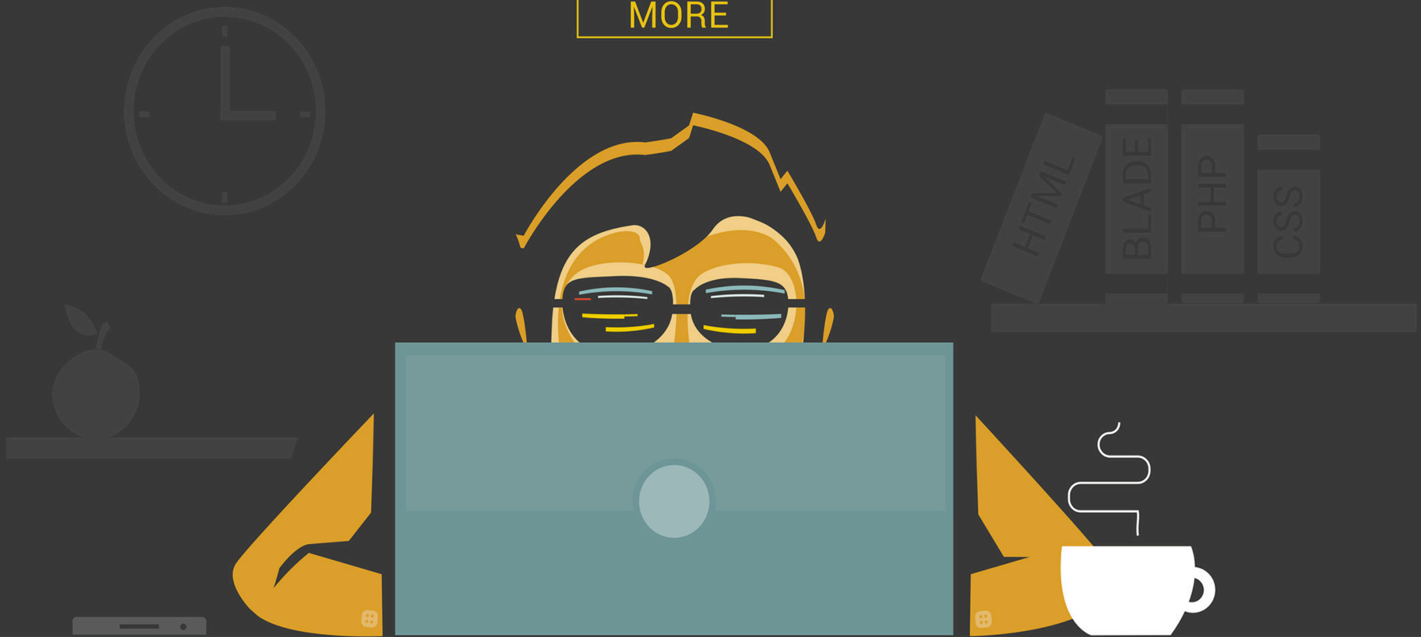
LARAVEL 5.1 BEAUTY

Creating Beautiful Web Apps in Laravel 5.1

MORE

<BY CHUCK HEINTZELMAN>

MORE



Laravel 5.1 Beauty

Creating Beautiful Web Apps with Laravel 5.1

Chuck Heintzelman

This book is for sale at http://leanpub.com/l5-beauty

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Contents

Thank You

Thank you for sampling this book. I hope you find it informative and useful.

Feedback

Feedback is encouraged!

If you find a typo, have a correction, or just want to comment on something you've found useful please drop by LaravelCoding.com[1] and comment on the appropriate chapter where you've found an issue.

Other places to learn Laravel 5.1

- The Laravel Web Site[2] - The documentation there is a great place to start.
- Laracasts[3] - The video tutorials created by Jeffrey Way are unparalleled.

[1]http://LaravelCoding.com/blog/?tag=L5+Beauty
[2]http://laravel.com
[3]http://laracasts.com

Chapter 1 - Introduction

Chapter Contents

Long Term Support

Laravel version 5.1 is the first LTS (long term support) Laravel release. This means bug fixes are provided for 2 years and security fixes are provided for 3 years.

This is important because the applications you build today will still be supported by the framework tomorrow.

Why This Book

My previous book on Laravel, *Getting Stuff Done with Laravel 4*[4] was well received. Now that Laravel 5.1 is available, I briefly thought of updating my previous book to work with Laravel 5.1. The new version of Laravel implements big changes from Laravel 4, but Laravel 5.1 is mostly backwards compatible.

But the *Getting Stuff Done with Laravel 4* book isn't really a manual covering every aspect of Laravel 4. It's a process and design book. The principles discussed within that book still are valid in Laravel 5.1, even if the implementation may vary slightly.

Instead of updating my previous book, I've created a new book, ***Laravel 5.1 Beauty***, to highlight some of the new features. This book is bigger and better than *Getting Stuff Done with Laravel 4*.

GitHub and the Blog

I'm publishing ***Laravel 5.1 Beauty*** simultaneously, as it is being built, on my web site LaravelCoding.com[5] and on Leanpub[6].

[4]https://leanpub.com/gettingstuffdonelaravel
[5]http://laravelcoding.com
[6]http://leanpub.com

The Source Code is on GitHub

The source code for the application built in this book is available on GitHub at Chuck-Heintzelman/l5beauty[7]. Just switch the branch at github to the chapter you're working on.

This book has a different tone than my previous book. No lame attempts to be funny. *(I guess we all can't be Dayle Rees.)*

Laravel 5.1 Beauty goes through the process of creating, designing and coding a real-world application while focusing on the the architecture that makes Laravel the number one PHP framework available today.

