Introduction to Git and GitHub

General Assembly – Data Science

Agenda

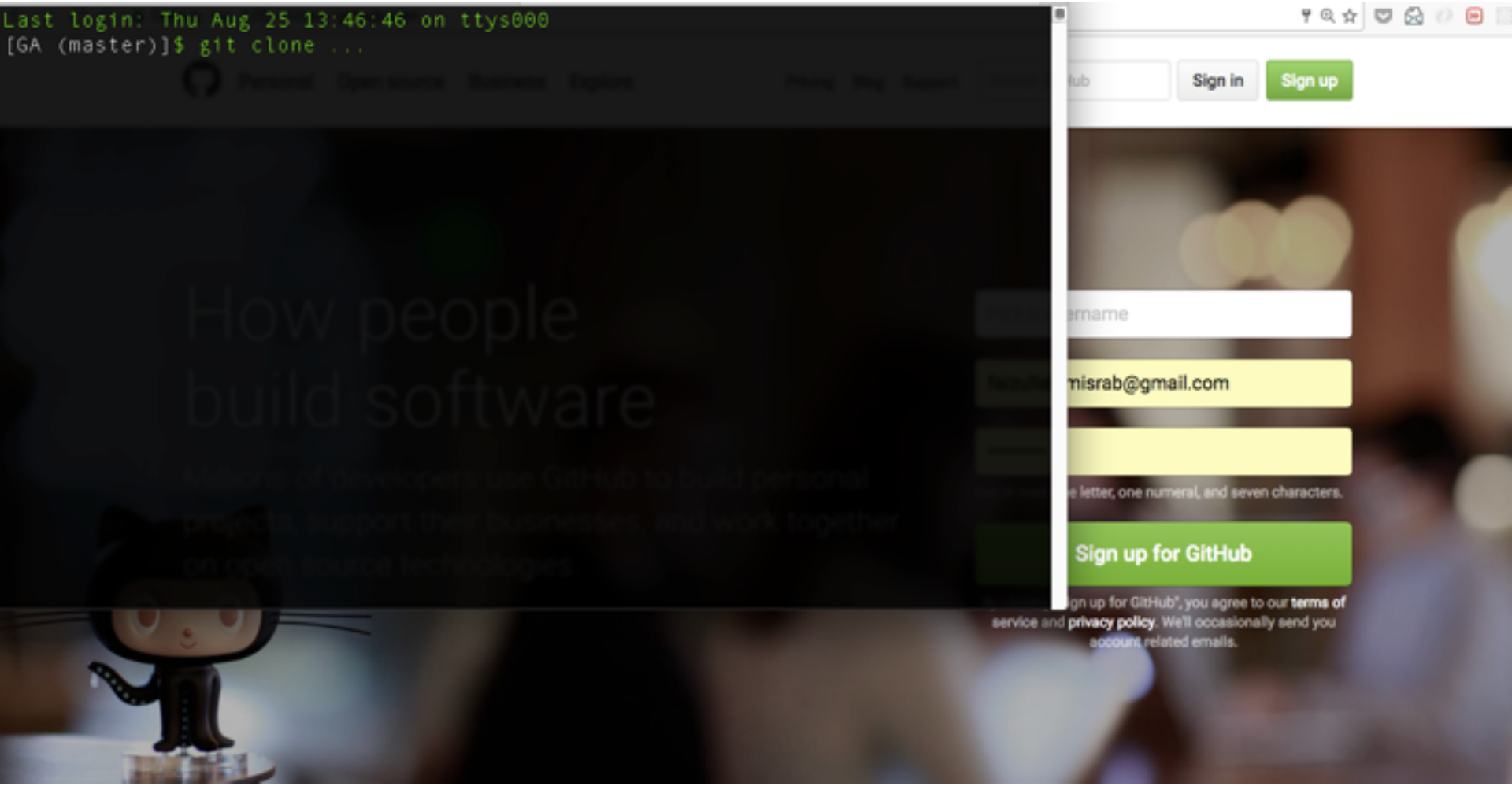
I. Introduction
II. Exploring GitHub
III. Using Git with GitHub
IV. Contributing on GitHub
V. Bonus Content

I. Introduction

Why learn version control?

