

Project 1 and intro to Git

- Review of Previous Week
- Introduction to Git
- GitHub account creating
- Using Git and GitHub for this class
- Changes, changes, changes
- Homework

But first a review of last week

```
LocalDate d = LocalDate.now()
LocalTime t = LocalTime.of(13, 2, 10);

LocalDateTime dt = LocalDateTime.now();
LocalDateTime hourLater = dt.plusHours(1);

Period p = Period.of(1, 0, 7);
DateTimeFormatter f =
    DateTimeFormatter.ofLocalizedDateTime(
        FormatStyle.SHORT);
```

Introduction to Git

We're going to talk about the what, the why, and then the how.

What is Git?

Git is Version Control software

What is "Version Control"?

New Terminology

Version Control: the task of keeping a software system consisting of many versions and configurations well organized. ~ Google [1]

Let's simplify some more.

Git

Git is a program that allows you to track updates in your code and easily share what you are working on. Git is heavily used in jobs and large projects, so we will use it to use to submit this and all future class projects.

Git (cont.)

- A better way to "undo" changes,
- A better way to collaborate than mailing files back and forth, and
- A better way to share your code with your teammates and the world.

Why?

A few reasons

1. This is a tool you'll use when you become a Software Developer.
2. Using Git allows you to store your code on GitHub (we'll get to that in a second.)
3. Storing your code on GitHub is good because:
 - it's a backup that shows a history of your work
 - more importantly it is a portfolio that shows off your work

What is GitHub?

GitHub is a site where you can host your code for free (after you create an account). It is a place where anyone can search, browse, download, and use Open Source software. It doesn't *run* your code, but it just *stores* it.

Are you familiar with Dropbox?

Think of Git + GitHub as Dropbox for your code

New Terminology

Open Source: A software project (however big or small) that has made their code freely available for anyone to see.

A lot of the code that is powering the internet is Open Source software. Like, a lot. Open Source software is *extremely* important.

Let's start getting into the "how"

Git and GitHub can do a lot, but this is where we'll start:

- How to save your work in your own computer.
- How to save your work in your GitHub account.

Now we're going to do the following:

1. Install Git.
2. Signup for GitHub.
3. Create a space in your GitHub account and in your own computer to store the first project.
4. Learn the parts of Git that are important for you to know.

Installing Git

Go to <https://git-scm.com/download> and select the operating system that you're using. If you're on Windows, make sure you know if you have 32 or 64 bit versions. The next slides are screenshots of installing Git in Windows.

<https://git-scm.com/download>

The screenshot shows a Mac OS X browser window displaying the git-scm.com website. The page has a light beige background with a dark grey header bar. The header bar includes the URL 'git-scm.com' and standard browser controls. The main content area features the Git logo ('git') and the tagline '--distributed-even-if-your-workflow-isnt'. A search bar is located in the top right corner. On the left side, there's a sidebar with links for 'About', 'Documentation', 'Blog', 'Downloads' (which is highlighted in red), and 'Community'. Below the sidebar is a callout box containing text about the 'Pro Git book'. The central part of the page is titled 'Downloads' and features three large buttons for 'Mac OS X', 'Windows', and 'Linux/Unix'. To the right of these buttons is a large image of a silver iMac monitor displaying a teal-colored software interface with the text 'Latest source Release 2.16.1' and a 'Download 2.15.1 for Mac' button. Below the download section, there's a note about older releases and the Git source repository on GitHub. The bottom section contains two boxes: one for 'GUI Clients' (with a link to 'View GUI Clients →') and one for 'Logos' (with a link to 'View Logos →'). At the very bottom, there's a section for 'Git via Git' with a command-line example ('git clone https://github.com/git/git') and a link to the 'web interface'.

git-scm.com

git --distributed-even-if-your-workflow-isnt

Search entire site...

About

Documentation

Blog

Downloads

GUI Clients

Logos

Community

The entire [Pro Git book](#) written by Scott Chacon and Ben Straub is available to [read online for free](#). Dead tree versions are available on [Amazon.com](#).

Downloads

Mac OS X Windows

Linux/Unix

Older releases are available and the [Git source repository](#) is on GitHub.

GUI Clients

Git comes with built-in GUI tools (`git-gui`, `gitk`), but there are several third-party tools for users looking for a platform-specific experience.

[View GUI Clients →](#)

Logos

Various Git logos in PNG (bitmap) and EPS (vector) formats are available for use in online and print projects.

[View Logos →](#)