What is the Application?

Throughout this book we'll build a simple, clean and beautiful blogging application along with the administration required to maintain the blog.

My own Laravel blog, `LaravelCoding.com`, uses the same blogging application developed here.

Conventions Used This Book

There are a few conventions used throughout this book.

Code is indented two spaces

The standard indentation for PHP code is 4 spaces. Since this book is available in a variety of eBook formats and some devices with small screens don't have much horizontal space, code within this book is indented 2 spaces instead of 4 to save space.

```
for ($i = 1; $i <= 10; $i++) {
  echo "I can count to $i\n";
}
```

Lines that end with backslash (\) should be continued

If you see any line ending with a backslash, that means the code should continue uninterrupted with text from the next line.

[7]https://github.com/ChuckHeintzelman/l5beauty

```
$ here_is_a_really_really_long_command that_has_a_long list of_arguments\
which should continue
```

In the above line, even though two lines are shown you should type in everything, excluding the backlash into one line.

Be Careful of This One

When you're typing code and miss this it can cause an issue. When in doubt check the GitHub **l5beauty** repository.

Different prompts used for Windows, OS X (or Linux), and Homestead

Whenever a Windows command prompt is used, the prompt always begins with `C:` and ends with the > symbol.

```
C:\some\path>
```

Whenever the OS X Console or Linux console is used, the prompt also ends with the > symbol, but slashes are used instead of backslashes. Often there's a tilde (~) in the path.

```
~/some/path>
```

Whenever the console is generic (meaning it could be Windows, OS X, or Linux console depending on your host operating system) a prompt ending with a percent sign `%` is used.

```
/some/path%
```

Finally, whenever the console for the Homestead Virtual Machine is used, the standard dollar sign $ prompt is used. *(The majority of the book uses the Homestead Virtual Machine.)*

```
~/somepath$
```

With the Homestead Virtual Machine, your prompt actually shows the username and hostname before the path. For example: `vagrant@homestead:~$`*, but the username and hostname are only occasionally illustrated.*

Sometimes the path is missing

Whenever the path is omitted from the prompt in one of the versions of the console windows, it is assumed you are in the current project directory.

Have Fun

I hope you enjoy this book and learn Laravel 5.1 with it. Be sure and follow along, set up your development machine, and create the application step-by-step, chapter-by-chapter.

Above all. Have fun. Coding in Laravel 5.1 is great fun.

Chapter 2 - Required Software and Components

This chapter discusses what software and components are required to develop applications with Laravel 5.1 and why they're required. Instructions to install VirtualBox and Vagrant are provided.

Chapter Contents

The Rise of the Virtual Machines

Over the last few years, virtual machines have come into their own. Virtual Machines (or VMs) allow one computer system (the host operating system) to emulate another one. Sure, VMs have been around for a while, but now with increased processor speed and cheap memory VMs can be on every developer's desktop.

Laravel embraces VM technology and packages it's own *"box"* with the most common requirements for web applications. This pre-packaged development environment is called **Laravel Homestead**[8].

About Laravel Homestead

One of the driving philosophies behind Laravel is to make PHP development both fun and easy. To this end Laravel provides a development environment called Laravel Homestead. Vagrant[9] is used to manage the virtual machine. Under the hood VirtualBox[10] provides the interface to the host operating system.

[8]http://laravel.com/docs/5.1/homestead
[9]http://vagrantup.com
[10]http://virtualbox.org

A **car** is the perfect metaphor for how this all works together. **Homestead** is the driver's seat of the car, **Vagrant** is the car's frame, and **VirtualBox** is the engine. Once Vagrant and VirtualBox are installed, there's no need to worry about them again. All interaction with the VM occurs through Homestead. *(Just like when driving a car, there's no need to worry about the frame or engine.)*

Laravel Homestead allows you to use a virtual Ubuntu Linux machine, pre-installed with the software required for web development. This VM includes:

- Ubuntu 14.04
- PHP 5.6
- HHVM
- Nginx
- MySQL
- PostgresSQL
- Node (With Bower, Grunt, and Gulp)
- Redis
- Memcached
- Beanstalkd
- Laravel Envoy
- Fabric + HipChat Extension

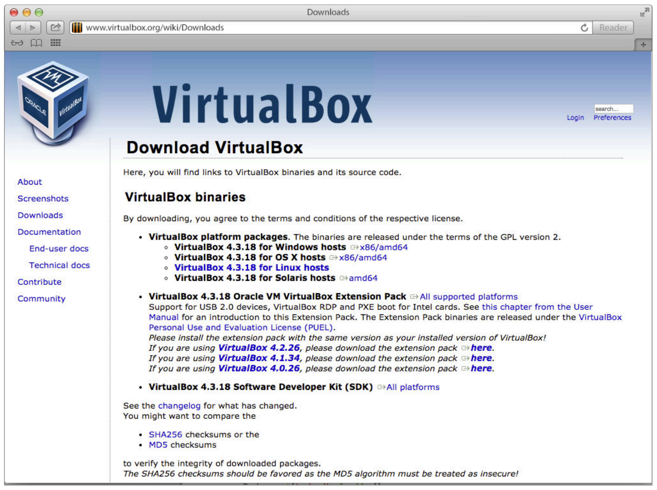
And best of all, Laravel Homestead allows the same development environment to be used on Windows, OS X, or Linux systems without worrying about conflicting software on the host machine.

Installing Virtual Box

Vagrant requires a back-end provider to provide the virtual machine it will manage. If you already have VirtualBox, VMWare, or another compatible provider[11] you can skip this step.

But if you don't yet have a back-end installed, use the VirtualBox platform package. It's free and works on every major platform.

