Parallel & Distibuted Computing: Lecture 3

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Version Control System (VCS), Julia packages

Git

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- Git was created by Linus Torvalds in 2005 for development of the Linux kernel

Data flows and storage levels

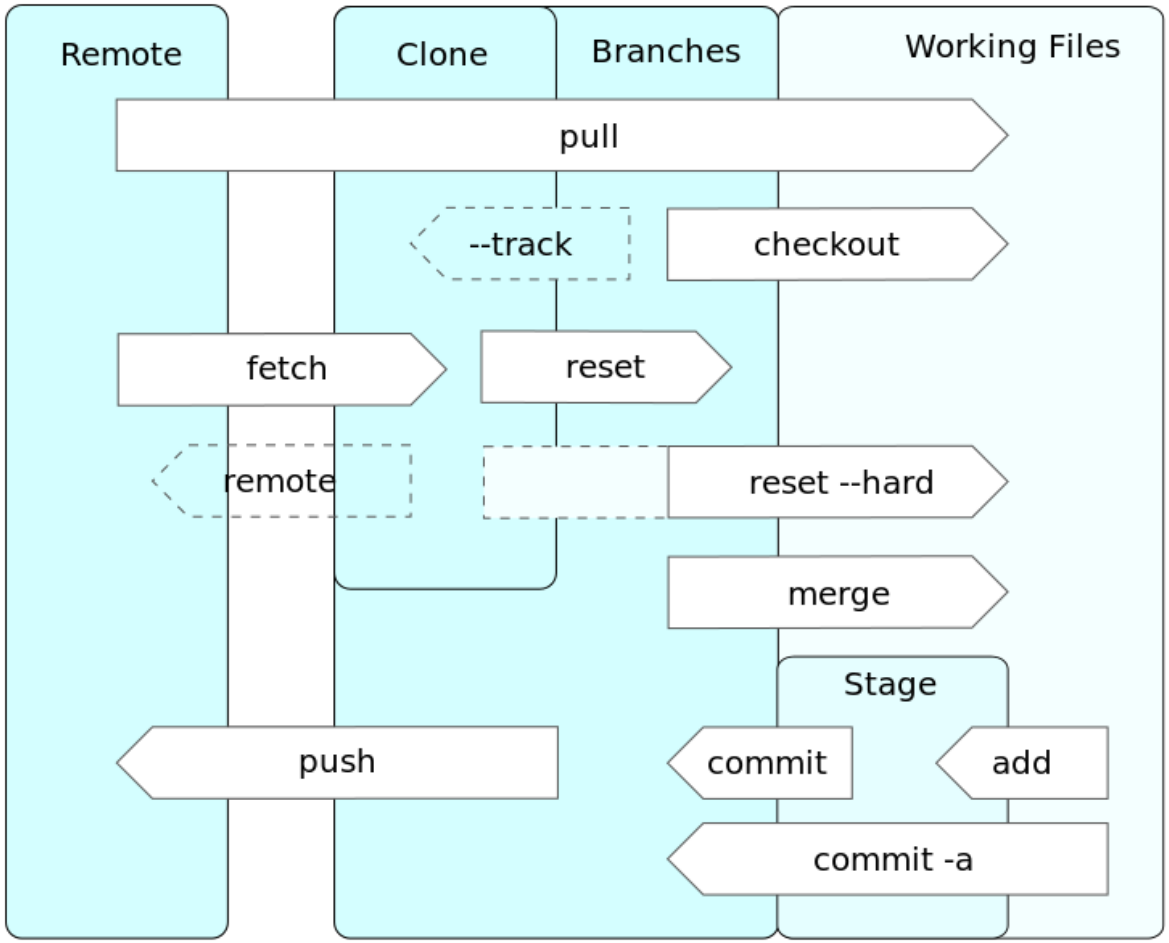
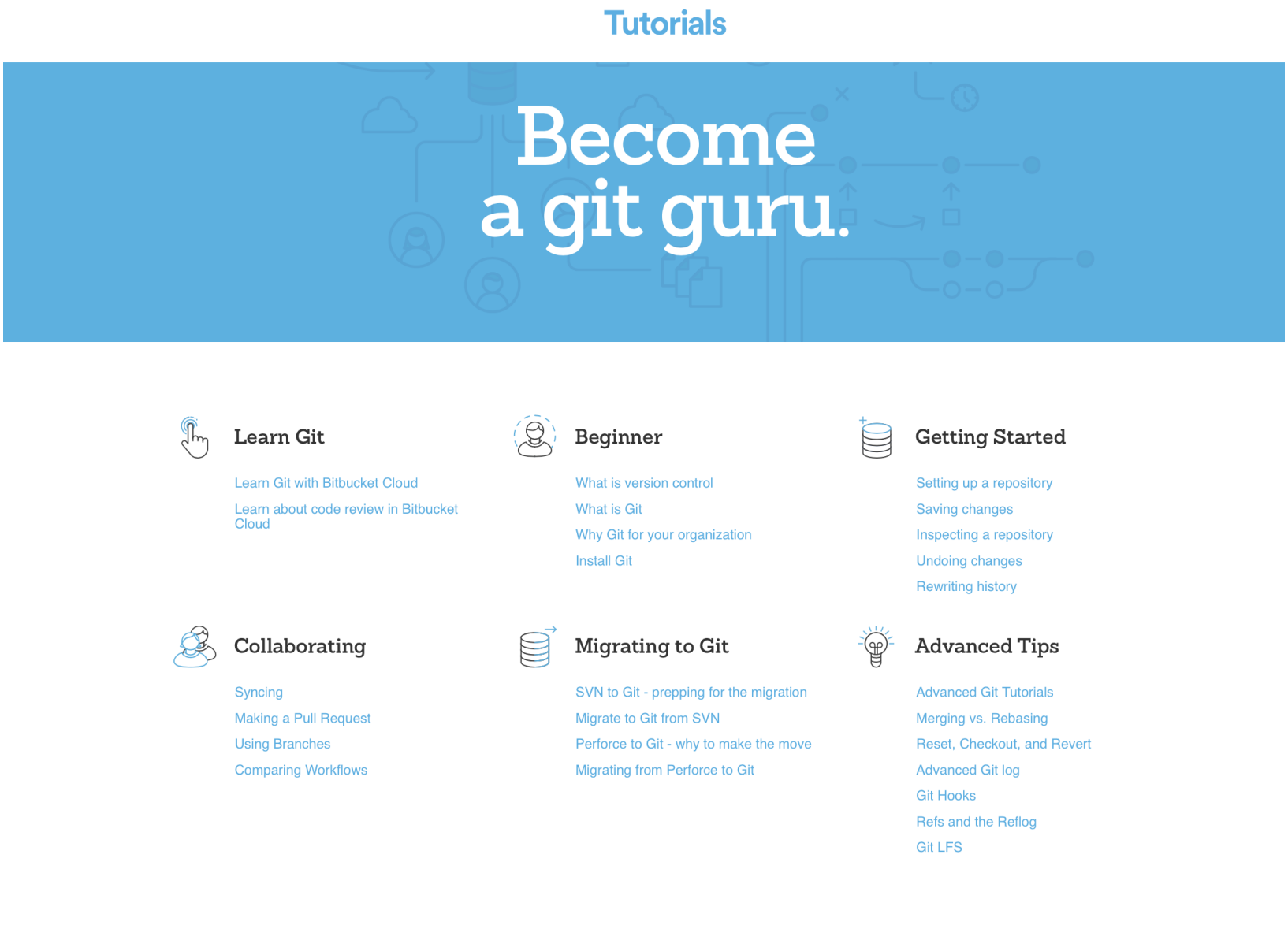