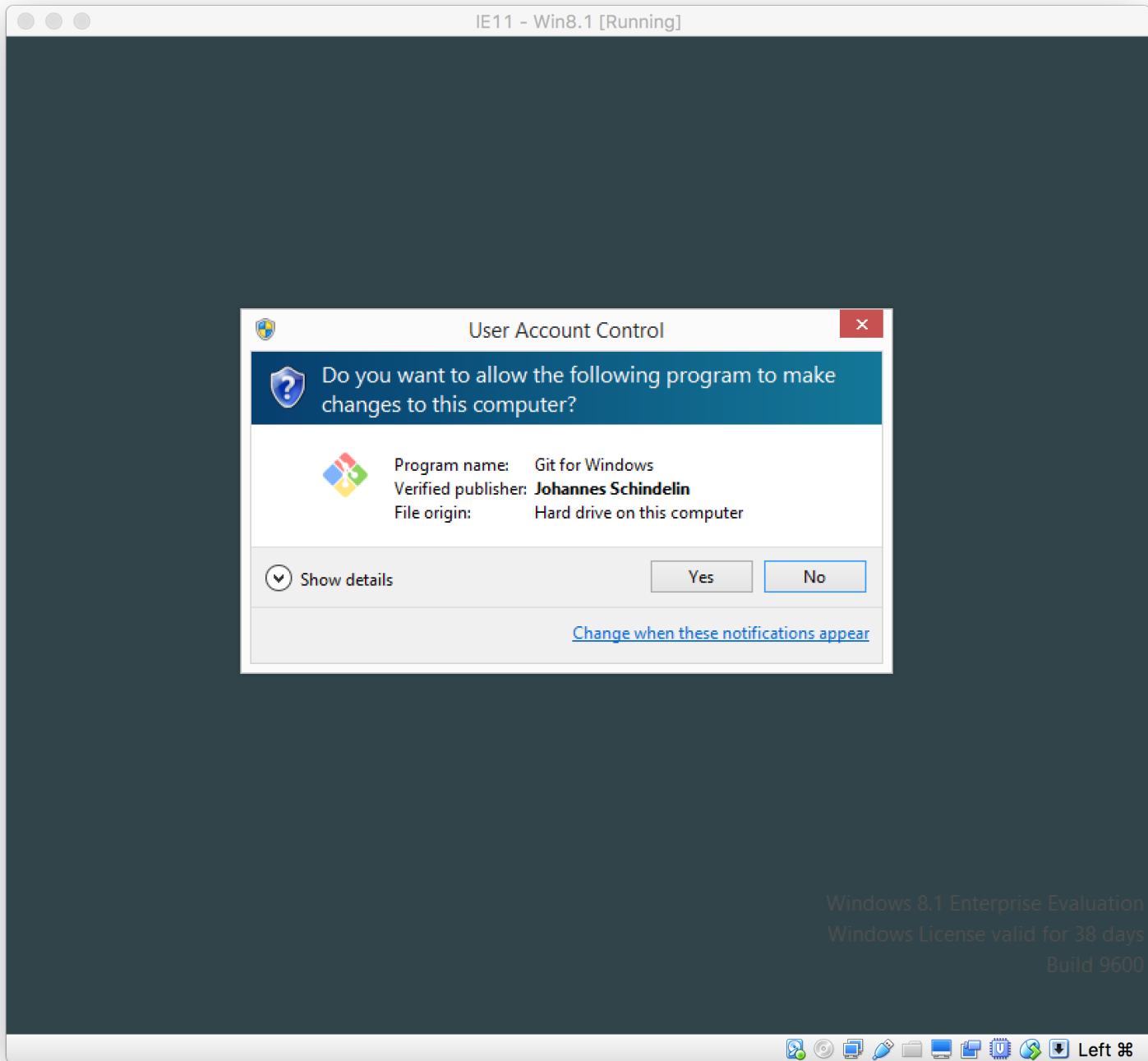
Git via Git

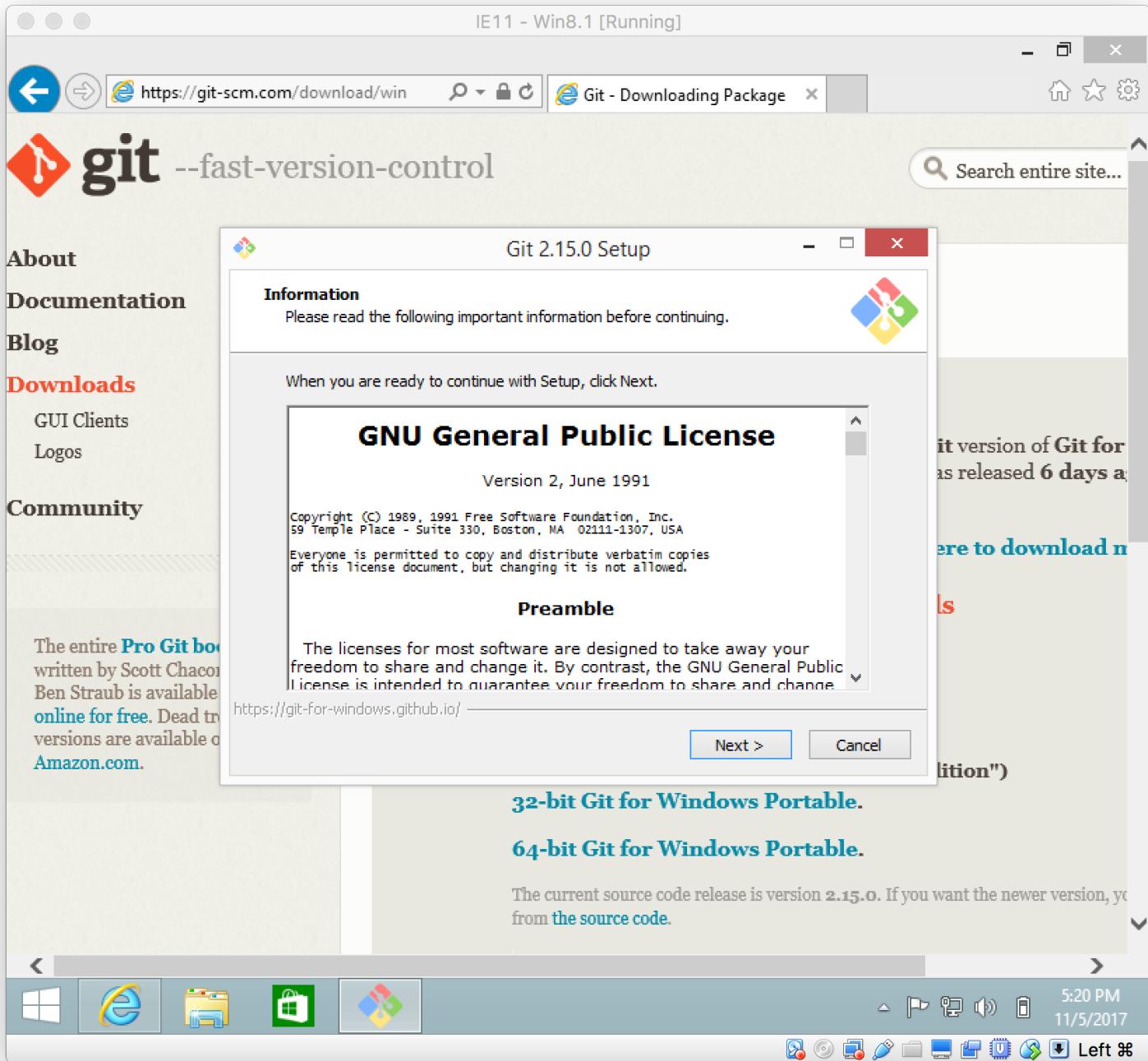
If you already have Git installed, you can get the latest development version via Git itself:

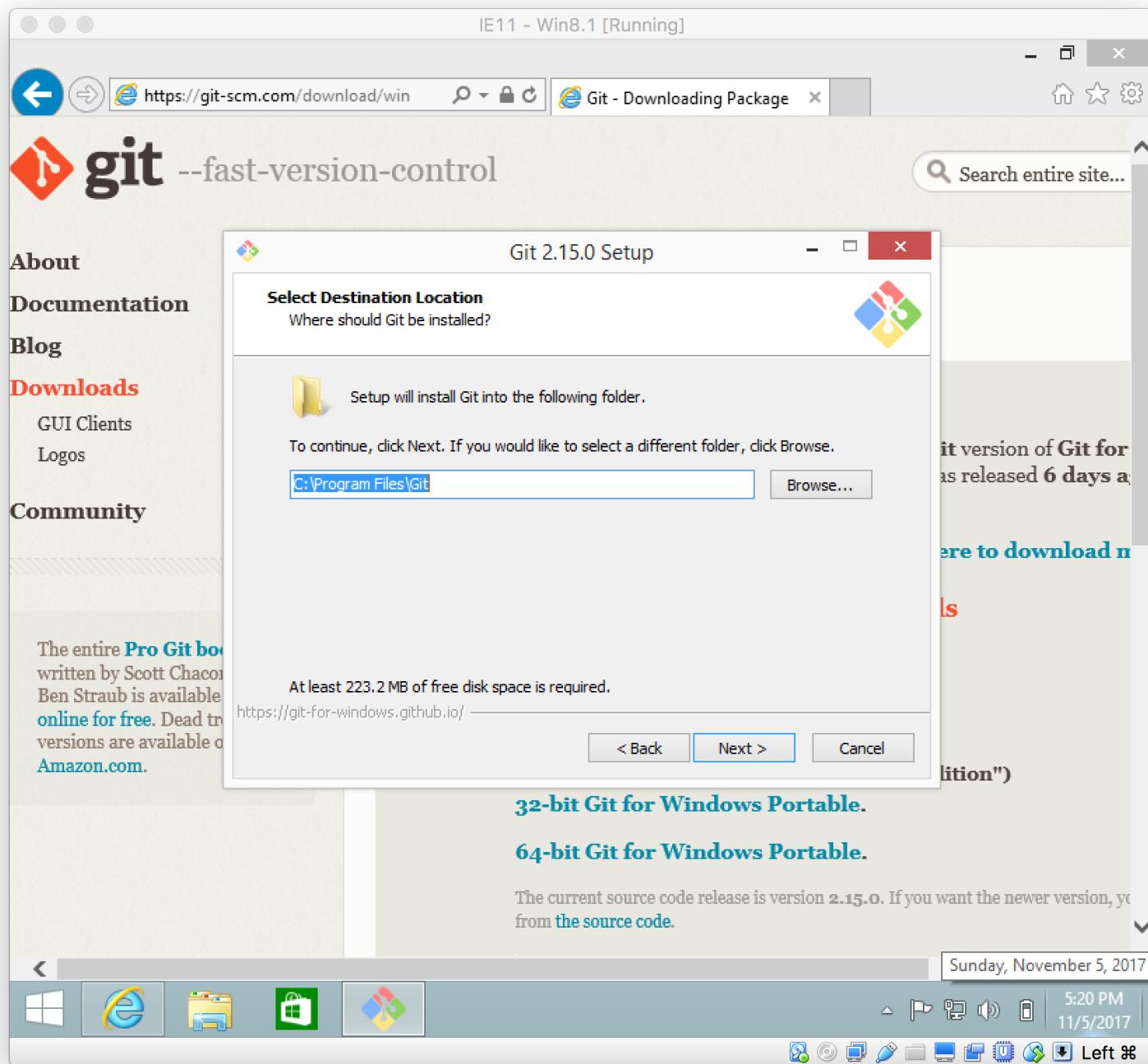
```
git clone https://github.com/git/git
```

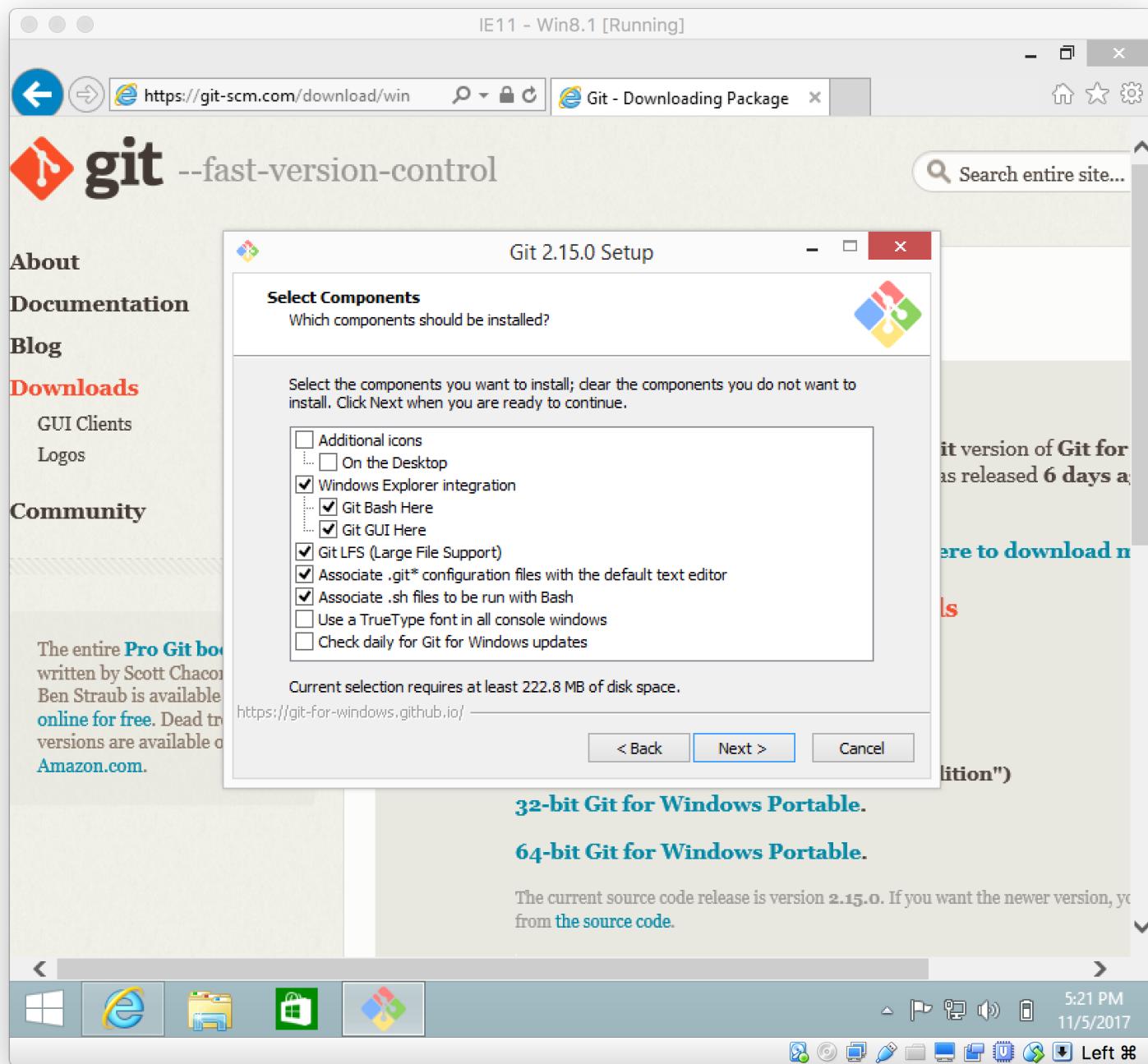
You can also always browse the current contents of the git repository using the [web interface](#).