[11]https://docs.vagrantup.com/v2/getting-started/providers.html



Download VirtualBox

Here, you will find links to VirtualBox binaries and its source code.

VirtualBox binaries

By downloading, you agree to the terms and conditions of the respective license.

- **VirtualBox platform packages**. The binaries are released under the terms of the GPL version 2.
  - **VirtualBox 4.3.18 for Windows hosts** ⇒x86/amd64
  - **VirtualBox 4.3.18 for OS X hosts** ⇒x86/amd64
  - **VirtualBox 4.3.18 for Linux hosts**
  - **VirtualBox 4.3.18 for Solaris hosts** ⇒amd64
- **VirtualBox 4.3.18 Oracle VM VirtualBox Extension Pack** ⇒All supported platforms
  Support for USB 2.0 devices, VirtualBox RDP and PXE boot for Intel cards. See this chapter from the User Manual for an introduction to this Extension Pack. The Extension Pack binaries are released under the VirtualBox Personal Use and Evaluation License (PUEL).
  Please install the extension pack with the same version as your installed version of VirtualBox!
  If you are using ***VirtualBox 4.2.26****, please download the extension pack ⇒* ***here****.*
  If you are using ***VirtualBox 4.1.34****, please download the extension pack ⇒* ***here****.*
  If you are using ***VirtualBox 4.0.26****, please download the extension pack ⇒* ***here****.*
- **VirtualBox 4.3.18 Software Developer Kit (SDK)** ⇒All platforms

See the changelog for what has changed.
You might want to compare the

- SHA256 checksums or the
- MD5 checksums

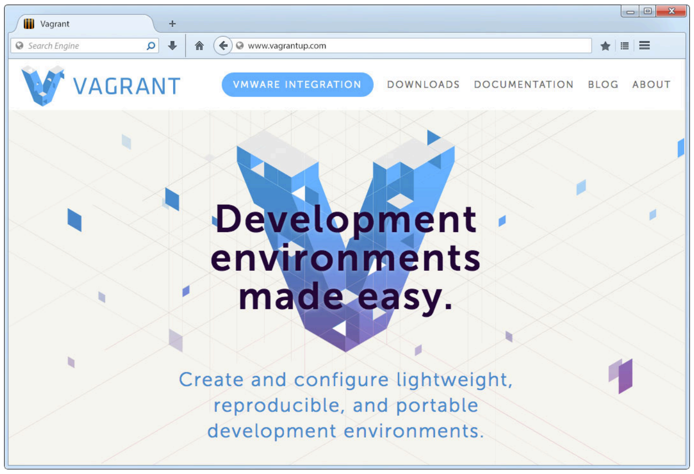
to verify the integrity of downloaded packages.
The SHA256 checksums should be favored as the MD5 algorithm must be treated as insecure!

VirtualBox Download Page

Go to ‘www.virtualbox.org](https://www.virtualbox.org/wiki/Downloads), download and install the package for your operating system.

Installing Vagrant

Once you have VirtualBox (or another back-end provider) installed, you need to install Vagrant.



Create and configure lightweight, reproducible, and portable development environments.

Vagrant Home Page

Go to `www.vagrantup.com`, download and install the package for your operating system.

When the Vagrant installation is complete, you may need to reboot your machine. After the reboot, verify Vagrant is installed by opening the console (command prompt in Windows, terminal in OS X or Linux) and checking the version.

Checking the Vagrant Version

```
% vagrant --version
Vagrant 1.6.5
```

Vagrant Windows Install Location

Unlike most software installed within Windows, Vagrant is not available in the Windows Start menu. It installs into the `C:\HashiCorp` directory and adds `C:\HashiCorp\Vagrant\bin` to your Windows system path.

Where Do I Execute Things?

After going through the next few chapters installing and running Laravel Homestead a common question is *"Where do I run ...?"* or *"Where does ... run?"* This section provides a brief overview of the major components of Laravel development within Homestead and answers the questions.

The Web Server

The Web Server runs in the Homestead Virtual Machine.

Nginx is the web server used to serve the web pages. The Host OS can access the web pages using the standard HTTP port (80) at the address 192.168.10.10. The Host OS can also access web pages at 127.0.0.1 on port 8000.

Editing Files

Always edit your source code from the Host OS.

The edited files are immediately available in the Homestead VM through shared folders.

MySQL

MySQL runs within the Homestead Virtual Machine.

You can access MySQL from your Host OS with the following information.

Setting Name	Setting Value
Host	127.0.0.1
Port	33060
Username	homestead
Password	secret

Memcached

Memcached is an in-memory key/value cache. It runs within the Homestead Virtual Machine.

Beanstalkd

Beanstalkd is a simple and fast work queue. It runs within the Homestead Virtual Machine.

Git or Subversion

Run from your Host OS.

Although you *can* run these version control systems from either place, it is **strongly** recommended to only run them from your Host OS. Consistently running them in one location avoids potential conflicts.

For example, let's say you install subversion in the Homestead Virtual Machine and it's version 1.8. You check out source code within the Homestead Virtual Machine and then try to check it in from your Host OS. If subversion v1.7 is installed on your Host OS you won't be able to do anything until upgrading subversion on your Host OS.

Bower

Bower is a simple to use package manager for the web. You can run this from either place if bower's installed on your Host OS.

Gulp

Gulp is a simple build system Laravel Elixir uses to concatenate assets, minify assets, combine assets, copy assets, and automate unit tests.

ONLY run this from your Host OS.

When running Gulp from your Host OS, growl-like notifications will appear in your OS when certain tasks are performed (such as LESS files compiled). If you execute Gulp within the Homestead Virtual Machine there will be warning errors when these notification attempts are made.

