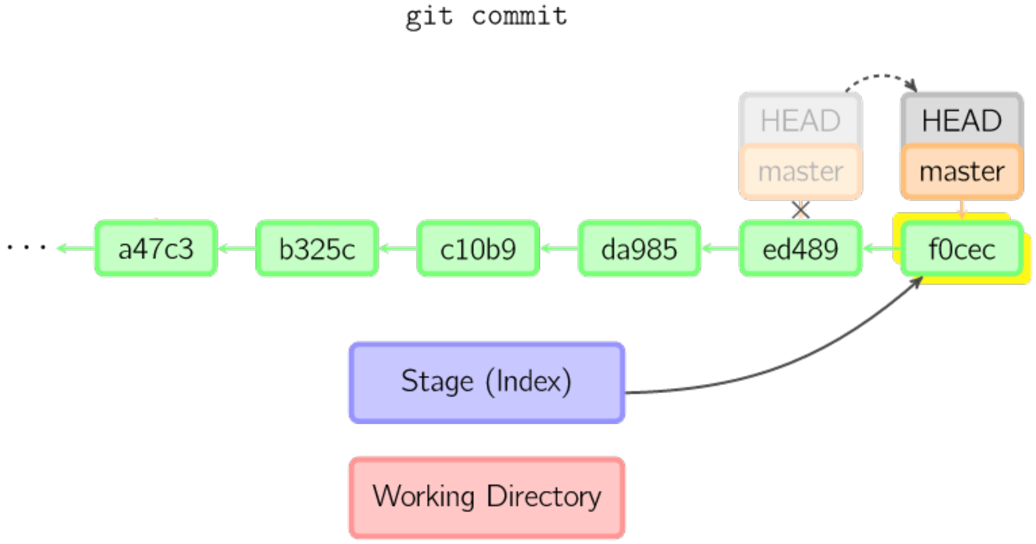
Key Concepts: How do you make a commit anyway?

- **The process:**
  - Make some changes to a file
  - Use the ‘`git add`’ command to put the file onto the staging environment
  - Use the ‘`git commit`’ command to create a new commit’.

Key Concepts: How do you make a commit anyway?



Key Concepts: How do you make a commit anyway?



Time going forward

4 What is GitHub?

What is GitHub?

- www.github.com
- Largest web-based git repository hosting service
  - Aka, hosts 'remote repositories'
- Allows for code collaboration with anyone online
- Adds extra functionality ontop of git
  - UI, documentation, bug tracking, feature requests, pull requests, *and more!*

Octocat!

What is GitHub?

- Founded in 2008
- Also has an Enterprise edition for businesses

Octocat!

Any questions?

5 Quick example using git and GitHub

Time to break into teams!

http://bit.ly/1EInhOZ

Git up, git up, git around!

Helpful Commands

- `git init`
  - Creates a new local repository
- `git status`
  - Lists all new and modified files that can be put in a commit
- `git add [file]`
  - Stages one or more files so it can be put in a commit
  - Can be performed multiple times
- `git commit –am [message]`
  - Commits the staged snapshots

Additional Resources

Additional Resources

- **Official git site and tutorial:**
  https://git-scm.com/
- **GitHub guides:**
  https://guides.github.com/
- **Command cheatsheet:**
  https://training.github.com/kit/downloads/github-git-cheat-sheet.pdf
- **Interactive git tutorial:**
  https://try.github.io/levels/1/challenges/1
- **Visual/interactive cheatsheet:**
  http://ndpsoftware.com/git-cheatsheet.html