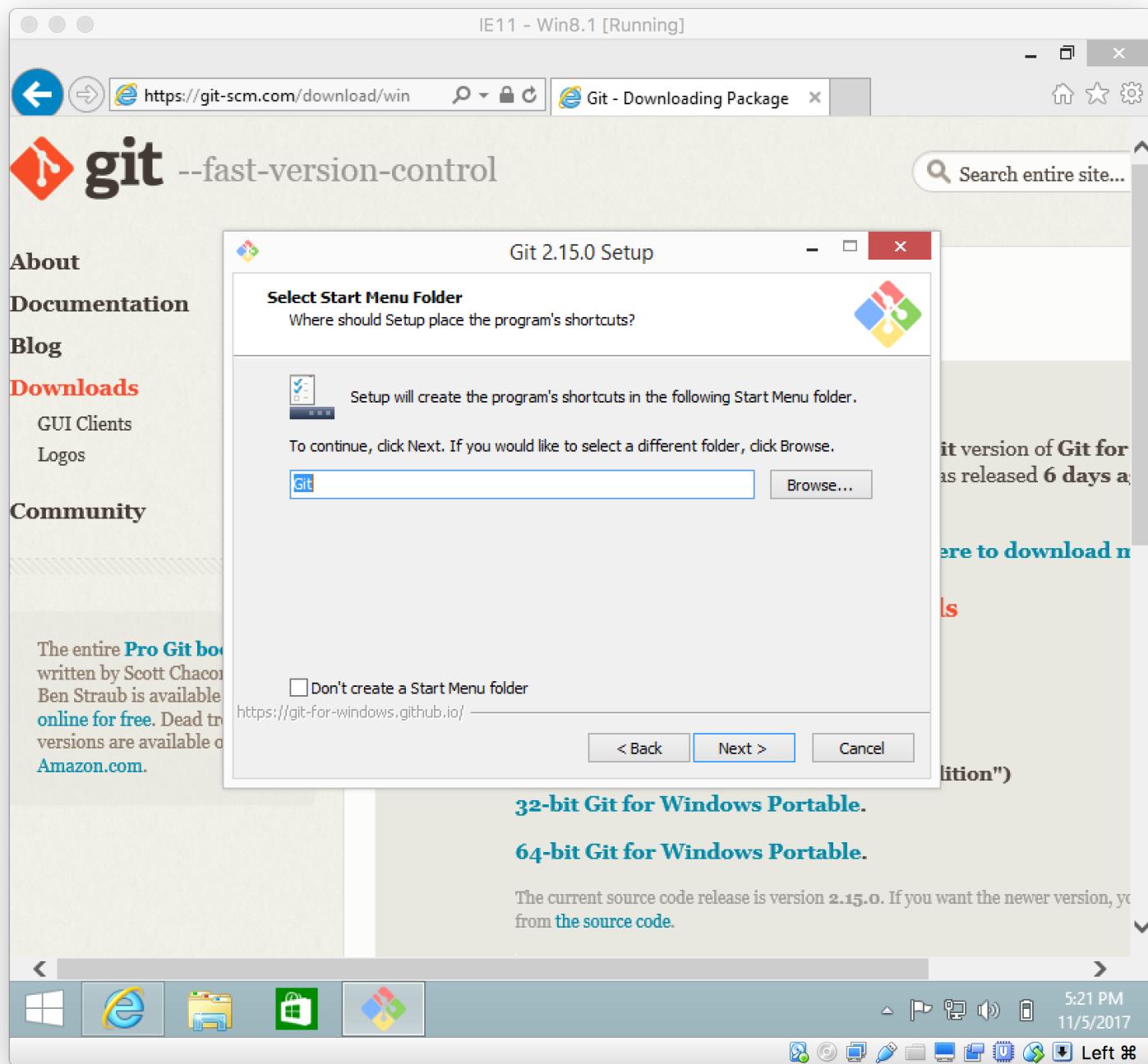
The screenshot shows a web browser window displaying the official Git website at git-scm.com. The page is titled "git --distributed-even-if-your-workflow-isnt". On the left sidebar, there are links for "About", "Documentation", "Blog", "Downloads" (which includes "GUI Clients" and "Logos"), and "Community". A callout box on the left side of the main content area points to the "Downloads" section with the text: "The entire [Pro Git book](#) written by Scott Chacon and Ben Straub is available to [read online for free](#). Dead tree versions are available on [Amazon.com](#)." The main content area is titled "Downloading Git". It features a large downward arrow icon and the text "Your download is starting...". Below this, it says: "You are downloading the latest (2.15.0) 64-bit version of **Git for Windows**. This is the most recent [maintained build](#). It was released **7 days ago**, on 2017-10-30." It also includes a link: "If your download hasn't started, [click here to download manually](#)." Further down, it lists "Other Git for Windows downloads": "Git for Windows Setup", "[32-bit Git for Windows Setup](#)", "[64-bit Git for Windows Setup](#)", "Git for Windows Portable ("thumbdrive edition")", "[32-bit Git for Windows Portable](#)", and "[64-bit Git for Windows Portable](#)". A note at the bottom states: "The current source code release is version 2.15.0. If you want the newer version, you can build it from [the source code](#)."