- Version control is useful when you write code, and data scientists write code
- Enables teams to easily collaborate on the same codebase
- Enables you to contribute to open source projects
- Attractive skill for employment

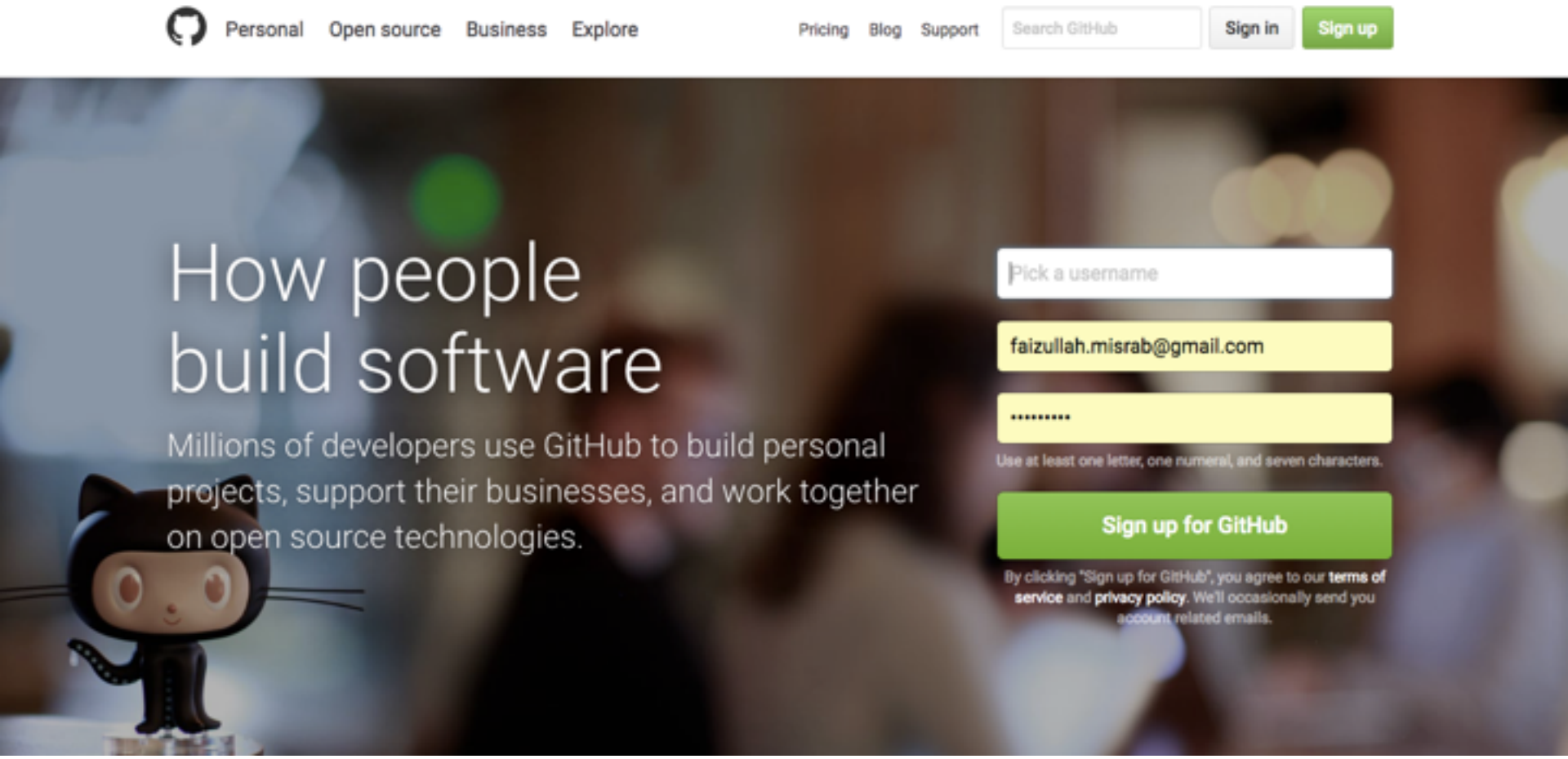
What is Git?


Last login: Thu Aug 25 13:46:46 on ttys000
[GA (master)]$ git clone ...
How people build software
Sign in
Sign up
misrab@gmail.com
letter, one numeral, and seven characters.
Sign up for GitHub
terms of service
privacy policy

What is Git?

- Version control system that allows you to track files and file changes in a repository ("repo")
- Primarily used by software developers
- Most widely used version control system
  - Alternatives: Mercurial, Subversion, CVS
- Runs from the command line (usually)
- Can be used alone or in a team

What is GitHub?