Composer

Only run Composer from your Host OS.

If you're Host OS is OS X or Linux you can run from either place, but if your Host OS is Windows then Composer creates necessary batch files required to operate correctly.

Artisan

Only run `artisan` from the Homestead Virtual Machine. The main reason for this is that any specific database, queue, and cache drivers are installed within Homestead and may not be available (or installed) on your Host OS. Also, the database setting of `localhost` is from the Homestead VM perspective, not from your Host OS's perspective.

The rule for running commands in the console

The rule is: *Only run artisan in the Homestead VM.* Everything else can or must be executed from your Host OS.

Recap

In this chapter we discussed the various software required to develop applications in Laravel 5.1 and installed VirtualBox and Vagrant.

If your machine is a Windows box, continue to the next chapter, *Setting up a Windows Machine*. Otherwise, skip to the chapter *Setting up an OS X or Linux Machine*.

Chapter 3 - Setting up a Windows Machine

This chapter goes through the steps required to set up and install the supporting software for Laravel Homestead on a Windows machine. It is assumed **VirtualBox** and **Vagrant** were already installed from the previous chapter.

If you're using OS X or Linux, please skip to the next chapter.

Chapter Contents

Multiple Ways to Setup Windows

With Windows, there's quite a few different paths you can go down to install the required software. I tried multiple methods searching for the combination presented below. This chapter has been tested with Windows 8.1 but should work fine with Windows 7.

Step 1 - Installing PHP Natively

The first step is to get PHP running on Windows.

Step 1.1 - Download / Unzip PHP

Go to windows.php.net/download[12] and download the latest Zip file for your machine. For my machine I downloaded the **VC11 x64 Thread Safe** version. (`php-5.6.10-Win32-VC11-x64.zip` at the time of this writing.)

Unzip this file into the `C:\Php` directory.

Step 1.2 - Update PHP.INI

Open up a command prompt and do the following to create the `php.ini` file.

Copy php.ini-development to php.ini

```
C:\Users\Chuck> cd \php
C:\Php> copy php.ini-development php.ini
```

Then edit `php.ini` in a text editor and change the following lines.

Changes in php.ini

```
// change
; extension_dir = "ext"
// to
extension_dir = "ext"

// change
;extension=php_openssl.dll
// to
extension=php_openssl.dll

// change
;extension=php_mbstring.dll
// to
extension=php_mbstring.dll
```

Now, within the `C:\Php` directory, you should be able to execute php.

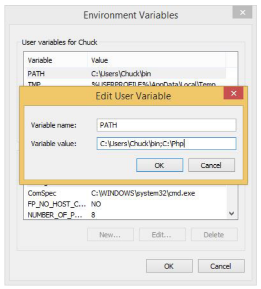
[12] http://windows.php.net/download

Checking the PHP version

```
C:\Php> php --version
PHP 5.6.10 (cli) (built: Oct 30 2014 16:05:53)
Copyright (c) 1997-2014 The PHP Group
Zend Engine v2.6.0, Copyright (c) 1998-2014 Zend Technologies
```

Step 1.3 - Add C:\Php to the path

- Open up the *Windows Control Panel*
- Search for *env* in the top right corner
- Click on the **Edit environment variables for your account** link
- If `PATH` is already in your User variables, then **[Edit…]** it, adding `;C:\Php` to the end, otherwise add it.


Environment Variables

User variables for Chuck

Variable	Value
PATH	C:\Users\Chuck\bin
TMP	%USERPROFILE%\AppData\Local\Temp
ComSpec	C:\WINDOWS\system32\cmd.exe
FP_NO_HOST_C...	NO
NUMBER_OF_P...	8

Edit User Variable

Variable name: PATH

Variable value: C:\Users\Chuck\bin;C:\Php

Adding PHP to Windows Path

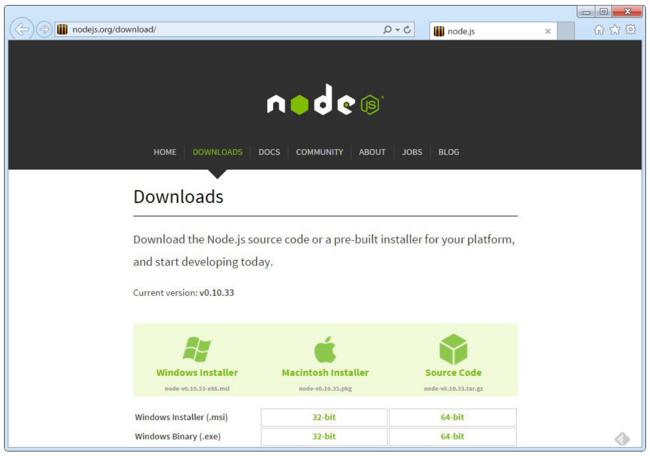
The next time you open up a command prompt, `php` will be available in your path.

Step 2 - Install Node.js

We'll install Node.js natively in Windows because later it'll make it easy to use Gulp directly from the Windows command prompt.

Go to nodejs.org/download[13] and download the Windows Installer for your version of windows. *(Either 32-bit or 64-bit.)*

[13]http://nodejs.org/download



Downloads

Download the Node.js source code or a pre-built installer for your platform, and start developing today.

Current version: **v0.10.33**

Windows Installer (.msi)	32-bit	64-bit
Windows Binary (.exe)	32-bit	64-bit

Node.js Download Page

Install using defaults. Once installed, open up a *new* command prompt and check the installation by looking at the versions installed.