Figure 1: Some data flows and storage levels in the Git revision control system

Tutorials


Tutorials
Become
a git guru.
Learn Git
Learn Git with Bitbucket Cloud
Learn about code review in Bitbucket Cloud
Beginner
What is version control
What is Git
Why Git for your organization
Install Git
Getting Started
Setting up a repository
Saving changes
Inspecting a repository
Undoing changes
Rewriting history
Collaborating
Syncing
Making a Pull Request
Using Branches
Comparing Workflows
Migrating to Git
SVN to Git - prepping for the migration
Migrate to Git from SVN
Perforce to Git - why to make the move
Migrating from Perforce to Git
Advanced Tips
Advanced Git Tutorials
Merging vs. Rebasing
Reset, Checkout, and Revert
Advanced Git log
Git Hooks
Refs and the Reflog
Git LFS

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- These changes are imported as added development branches, and can be merged in the same way as a locally developed branch.

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Efficient handling of large projects Torvalds has described Git as being very fast and scalable

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- It has multiple algorithms for completing it, until telling that manual editing is needed.

Git Install

Getting Started - Installing Git

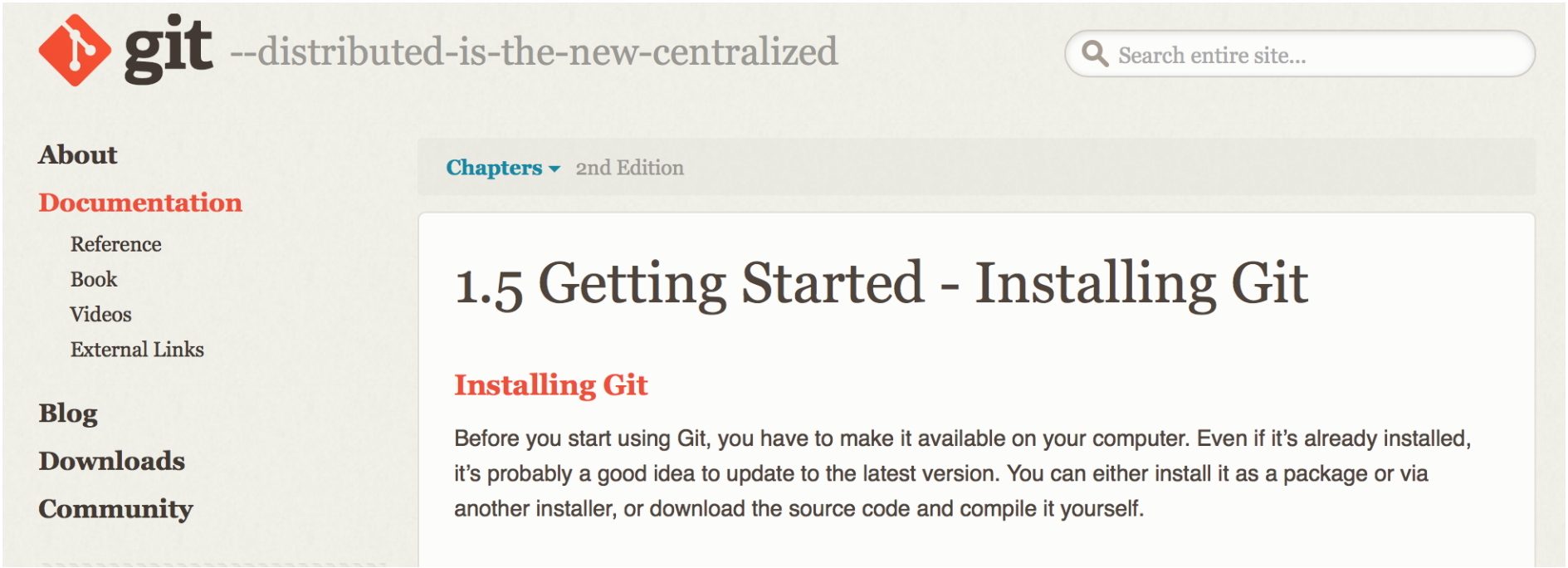

Figure 2: Git Install

Git configuring

Setting up Git

1. Download and install the latest version of Git.
2. On your computer, open the **Terminal** application.
3. Tell Git your *name* so your commits will be properly labeled. Type everything after the `$` here:

```
$ git config --global user.name "YOUR NAME"
```

4. Tell Git the *email address* that will be associated with your Git commits. The email you specify should be the same one found in your email settings. To keep your email address hidden, see "Keeping your email address private".

```
$ git config --global user.email "YOUR EMAIL ADDRESS"
```

GitHub

Web-based Git = VCS + Internet hosting service

GitHub is a code hosting platform for version control and collaboration. It lets you and others work together on projects from anywhere.