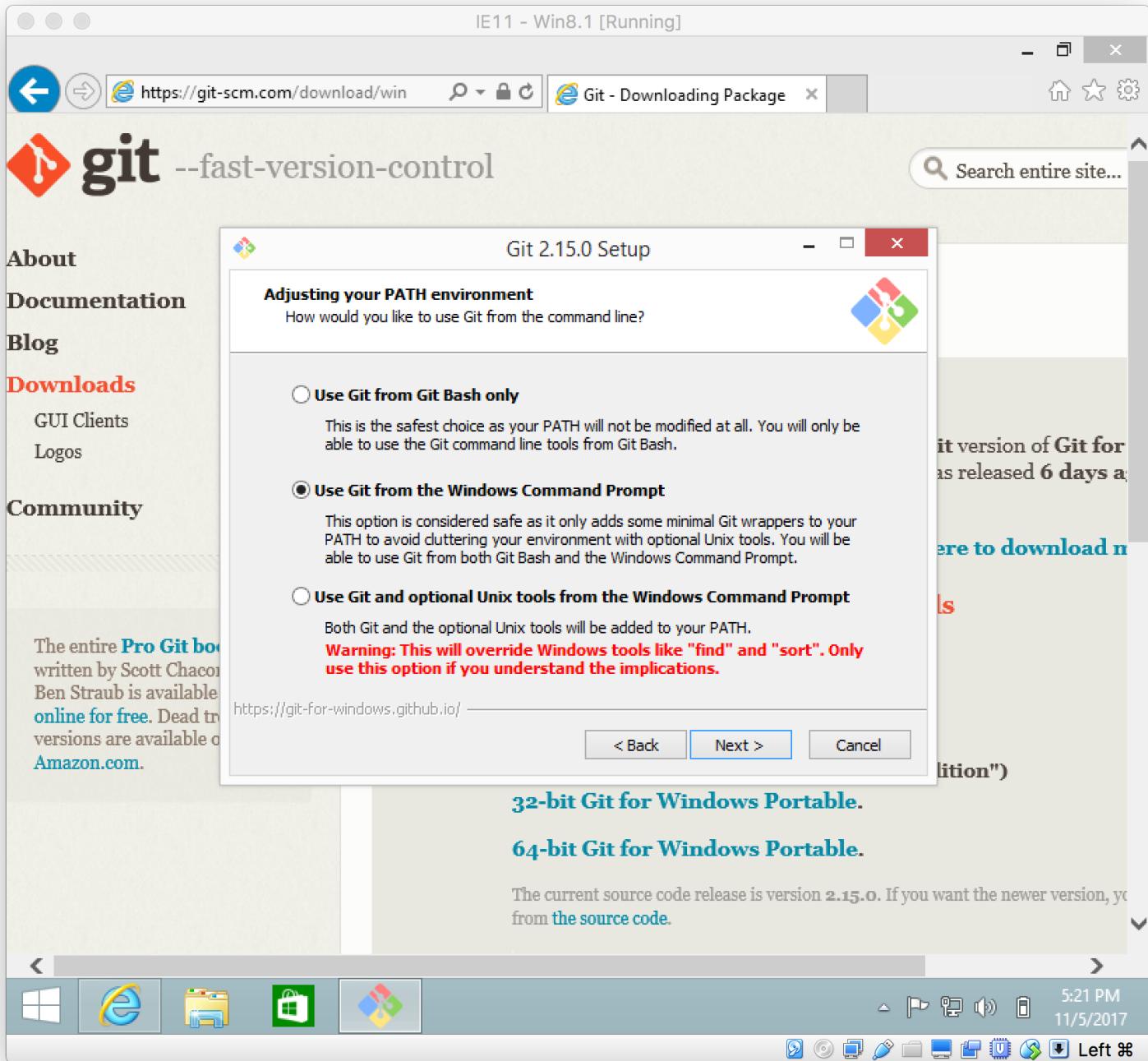


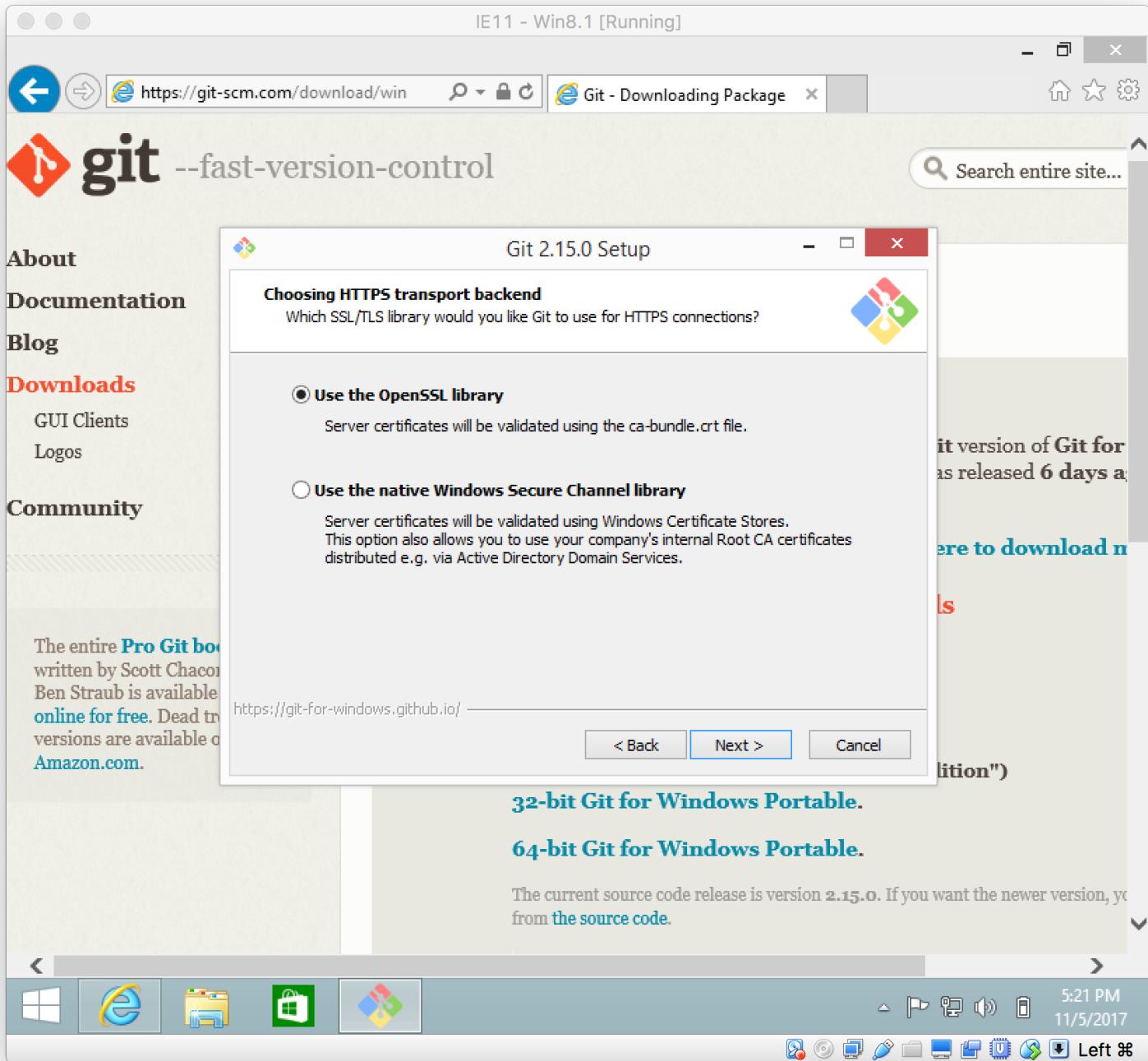


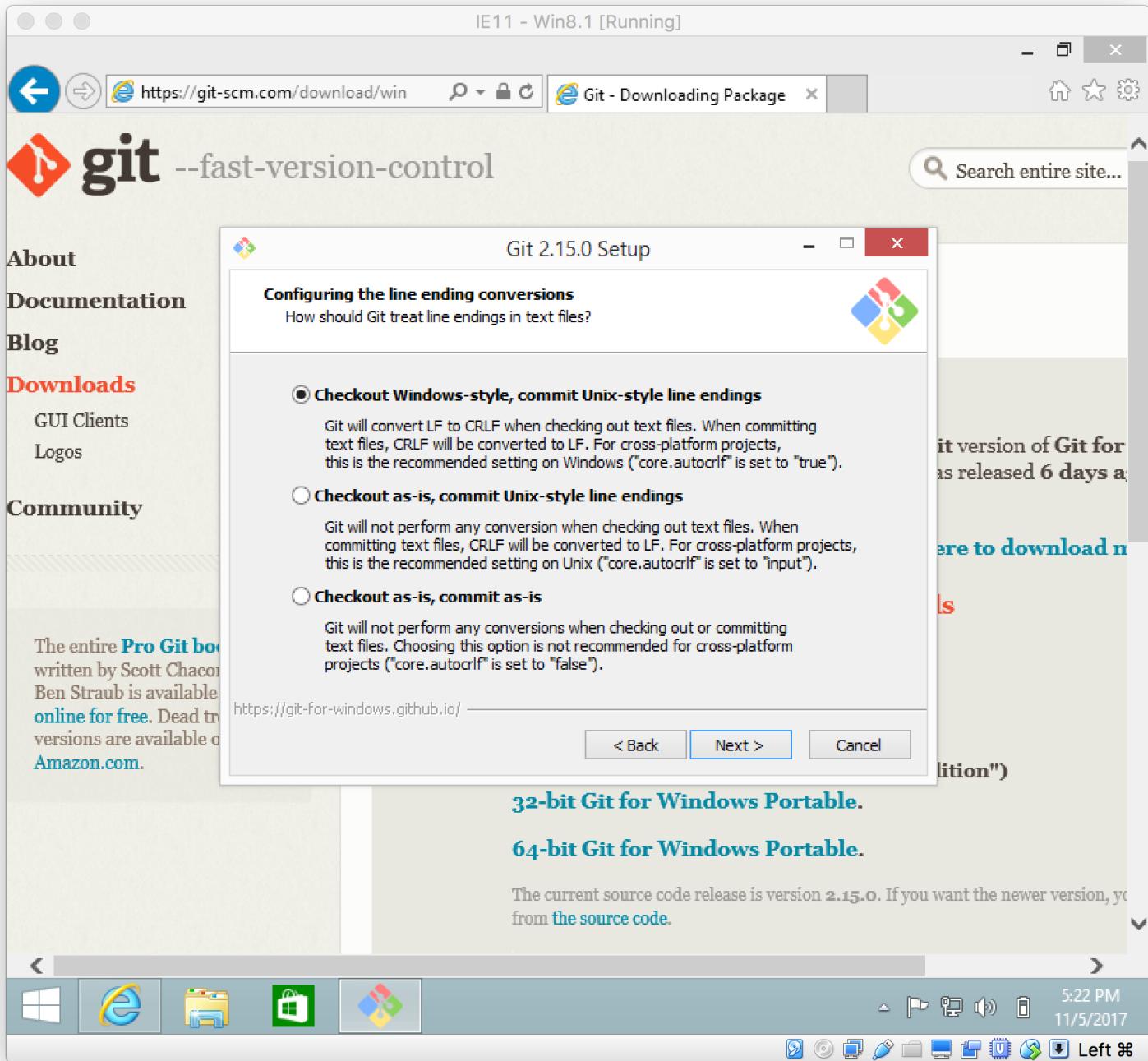


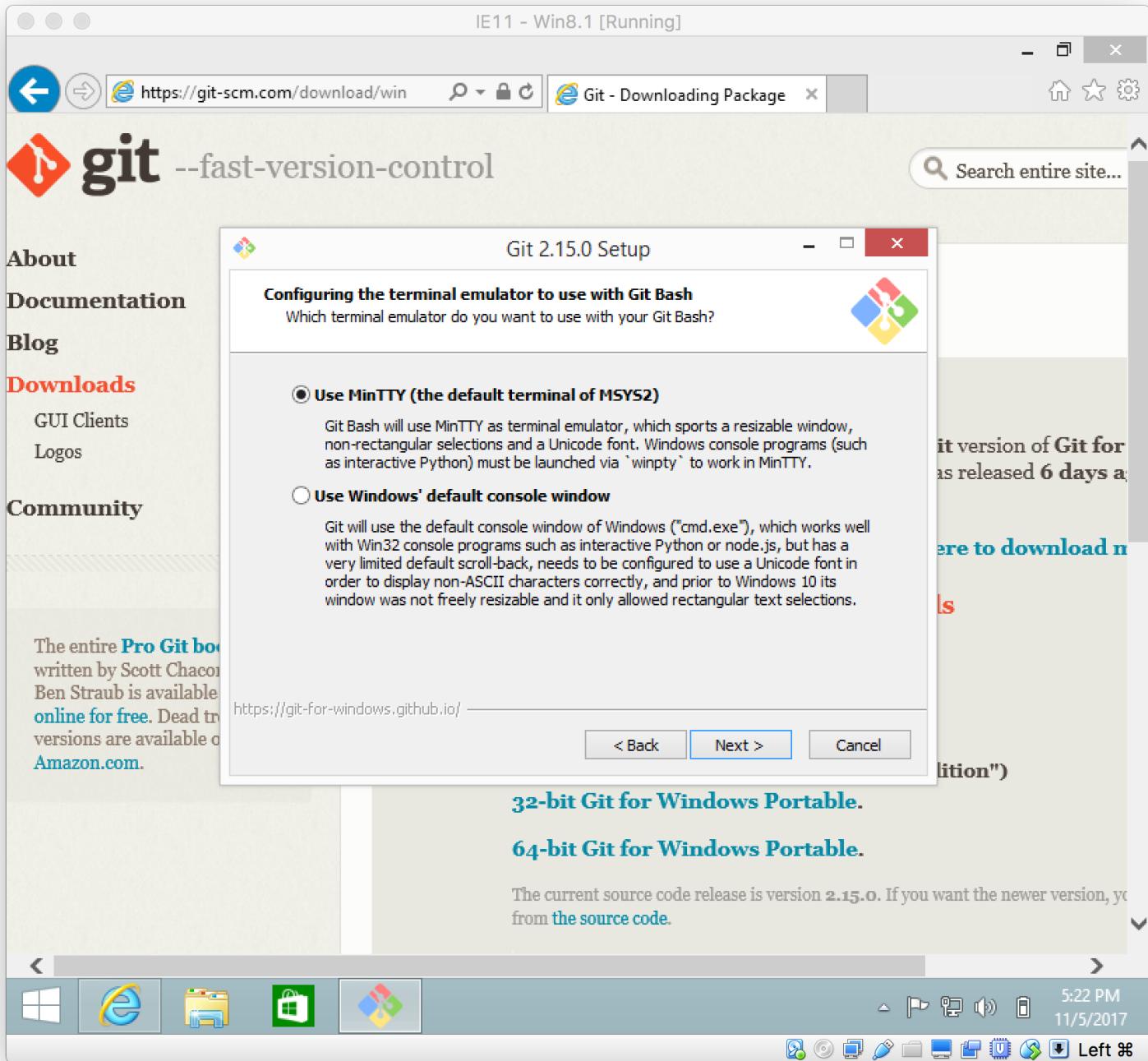


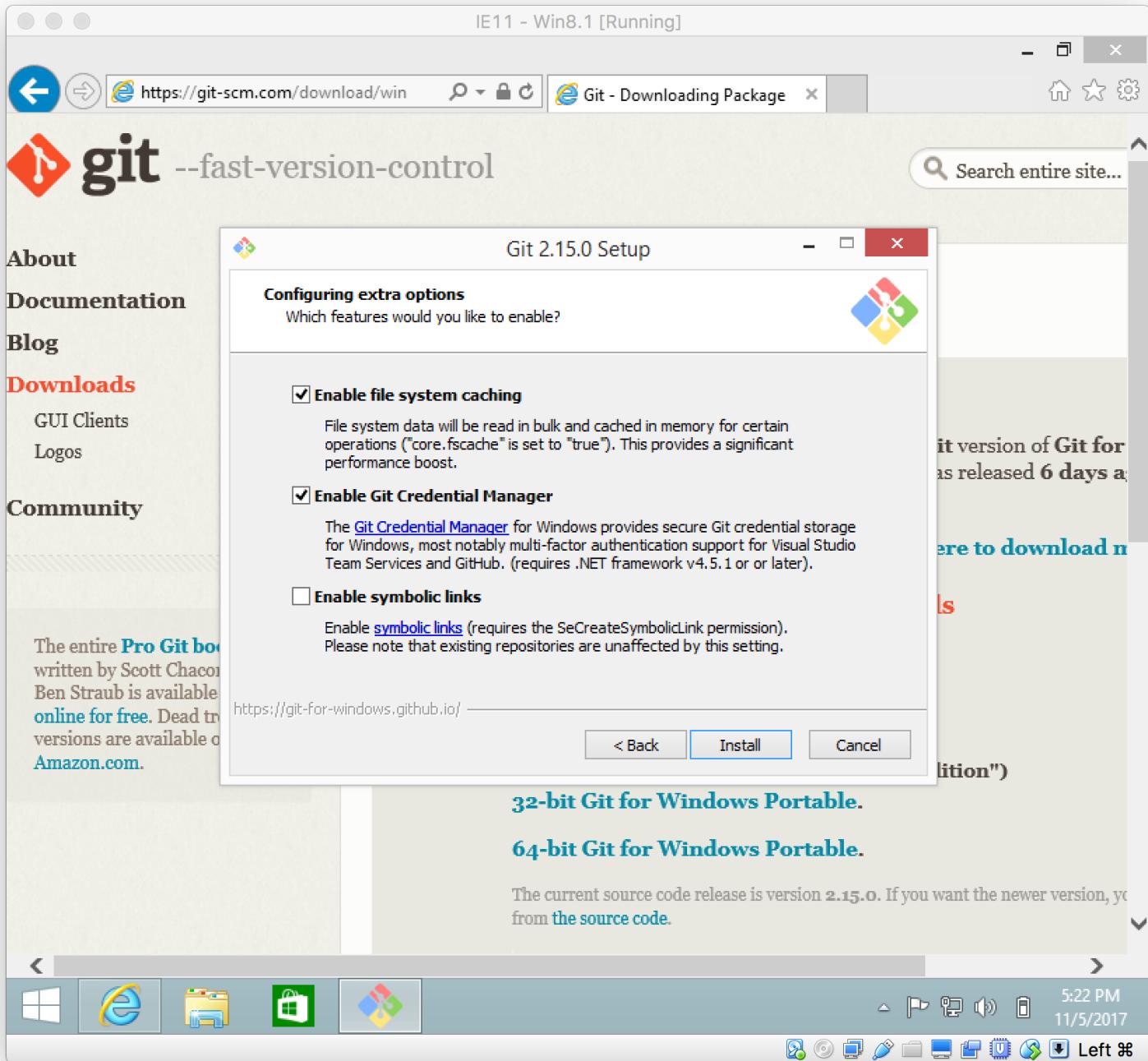


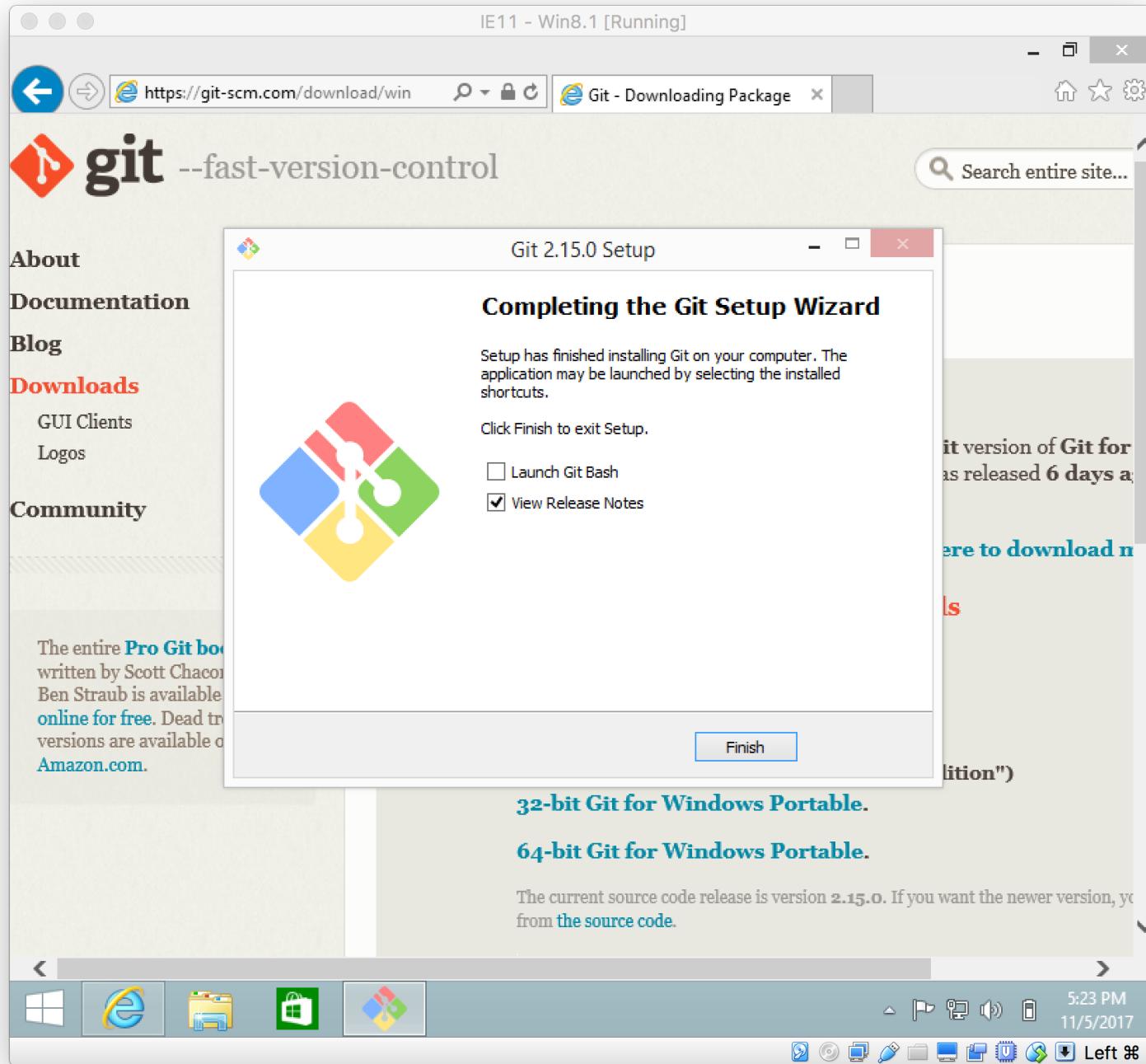












Now open your terminal and run `git`.

What do you see?

IE11 - Win8.1 [Running]

Command Prompt

```
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Users\IEUser>git
usage: git [--version] [--help] [-C <path>] [-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>]

These are common Git commands used in various situations:

start a working area (see also: git help tutorial)
  clone      Clone a repository into a new directory
  init       Create an empty Git repository or reinitialize an existing one

work on the current change (see also: git help everyday)
  add        Add file contents to the index