Checking node and npm versions

```
C:\Users\Chuck> node --version
v0.10.33

C:\Users\Chuck> npm --version
1.4.28
```

Installing gulp globally

```
C:\Users\Chuck> npm install -g gulp
C:\Users\Chuck\AppData\Roaming\npm\gulp -> C:\Users\Chuck\AppData/
Roaming\npm\node_modules\gulp\bin\gulp.js
gulp@3.8.10 C:\Users\Chuck\AppData\Roaming\npm\node_modules\gulp
[snip]
```

Checking the gulp version

```
C:\Users\Chuck> gulp --version
[10:13:44] CLI version 3.8.10
```

Optionally Install Bower

You can optionally install bower globally if you wish to run bower from a Windows prompt. Personally, I usually run bower within the Homestead Virtual Machine, but it's your choice.

Using the Node package manager (NPM), install bower globally.

Installing bower globally

```
C:\Users\Chuck> npm install -g bower
C:\Users\Chuck\AppData\Roaming\npm\bower -> C:\Users\Chuck\AppData\
    Roaming\npm\node_modules\bower\bin\bower
bower@1.3.12 C:\Users\Chuck\AppData\Roaming\npm\node_modules\bower
[snip]
```

Checking the bower version

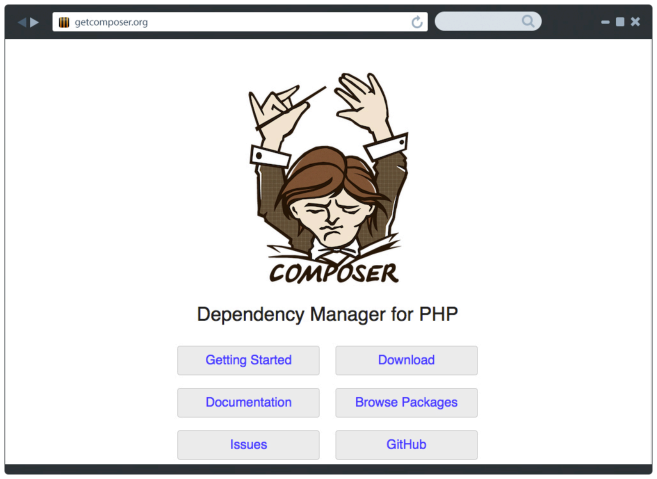
```
C:\Users\Chuck> bower --version
1.3.12
```

Remember this only installs the programs globally

If you use gulp (or bower) within a particular project you'll still need to install them locally within that project with a `npm install` (omitting the -g option). This will be covered later.

Step 3 - Install Composer

Composer is *the* package manager for PHP.



Composer Page

Download and install the Windows setup program, Composer-Setup.exe[14]. Use the defaults when installing and if it asks you the path to PHP, enter `C:\Php\php.exe`.

Once Composer installs, close any command prompts and open up a new one. Check the version of composer to see if installed correctly.

[14]https://getcomposer.org/Composer-Setup.exe

Checking the Composer version

```
C:\Users\Chuck> composer --version
Composer version 1.0-dev (b23a3cd36870ff0eefc161a4638d9fcf49d998ba)\
2014-11-21 17:59:11
```

> **Installing Composer Updates Your Path**
>
> The installation will move `C:\Php` from your personal path and add it to the system path. It will also add `C:\ProgramData\ComposerSetup\bin` to your system path.

Step 4 - Install GIT and set up SSH Key

For Windows we'll install the native GIT application and use GIT BASH for setting up the SSH Key. Any other GIT usage in Windows will be through the Windows command prompt.

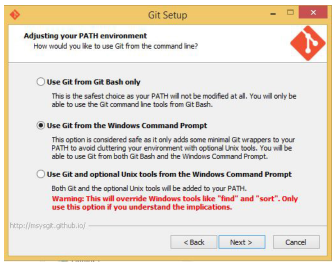
Step 4.1 - Download the git installer

Go to git-scm.com/downloads[15] and click on the **[Downloads for Windows]** button. This will download the latest version of Git for windows.

(At the time of this writing, the file downloaded is named `Git-1.9.4-preview20140920.exe`*.)*

Step 4.2 - Install, choosing the 'Use Git from Command Prompt' option

Run the file just downloaded and choose default options until you get to the following screen.



Adjusting your PATH environment
How would you like to use Git from the command line?

○ **Use Git from Git Bash only**
This is the safest choice as your PATH will not be modified at all. You will only be able to use the Git command line tools from Git Bash.

● **Use Git from the Windows Command Prompt**
This option is considered safe as it only adds some minimal Git wrappers to your PATH to avoid cluttering your environment with optional Unix tools. You will be able to use Git from both Git Bash and the Windows Command Prompt.

○ **Use Git and optional Unix tools from the Windows Command Prompt**
Both Git and the optional Unix tools will be added to your PATH.
Warning: This will override Windows tools like "find" and "sort". Only use this option if you understand the implications.

Git Path Option

Make sure you select the **Use Git from the Windows Command Prompt** option.

Use the defaults for the rest of the installation.

[15] http://git-scm.com/downloads

Step 4.3 - Checking the Git Version

Close any existing command prompts and open a new command prompt. Make sure Git installed successfully by executing the command below.

Checking the Git Version

```
C:\Users\Chuck> git --version
git version 1.9.4.msysgit.2
```

Step 4.4 - Setup the SSH Key

Find **Git Bash** in the Windows Start Menu and execute the `ssh-keygen` command below. Press [Enter] all the way through to use the defaults and set up the SSH key with no pass phrase.