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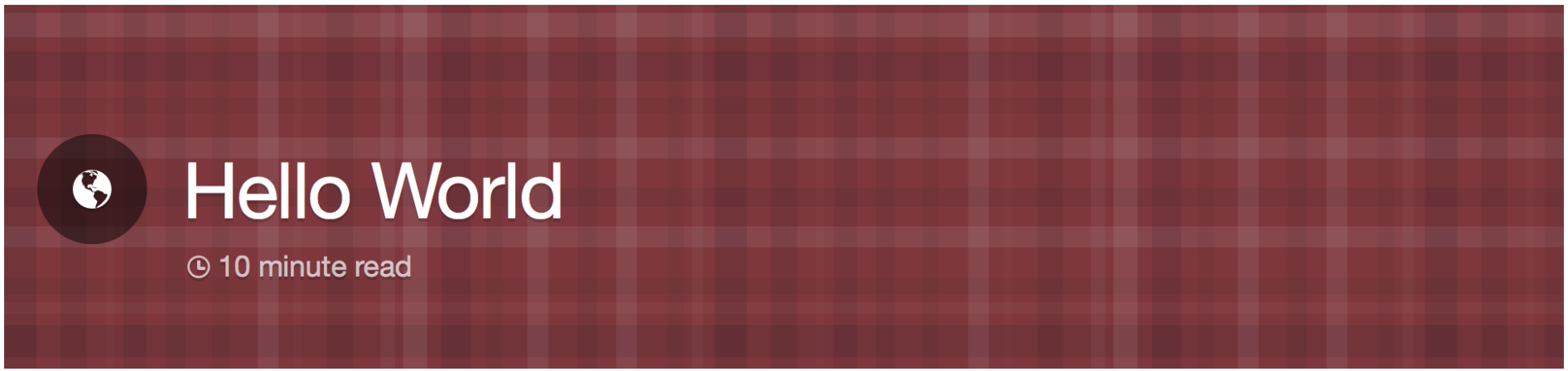
Hello World project on GitHub



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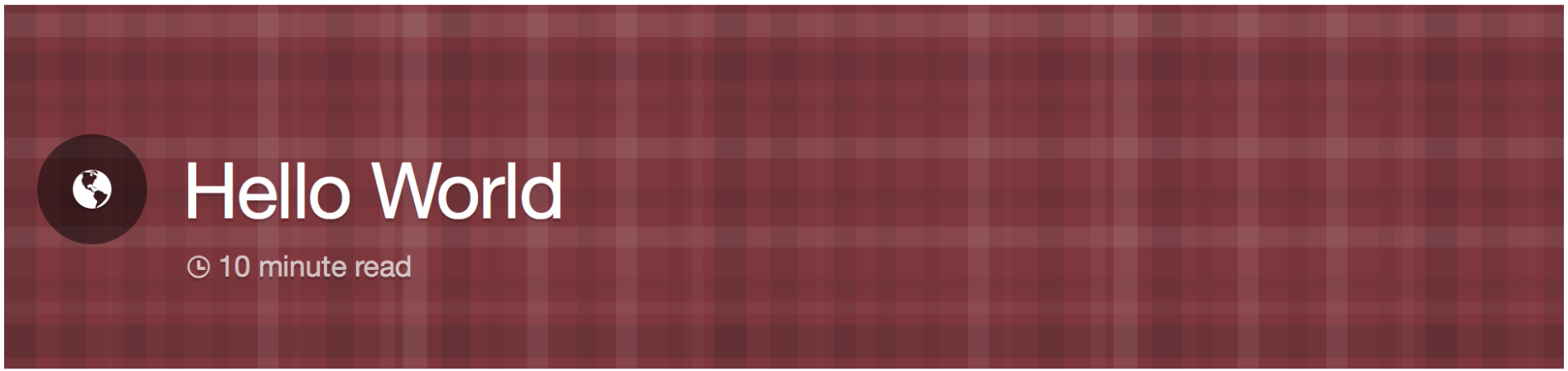