  mv        Move or rename a file, a directory, or a symlink
  reset     Reset current HEAD to the specified state
  rm        Remove files from the working tree and from the index

examine the history and state (see also: git help revisions)
  bisect    Use binary search to find the commit that introduced a bug
  grep      Print lines matching a pattern
  log       Show commit logs
  show      Show various types of objects
  status    Show the working tree status

grow, mark and tweak your common history
  branch   List, create, or delete branches
  checkout Switch branches or restore working tree files
  commit   Record changes to the repository
  diff     Show changes between commits, commit and working tree, etc
  merge   Join two or more development histories together
  rebase   Reapply commits on top of another base tip
  tag     Create, list, delete or verify a tag object signed with GPG

collaborate (see also: git help workflows)
  fetch   Download objects and refs from another repository
  pull    Fetch from and integrate with another repository or a local branch
  push    Update remote refs along with associated objects

'git help -a' and 'git help -g' list available subcommands and some
concept guides. See 'git help <command>' or 'git help <concept>'
to read about a specific subcommand or concept.

C:\Users\IEUser>
```

Configure Git

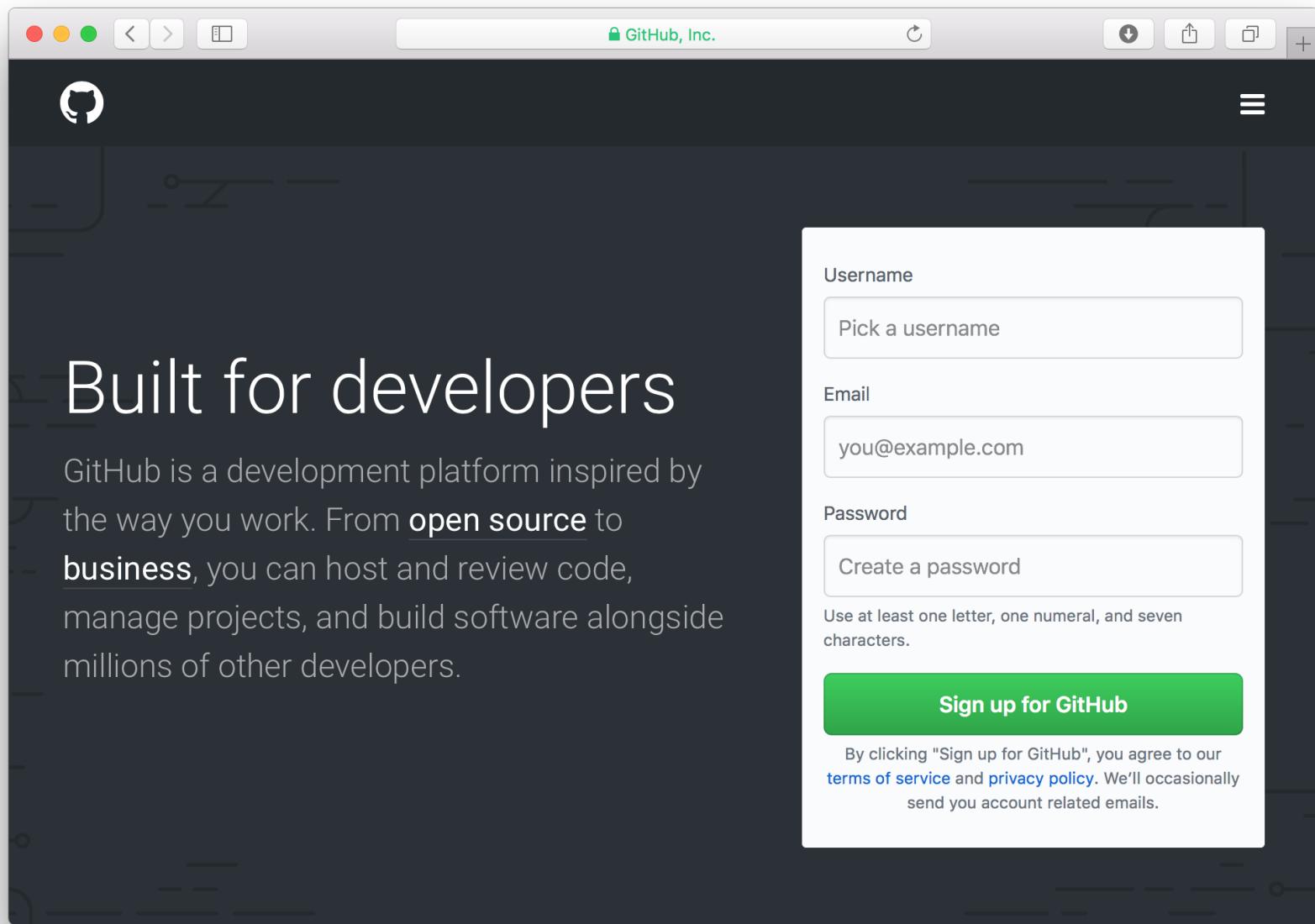
Let's give Git your name and email so that it knows who you are.

```
> git config --global user.name "FirstName LastName"  
> git config --global user.email "YourEmailAddress"
```

Next let's create a GitHub account

Now that you have Git installed in your computer, we're going to create a GitHub account so that you can store your code in both your computer and online. Go to <https://github.com> to start the process.