Creating SSH Key in Git Bash

```
Chuck@Windows ~
$ ssh-keygen -t rsa -C "your@email.com"
Generating public/private rsa key pair.
Enter file in which to save the key (/c/Users/Chuck/.ssh/id_rsa):
Created directory '/c/Users/Chuck/.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
$
```

Step 5 - Adding the Homestead box

This step downloads the Laravel Homestead Vagrant box.

Adding the Homestead box in Windows

```
C:\Users\Chuck> vagrant box add laravel/homestead
==> box: Loading metadata for box 'laravel/homestead'
    box: URL: https://vagrantcloud.com/laravel/homstead

[snip]
```

It can take a while to download on slow connections.

Step 6. Installing Homestead

Now we'll use composer to install the `homestead` command. This command line utility makes it easy to control the Homestead VM.

Step 6.1 - Globally requiring Homestead

Globally requiring Homestead 2.0

```
C:\Users\Chuck> composer global require "laravel/homestead=~2.0"
Changed current directory to C:\Users/Chuck/AppData/Roaming/Composer
./composer.json has been updated
Loading composer repositories with package information
Updating dependencies (including require-dev)
  - Installing symfony/process (v2.5.7)
    Loading from cache

  - Installing symfony/console (v2.5.7)
    Loading from cache

  - Installing laravel/homestead (v2.0.7)
    Loading from cache

Writing lock file
Generating autoload files
```

Step 6.2 - Updating Path

Composer just installed Homestead into the `vendor` directory of your Composer installation. (For example, `C:\Users\YOU\AppData\Roaming\Composer`).

In order to access homestead from any command prompt, add this path to your User path variable.

Follow the same steps to do this as you did back in **Step 1.3 - Adding C:\Php to the path** but this time the path to add will be below (replacing **YOU** as appropriate).

Paths to add

`C:\Users\YOU\AppData\Roaming\Composer\vendor\bin;vendor\bin`

Notice the extra 'vendor\bin' in the path?

We're adding this so any time you're within the base directory of a Laravel project you can easily access any vendor utilities provided in that project. For example, **Phpunit** is installed in the `vendor/bin` directory of every Laravel application.

Step 6.3 - Verifying Homestead Installed

Close any existing command prompts and open a new command prompt so the latest changes to the path will be in effect. Then check the version of homestead to verify it installed.

Checking the Homestead Version

```
C:\Users\Chuck>homestead --version
Laravel Homestead version 2.0.7
```

Step 6.4 - Initialize Homestead

Once you've installed the homestead command and added the composer bin directory to your path, then you need to initialize Homestead.

Initializing Homestead

```
C:\Users\Chuck> homestead init
Creating Homestead.yaml file...
Homestead.yaml file created at: C:\Users\Chuck\.homestead/Homestead.yaml
```

Remember

You only need to initialize Homestead once on your machine

Step 7 - Bring up the Homestead VM

To bring up Homestead for the first time we'll create a `Code` directory to store our projects and use the `homestead up` command.

Bringing up Homestead for the 1st time

```
C:\Users\Chuck> mkdir Code
C:\Users\Chuck> homestead up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Importing base box 'laravel/homestead'...
==> default: Matching MAC address for NAT networking...
==> default Checking if box 'laravel/homestead' is up to date...

[snip]
```

Now the Homestead Virtual Machine is running. If you exit the Windows command prompt, the VM is still running. It'll remain active until you issue a `homestead halt` command from the Windows command prompt.

You can log onto the Homestead Virtual Machine, but on Windows we won't use the `homestead ssh` command, we'll use **PuTTY**.

Step 8 - Setting up PuTTY

Windows does not provide a SSH client so we need to download and install one. For this book we'll use **PuTTY** and set it up to log onto the Homestead VM.

Step 8.1 - Download and install PuTTY

Download putty-0.63-installer[16]. Run this file to install PuTTY. You can just use the default installation settings.

Step 8.2 - Convert the SSH Key

Next find PuTTYgen in the Windows Start Menu and run it. Select the **Conversions** menu and then **Import key**. Navigate to the `id_rsa` file created in Step 4.4. Then click the **[Save private key]** button. Yes, you want to save the key without a pass phrase, and save it to the same directory–in my case it's `C:\Users\Chuck\.ssh`–using the filename `id_rsa.ppk`.

Step 8.3 - Setup a Homestead PuTTY Session

Start up PuTTY and set the **Connection | SSH | Auth** private key to the `id_rsa.ppk` just created. Set the Session Hostname to `vagrant@127.0.0.1` and the port to `2222`.

Save the session as the name **homestead**.

The first time you run this session you'll have a confirmation box, but after that you'll log onto the Homestead Virtual Machine without having to type a password.

You may want to create a shortcut on your desktop. The item you want the shortcut to point to is: `"C:\Program Files (x86)\PuTTY\Putty.exe" -load homestead` and name the shortcut **homestead**.

Change PuTTY's Font

The default font PuTTY uses is *Courier New*, which to my eyes is ugly. You can go into **Window | Appearance** in the PuTTY configuration and change the font, size, colors, etc.

[16]http://the.earth.li/~sgtatham/putty/latest/x86/putty-0.63-installer.exe

Step 8.4 - Connecting to Homestead via PuTTY

Execute the **homestead** session you just created in PuTTY and you should receive a screen similar to the follows.