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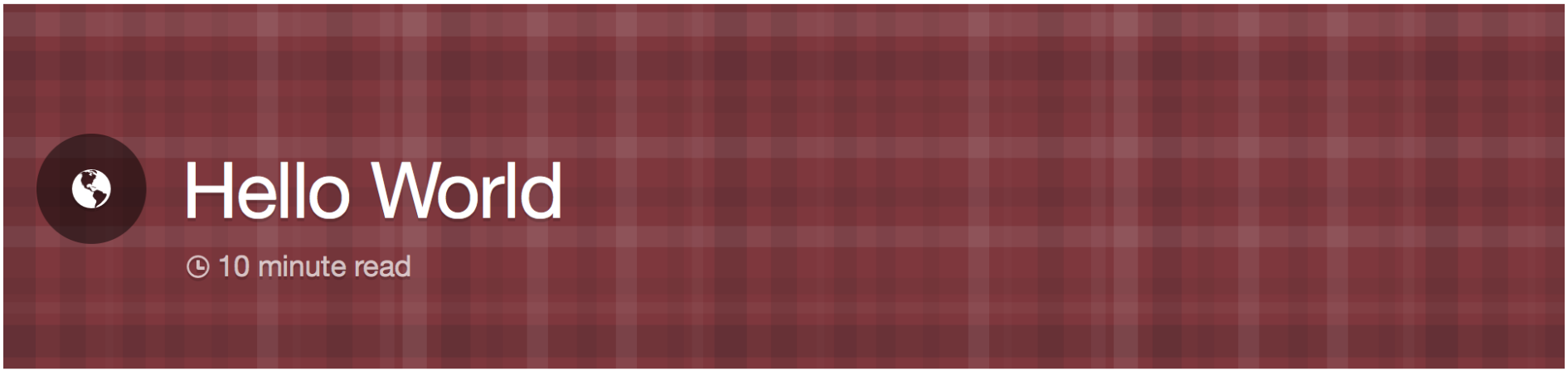

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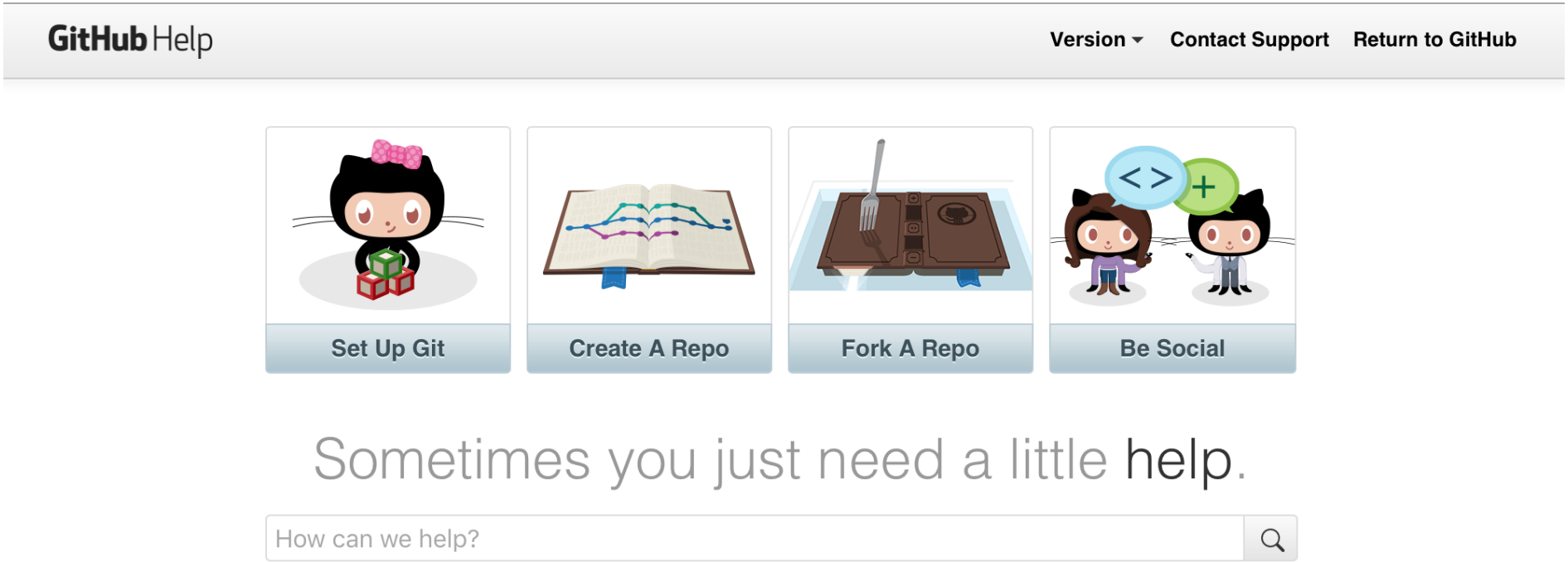
GitHub help system