<https://github.com>



The screenshot shows the GitHub welcome screen for a new user. At the top, there's a navigation bar with the GitHub logo, a search bar, and links for Pull requests, Issues, Marketplace, and Explore. Below the header, the main title is "Welcome to GitHub" followed by a message: "You've taken your first step into a larger world, @githubtesting123123." There are three progress steps: "Completed Set up a personal account" (green checkmark), "Step 2: Choose your plan" (blue square icon), and "Step 3: Tailor your experience" (gear icon). The "Choose your personal plan" section contains two options: "Unlimited public repositories for free." (selected, indicated by a blue dot) and "Unlimited private repositories for \$7/month." Below this, a note says "Don't worry, you can cancel or upgrade at any time." To the right, a box lists "Both plans include:" with five items: Collaborative code review, Issue tracking, Open source community, Unlimited public repositories, and Join any organization. At the bottom left is a green "Continue" button.

Welcome to GitHub

You've taken your first step into a larger world, @githubtesting123123.

Completed
Set up a personal account

Step 2:
Choose your plan

Step 3:
Tailor your experience

Choose your personal plan

Unlimited public repositories for free.

Unlimited private repositories for \$7/month.

Don't worry, you can cancel or upgrade at any time.

Help me set up an organization next

Organizations are separate from personal accounts and are best suited for businesses who need to manage permissions for many employees.

[Learn more about organizations](#)

Send me updates on GitHub news, offers, and events

Unsubscribe anytime in your email preferences. [Learn more](#)

[Continue](#)

Both plans include:

- Collaborative code review
- Issue tracking
- Open source community
- Unlimited public repositories
- Join any organization

The screenshot shows a Mac OS X desktop environment with a GitHub browser window. The window title is "GitHub, Inc.". The top navigation bar includes "Search GitHub", "Pull requests", "Issues", "Marketplace", and "Explore". On the right, there are "+" and "grid" buttons.

Welcome to GitHub

You'll find endless opportunities to learn, code, and create,
@githubtesting123123.

Completed Set up a personal account	Step 2: Choose your plan	Step 3: Tailor your experience
--	-----------------------------	-----------------------------------

How would you describe your level of programming experience?

Totally new to programming Somewhat experienced Very experienced

What do you plan to use GitHub for? (check all that apply)

Project Management Design School projects
 Development Research Other (please specify)

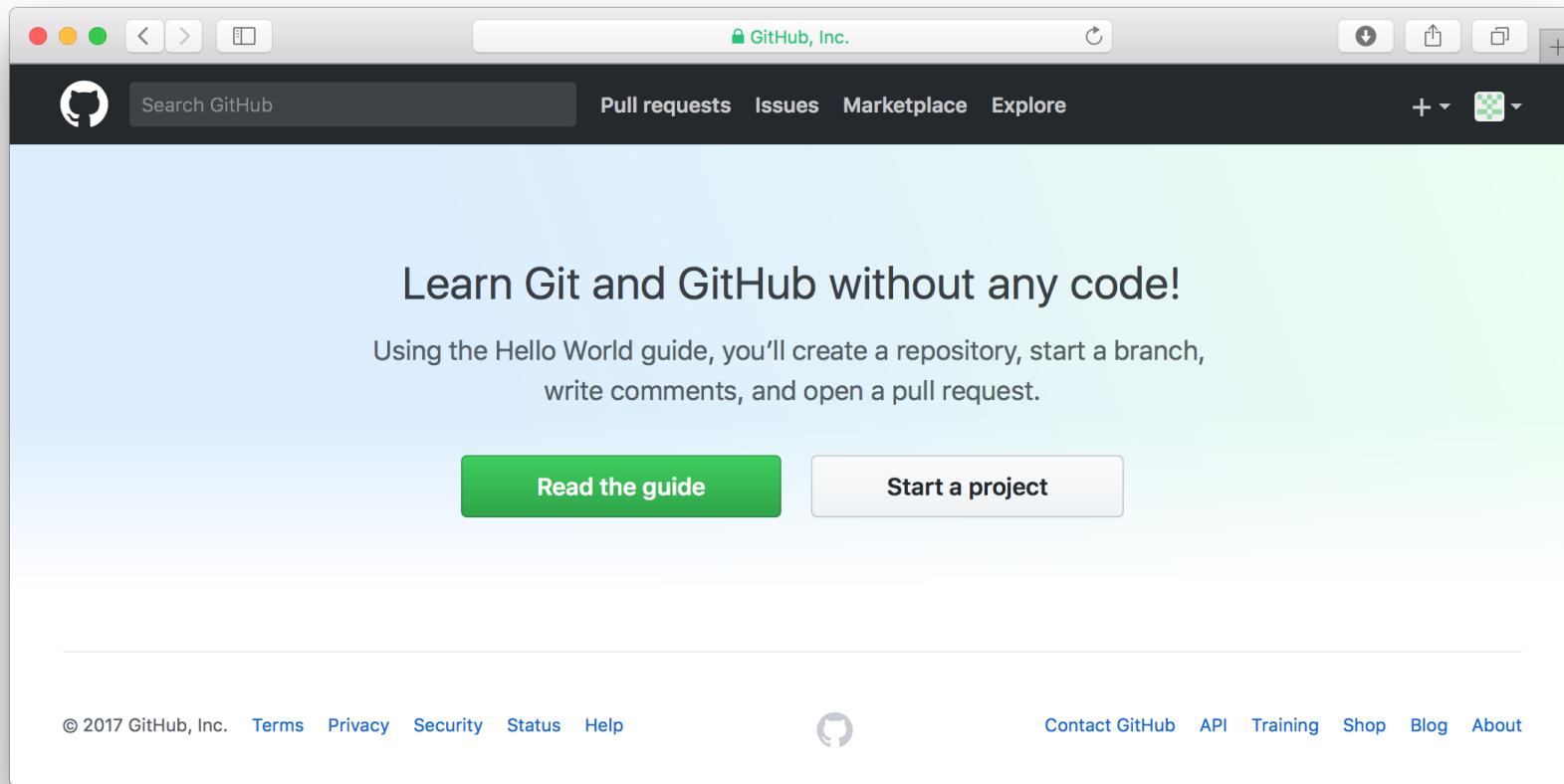
Which is closest to how you would describe yourself?

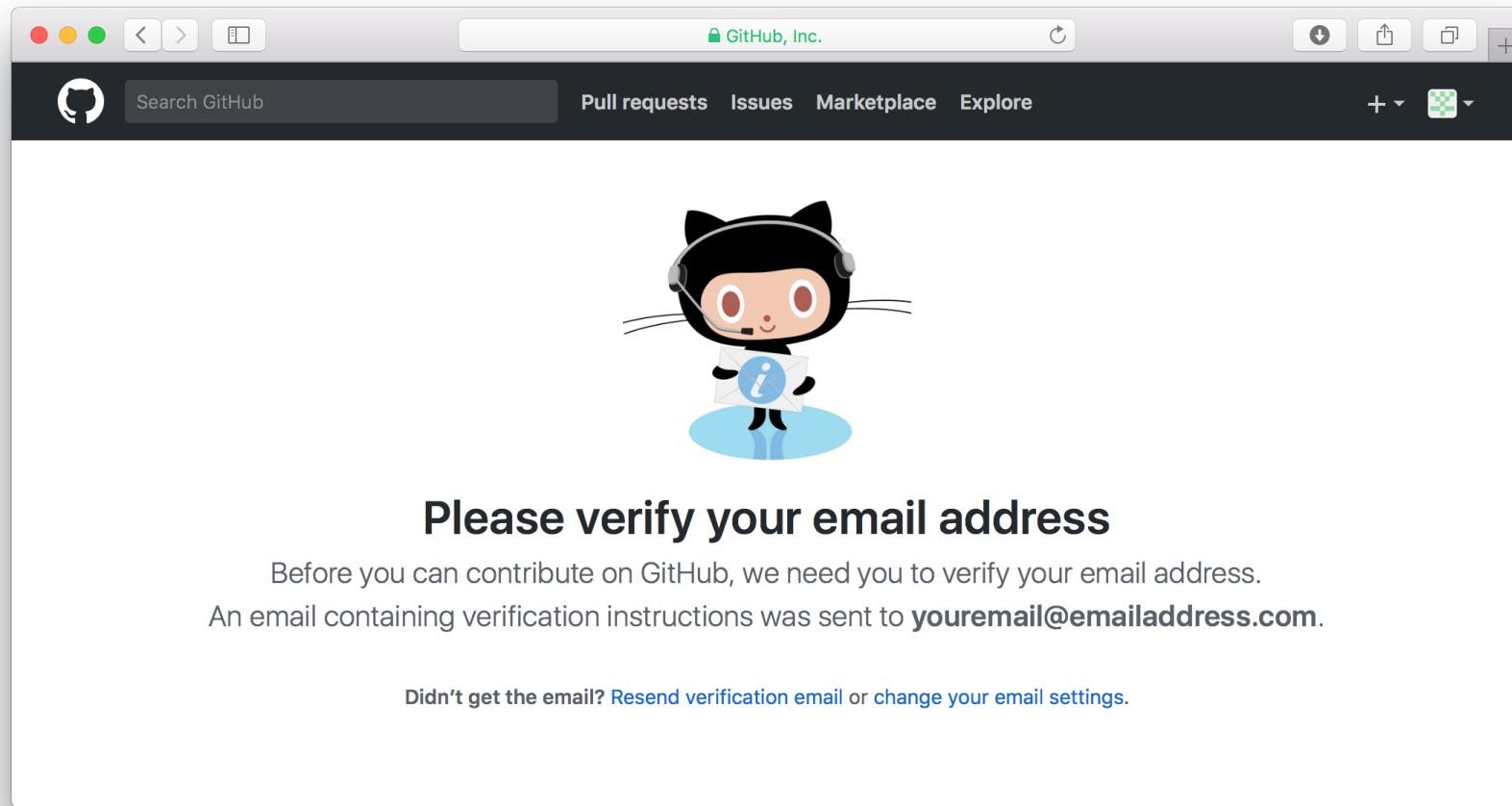
I'm a hobbyist I'm a student I'm a professional
 Other (please specify)

What are you interested in?

e.g. tutorials, android, ruby, web-development, machine-learning, open-source

Submit [skip this step](#)





After verifying your email we're going to create a repository for this week's homework assignment.