Homestead's first screen

```
Using username "vagrant".
Authenticating with public key "imported-openssh-key"
Welcome to Ubuntu 14.04.1 LTS (GNU/Linux 3.13.0-11-generic x86_64)

 * Documentation:  https://help.ubuntu.com/

  System information as of Fri Nov 28 04:24:01 UTC 2014

  System load:  0.0               Processes:           92
  Usage of /:   5.2% of 39.34GB   Users logged in:     0
  Memory usage: 33%               IP address for eth0: 10.0.2.15
  Swap usage:   0%                IP address for eth1: 192.168.10.10

  Graph this data and manage this system at:
    https://landscape.canonical.com/

  Get cloud support with Ubuntu Advantage Cloud Guest:
    http://www.ubuntu.com/business/services/cloud

Last login: Fri Nov 28 04:24:01 2014 from 10.0.2.2
vagrant@homestead:~$
```

Step 9 - Installing Laravel's Installer

For the last step we'll install the Laravel installer

Globally requiring Laravel Installer

```
C:\Users\Chuck> composer global require "laravel/installer=~1.1"
Changed current directory to C:\Users/Chuck/AppData/Roaming/Composer
./composer.json has been updated
Loading composer repositories with package information
Updating dependencies (including require-dev)
  - Installing guzzlehttp/streams (2.1.0)
    Downloading: 100%

  - Installing guzzlehttp/guzzle (4.2.3)
    Downloading: 100%

  - Installing laravel/installer (v1.1.3)
    Downloading: 100%

Writing lock file
Generating autoload files
```

Since your path was already updated in Step 6.2 to contain composer's bin directory, the `laravel` command should already be accessible from a DOS Prompt. Verify it by checking the version.

Checking the Laravel Version

```
C:\Users\Chuck>laravel --version
Laravel Installer version 1.1
```

Congratulations!

You now have a virtual Ubuntu 64-bit machine, ready for developing your Laravel 5.1 web applications.

Recap

This chapter was basically a laundry list of steps to follow in order to get Laravel Homestead up and running on your Windows machine. The good news is, these steps only have to be performed once.

Now, skip to the **Using Homestead** chapter for some information about Laravel Homestead.

Chapter 4 - Setting up an OS X or Linux Machine

This chapter goes through the steps required to set up and install the supporting software for Laravel Homestead on an OS X or Linux machine. It is assumed **VirtualBox** and **Vagrant** were already installed from the **Required Software and Components** chapter.

Chapter Contents

Slight Variations with Linux

There are slight variations between the different Linux distributions. In particular, the package manager. CentOS and Fedora use **yum** as the package manager, Ubuntu uses **apt**. There is no official "package manager" with OS X other than the App Store, but **homebrew** is the unofficial OS X package manager. Regardless of the differences, the essence is pretty much the same across all *nix systems, including OS X.

Step 1 - Installing PHP

Often PHP will be pre-installed on your system. You can check the version from a terminal window.

Checking the PHP version

```
~> php --version
PHP 5.5.9-1ubuntu4.5 (cli) (built: Oct 29 2014 11:59:10)
Copyright (c) 1997-2014 The PHP Group
Zend Engine v2.5.0, Copyright (c) 1998-2014 Zend Technologies
    with Zend OPcache v7.0.3, Copyright (c) 1999-2014, by Zend Technologies
```

Laravel 5.1 requires PHP version 5.5.9 or above. If you don't have PHP installed, or it's not at least version 5.5.9, then you'll need to use your package manager to install PHP.

OS X Yosemite

Yosemite (the version of OS X at the time of this writing) ships with PHP 5.5.14. So no worries there.

Example installing PHP in Ubuntu

```
~> sudo apt-get install php5
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following NEW packages will be installed:
  php5
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.

[snip]
```

Step 2 - Install Node.js

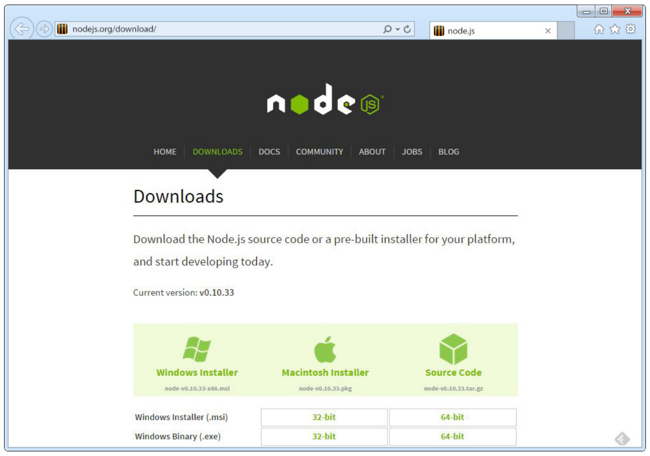
You'll need Node.js installed to later use Gulp.

Often, Node.js is already installed. You can check the version of **npm** to see if Node.js is installed on your system.

Checking the npm version

```
$> npm --version
1.5.0-alpha-4
```

If it's not installed, there are a couple options for installing it. You can use your package manager to install it. With OS X you can install it with Homebrew. Or you can just go to nodejs.org/download[17] and download the correct version for your operating system.



Downloads

Download the Node.js source code or a pre-built installer for your platform, and start developing today.

Current version: **v0.10.33**

Windows Installer	Macintosh Installer	Source Code
node-v0.10.33-x86.msi	node-v0.10.33.pkg	node-v0.10.33.tar.gz

Windows Installer (.msi)	32-bit	64-bit
Windows Binary (.exe)	32-bit	64-bit

Node.js Download Page

Once installed, be sure to check the version to make sure node and npm are available in your path.

Checking node and npm versions

```
~> node --version
v0.10.29

~> npm --version
1.5.0-alpha-4
```

Step 3 - Install Gulp

Gulp in an integral part of rapid Laravel development. Use the Node package manager (NPM) to install gulp globally.