What is GitHub?

- A website, not a version control system
- Allows you to put your Git repos online
  - Largest code host in the world
  - Alternative: Bitbucket
- Benefits of GitHub:
  - Backup of files
  - Visual interface for navigating repos
  - Makes repo collaboration easy
- “GitHub is just Dropbox for Git”
- Note: Git does not require GitHub

Git can be challenging to learn

- Designed (by programmers) for power and flexibility over simplicity
- Hard to know if what you did was right
- Hard to explore since most actions are “permanent” (in a sense) and can have serious consequences
- We’ll focus on the most important 10% of Git

II. Exploring GitHub

GitHub setup

- Create an account at github.com
- There's nothing to install
  - "GitHub for Windows" & "GitHub for Mac" are GUI clients (alternatives to command line)

Navigating a GitHub repo

- Example repo: https://github.com/misrab/SG_DAT{x}
- Account name, repo name, description
- Folder structure
- Viewing files:
  - Rendered view (with syntax highlighting)
  - Raw view
- README.md:
  - Describes a repo
  - Automatically displayed
  - Written in Markdown

Basic Markdown

- Easy-to-read, easy-to-write markup language
- Usually (always?) rendered as HTML
- Many implementations (aka “flavors”)
- Let’s edit README.md using GitHub!
- Common syntax:
  - ## Header size 2
  - *italics* and **bold**
  - [link to GitHub](https://github.com)
  - * bullet
  - `inline code` and ```code blocks```
- Valid HTML can also be used within Markdown

III. Using Git with GitHub

Git installation and setup

- Installation: tiny.cc/installgit
- Open Git Bash (Windows) or Terminal (Mac/Linux):
  - git config --global user.name “YOUR FULL NAME”
  - git config --global user.email “YOUR EMAIL”
- Use the same email address you used with your GitHub account
- Generate SSH keys (optional): tiny.cc/gitssh
  - More secure that HTTPS
  - Only necessary if HTTPS doesn’t work for you

Preview of what you're about to do

- Copy ("**clone**") your new GitHub repo to your computer
- Make some file changes locally
- Save those changes locally ("**commit**" them)
- Update your GitHub repo with those changes ("**push**")

Committing changes

- Stage changes for committing:
  - Add a single file: git add <filename>
  - Add all “red” files: git add .
- Check your status:
  - Red files have turned green
- Commit changes:
  - git commit -m “message about commit”
- Check your status again!
- Check the log: git log

Pushing to GitHub

- Everything you've done to your cloned repo (so far) has been local
- You've been working in the "master" branch
- Push committed changes to GitHub:
  - Like syncing local file changes to Dropbox
  - git push <remote> <branch>
  - Often: git push origin master
- Refresh your GitHub repo to check!

Quick recap of what you've done

- Created a repo on GitHub
- Cloned repo to your local computer (git clone)
  - Automatically sets up your "origin" remote
- Made two file changes
- Staged changes for committing (git add)
- Committed changes (git commit)
- Pushed changes to GitHub (git push)
- Inspected along the way (git remote, git status, git log)

Let’s do it again!

- Modify or add a file, then git status
- git add ., then git status
- git commit -m “message”
- git push origin master
- Refresh your GitHub repo

Lab -- Before you leave

- Install Git on your machine
- Make a Github Profile on the web
- Create your own repo, call it “SG_DAT_{x}” and clone it to your machine
- Clone the class repo

IV. Bonus Content

Two ways to initialize Git

- Initialize on GitHub:
  - Create a repo on GitHub (with README)
  - Clone to your local machine
- Initialize locally:
  - Initialize Git in existing local directory: git init
  - Create a repo on GitHub (without README)
  - Add remote: git remote add origin <URL>

Deleting or moving a repo

- Deleting a GitHub repo:
  - Settings, then Delete
- Deleting a local repo:
  - Just delete the folder!
- Moving a local repo:
  - Just move the folder!

Excluding files from a repo

- Create a ".gitignore" file in your repo: touch .gitignore
- Specify exclusions, one per line:
  - Single files: pip-log.txt
  - All files with a matching extension: *.pyc
  - Directories: env/
- Templates: github.com/github/gitignore

Online tutorials

https://try.github.io/

https://www.atlassian.com/git/tutorials/