Julia packages

Julia package listing

https://pkg.julialang.org

Listing all 1297 registered packages for the Julia programming language.

Last updated 2017-03-12 — Package ecosystem pulse

Packages tested on Julia versions:
v0.4.7 (previous release) — **v0.5.1 (current release)** — v0.6-pre (unstable)

Packages

packages

Packages

Julia has a built-in package manager for installing add-on functionality written in Julia. It can also install external libraries using your operating system's standard system for doing so, or by compiling from source. The list of registered Julia packages can be found at http://pkg.julialang.org. All package manager commands are found in the `Pkg` module, included in Julia's `Base` install.

First we'll go over the mechanics of the `Pkg` family of commands and then we'll provide some guidance on how to get your package registered. Be sure to read the section below on package naming conventions, tagging versions and the importance of a `REQUIRE` file for when you're ready to add your code to the curated METADATA repository.

Some `Pkg` commands

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`Pkg.rm()` to remove the requirement for it from the `REQUIRE` file

Make your own Julia packages

Toban Wiebe

Penn Economics PhD Candidate

Blog
Projects

August 20, 2016

Make your own Julia packages

Julia is a fantastic language for scientific computing and as a result is gaining traction among researchers. In research projects, it often happens that you need to write code which could be generalized and reused. For example, in a recent project, I coded up a marriage market model as a component of a larger model. The best way to make such code reusable is to create a package (most languages provide a packaging system).

Julia provides a convenient way to create a new package. As explained in the manual, `Pkg.generate("NewPackage", "MIT")` initializes a git repo containing the package structure for a package named `NewPackage` with an MIT license. If you configure your GitHub username in git (`git config --global github.user "USERNAME"`), it will even configure the remote repository (which you'll still need to create in GitHub).

Package example: `LAR.jl`

README.md

LAR.jl

Geometric and topological modeling with chain complexes in Julia.

Precondition: install pyplasm and larlib for Python 2.7

Installation: `julia> Pkg.clone("git://github.com/cvdlab/LAR.jl.git")`

Basic Usage

```
using LAR
```

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- `include` is just about splitting a single source file into multiple pieces.
- `reload` Like "require", except forces loading of files regardless of whether they have been loaded before. Typically used when interactively developing libraries.

A common question

What is the difference between `using` and `import` in Julia when I'm building my own module?

The Julia Modules documentation states:

> The `import` keyword [...] *only operates on a single name at a time*. It does not add modules to be searched the way `using` does. `import` also differs from `using` in that functions must be imported using `import` *to be extended with new methods*. [...] *Functions whose names are only visible via* `using` *cannot be extended*.

(Emphasis mine.)

References