New Terminology

Repository: repositories are where you store your Git projects. They track all the code and have a history of every change!

A repository is just like a folder that holds one of your projects. You create a repository for different projects. Repositories can have many files and other folders in them.

You will want to get in the practice of creating a new repository for every project.

We're going to create a new repository that you will own and use for this week's homework. Go to GitHub and follow the next slides.

A screenshot of a Mac OS X desktop showing the GitHub homepage. The browser window has three tabs open: GitHub, Salt Lake Film Socie..., and How I Start... The GitHub tab is active. The page shows a feed of recent activities:

- jdan created a repository [jdan/j](#) 6 hours ago. Description: Some code examples for the J programming language. Updated Feb 2.
- steveoh labeled an issue with [help wanted](#) in [OpenSaltLake/OpenSaltLake_Website](#) 6 hours ago. A callout box for this item contains the text: "Project Page #5" and "Create project page. Since this is a reboot we are a little dry on projects. Are there any successful projects from that last iteration that can be...".
- steveoh labeled an issue with [help wanted](#) in [OpenSaltLake/OpenSaltLake_Website](#) 6 hours ago.
- <https://github.com/new> Team Member Information #4

The right sidebar features a "New repository" button and a dropdown menu with options: Import repository, New gist, and New organization. It also lists repositories contributed to by the user:

- MIT Media Engineering
- Import repository
- New gist
- New organization

Repositories you contribute to (11):

- UtahRETC/JavaProgrammer1CI... 1 ★
- consumr-project/cp 2 ★
- malsoudani/gota 0 ★
- inphomercial/gente 0 ★
- jneen/prg-qush-slides 0 ★

Load more...

Your repositories (103) [New repository](#)

Find a repository...
All Public Private Sources Forks

- [courses](#)
- [dots](#)
- [talk-parse-to-interpretation](#)
- [bool](#)

- Repository name: java-class-git-homework
- Description: Repository for Git homework in my Introduction to Java Programming class.
- Check "Public"
- Check "Initialize this repository with a README"
- Click "Create repository" button

A screenshot of a web browser displaying the GitHub 'Create a new repository' page. The page has a dark header with the GitHub logo, search bar, and navigation links for Pull requests, Issues, Marketplace, and Explore. Below the header, the main title 'Create a new repository' is displayed, followed by a sub-instruction: 'A repository contains all the files for your project, including the revision history.' The form fields include 'Owner' (set to 'githubtesting123123'), 'Repository name' ('csv-crm'), a suggestion 'literate-adventure.', 'Description (optional)' ('A CRM that uses CSVs as the data store.'), and a 'Visibility' section where 'Public' is selected (indicated by a blue dot). There are also options for 'Private' and 'Initialize this repository with a README'. At the bottom, there are buttons for 'Add .gitignore: None' and 'Add a license: None', and a large green 'Create repository' button.

Create a new repository

A repository contains all the files for your project, including the revision history.

Owner

githubtesting123123 / Repository name

csv-crm ✓

Great repository names are short and memorable. Need inspiration? How about [literate-adventure](#).

Description (optional)

A CRM that uses CSVs as the data store.

 **Public**
Anyone can see this repository. You choose who can commit.

 **Private**
You choose who can see and commit to this repository.

Initialize this repository with a README
This will let you immediately clone the repository to your computer. Skip this step if you're importing an existing repository.

Add .gitignore: **None** | Add a license: **None** ⓘ

Create repository

The screenshot shows a GitHub repository page for 'githubtesting123123 / csv-crm'. The top navigation bar includes links for 'Pull requests', 'Issues', 'Marketplace', and 'Explore'. Below the header, there are buttons for 'Watch' (0), 'Star' (0), and 'Fork' (0). The main content area is titled 'Quick setup — if you've done this kind of thing before' and provides instructions for setting up the repository. It includes a code input field with options for 'Set up in Desktop' (selected), 'HTTPS', and 'SSH', and a URL 'git@github.com:githubtesting123123/csv-crm.git'. A note says 'We recommend every repository include a README, LICENSE, and .gitignore.' Below this, there are sections for '...or create a new repository on the command line' with a command-line script, '...or push an existing repository from the command line' with another command-line script, and '...or import code from another repository' with a link to 'Import code'. A 'ProTip!' at the bottom suggests using the URL for adding GitHub as a remote.

GitHub, Inc.

This repository Search

Pull requests Issues Marketplace Explore

Watch 0 Star 0 Fork 0

Code Issues 0 Pull requests 0 Projects 0 Wiki Insights Settings

Quick setup — if you've done this kind of thing before

Set up in Desktop or HTTPS SSH git@github.com:githubtesting123123/csv-crm.git

We recommend every repository include a [README](#), [LICENSE](#), and [.gitignore](#).

...or create a new repository on the command line

```
echo "# csv-crm" >> README.md
git init
git add README.md
git commit -m "first commit"
git remote add origin git@github.com:githubtesting123123/csv-crm.git
git push -u origin master
```

...or push an existing repository from the command line

```
git remote add origin git@github.com:githubtesting123123/csv-crm.git
git push -u origin master
```

...or import code from another repository

You can initialize this repository with code from a Subversion, Mercurial, or TFS project.

Import code

💡 ProTip! Use the URL for this page when adding GitHub as a remote.

Let's download your new repository to your computer.

Create a Projects folder in your computer, navigate to that folder in your terminal, and run the clone command.

Now let's talk about how we use Git

Git commands

- `git add`
- `git commit`
- `git push`
- `git status`
- `git clone`

git add

By default, Git does not care about every file in the repository. If you want Git to track changes you make to a file, you have to "add" it by running `git add <FILENAME>`.

Then, as you make changes to your files, you will also need to tell git which changes you are interested in keeping track of, by using `git add` on the files that have changed. This gives you fine tuned control over what changes you are committing to as you work.

```
git commit -m "your commit  
explanation"
```

Think of a commit as a snapshot of changes you have made to your code. Let's say we just finished adding a feature to our project, we would create a commit which basically packages all of those changes and formats them in a way that I can then share when the rest of my team or the rest of the internet.

When you commit you will also include a short explanation of the changes you made at the end. What you put between the quotes is up to you!

There is no limit to the number of commits you make! The only requirement is that there is at least one character change in a file that Git is tracking.

git push

Committing your updates doesn't mean they'll be shared with others that have access to the repository.

To share these changes with everyone else, you have to "push" your commits. The command `git push` takes the commits that only exist locally (on your computer) and pushes them to the remote Git server ([GitHub.com](#)).

git status

This simple command will give you information about the current state of your repository. With this command you can see which files are untracked by Git, which tracked files have modifications, and also which files you have recently started tracking with Git.

When you create a new commit, Git will put all changes and new files in the commit and so they will not show up when you run `git status`, but what you will see is that there is a local commit that needs to be pushed (with `git push .`)

git clone

This command downloads a repository to your computer. You need to clone a repository before you can make any changes to it on your computer.

`git add` : Use this command to tell Git to start tracking the changes you make to a file. Example: `git add HelloWorld.java`

`git commit` : Use this command once you are done with a set of updates to your code and you are ready to package them so that you can share them with others. `git commit -m "Fixing a bug"`

`git push` : Use this command to make your commits available to the rest of your team. Example: `git push origin master`

`git status` : Use this command to get information about your repository. Tells you what files Git is not tracking and which ones you have modified.

`git clone` : Use this command to download a copy of a repository to your own computer. Only need to do this once.

```
> # After you cloned your repo and cd into the folder  
> git status  
> git add Calculator.java  
> git add Main.java  
> git commit -m "Finished the Calculator homework"  
> git push origin master
```

Lab #1: add a file to your repository and push it to GitHub.

Lab #2: make a change to that same file
and push the update to Github.

Lab #3: follow at least one of your
classmates.

Changes, changes, changes

Let's review this week's homework

You should have the following for this week's homework:

- Git installed on your computer.
- A GitHub account.
- A Pluralsight account.

If you are missing any of these please talk to us.

Reference list

[1] <https://www.google.com/search?q=define+version+control&ie=utf-8&oe=utf-8&client=firefox-b-1-ab>