Installing gulp globally

```
~> npm install -g gulp
/usr/local/bin/gulp -> /usr/local/lib/node_modules/gulp/bin/gulp.js
gulp@3.8.10 /usr/local/lib/node_modules/gulp
[snip]
```

[17] http://nodejs.org/download

Checking the gulp version

```
~> gulp --version
[10:13:44] CLI version 3.8.10
```

Optionally Install Bower

You can optionally install bower globally if you wish to run bower from your Linux (or OS X) console. Personally, I use bower both from my OS X console and within the Homestead Virtual Machine, whichever I'm currently in.

Use the Node package manager (NPM), install bower globally.

Installing bower globally

```
~> npm install -g bower
/usr/local/bin/bower -> /usr/local/lib/node_modules/bower/bin/bower
bower@1.3.12 /usr/local/lib/node_modules/bower
[snip]
```

Checking the bower version

```
~> bower --version
1.3.12
```

Remember this only installs the programs globally

If you use gulp (or bower) within a particular project you'll still need to install them locally within that project with a `npm install` (omitting the -g option). This will be covered later.

Step 4 - Install Composer

Composer is the package manager for PHP. It can easily be installed from a terminal window in *nix systems (including both OS X and Linux). An alternative method of installing Composer in OS X using Homebrew is presented at the bottom of this section.

Installing Composer

```
~> curl -sS https://getcomposer.org/installer | php
#!/usr/bin/env php
All settings correct for using Composer
Downloading...

Composer successfully installed to: /Users/chuck/composer.phar
Use it: php composer.phar
```

Once you have `composer.phar` downloaded, move it to the global path.

Moving composer.phar

```
~> sudo mv composer.phar /usr/local/bin/composer
```

And then check the version to make sure it's accessible.

Checking the Composer version

```
~> composer --version
Composer version 1.0-dev (b23a3cd36870ff0eefc161a4638d9fcf49d998ba)\
2014-11-21 17:59:11
```

Install using Homebrew

In OS X, if you are using Homebrew, you can install composer using the instructions below.

Alternative installation in OS X with Homebrew

```
~> brew update
~> brew tap homebrew/dupes
~> brew tap homebrew/php
~> brew install composer
```

Step 5 - Adding SSH Keys

If you haven't already added a SSH key for your machine, you'll need to do it.

Checking for SSH Keys

```
~> ls ~/.ssh
config id_rsa id_rsa.pub
```

If you don't see `id_rsa` and `id_rsa.pub` create them with the following command. (Press [Enter] all the way through to use the defaults and set up the SSH key with no pass phrase.)

Creating SSH Keys

```
~> ssh-keygen -t rsa -C "your@email.com"
Generating public/private rsa key pair.
Enter file in which to save the key (/Users/Chuck/.ssh/id_rsa):
Created directory '/Users/Chuck/.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
```

Step 6 - Adding the Homestead box

This step downloads the Laravel Homestead Vagrant box.

Adding the Homestead box in Linux

```
~> vagrant box add laravel/homestead
==> box: Loading metadata for box 'laravel/homestead'
    box: URL: https://vagrantcloud.com/laravel/homstead

[snip]
```

It can take a while to download on slow connections.

Step 7 - Installing Homestead

Now we'll use composer to install the `homestead` command. The homestead command line utility makes it easy to control the Homestead Virtual Machine.

Step 7.1 - Globally requiring Homestead

Globally requiring Homestead 2.0

```
~> composer global require "laravel/homestead=~2.0"
Changed current directory to /home/chuck/.composer
./composer.json has been updated
Loading composer repositories with package information
Updating dependencies (including require-dev)
  - Installing symfony/process (v2.5.7)
    Loading from cache

  - Installing symfony/console (v2.5.7)
    Loading from cache

  - Installing laravel/homestead (v2.0.7)
    Loading from cache

Writing lock file
Generating autoload files
```

Step 7.2 - Updating Path

Composer just installed Homestead into the `vendor` directory of your Composer installation. (For example `/home/chuck/.composer` in Linux or `/Users/Chuck/.composer` in OS X).

In order to access homestead from any command prompt, add this path to your path variable. This should be added to whatever the startup script is for your operating system. Common startup files are: `.bashrc`, `.bash_profile`, `.zshrc`, etc.

At the bottom of your startup script add the following line:

Updating path in the startup script

```
export PATH="~/.composer/vendor/bin:vendor/bin:$PATH"
```

Notice the extra 'vendor/bin' in the path?

We're adding this so any time you're within the base directory of a Laravel project you can easily access any vendor utilities provided in that project such as **phpunit**.

Step 7.3 - Verifying Homestead Installed

Close any existing terminal windows and open a new terminal window so the latest changes to the path will be in effect. Then check the version of homestead to verify it installed.

Checking the Homestead Version

```
~>homestead --version
Laravel Homestead version 2.0.7
```

Step 7.4 - Initialize Homestead

Once you've installed the homestead command and added the composer bin directory to your path, then you need to initialize Homestead.

Initializing Homestead

```
~> homestead init
Creating Homestead.yaml file...
Homestead.yaml file created at: /home/chuck/.homestead/Homestead.yaml
```

Remember

You only need to initialize Homestead once on your machine

Step 8 - Bring up the Homestead VM

To bring up Homestead for the first time we'll create a `Code` directory to store our projects and use the `homestead up` command.

Bringing up Homestead for the 1st time

```
~> mkdir Code
~> homestead up
Bringing machine 'default' up with 'virtualbox' provider...
==> default: Importing base box 'laravel/homestead'...
==> default: Matching MAC address for NAT networking...
==> default Checking if box 'laravel/homestead' is up to date...

[snip]
```

Now the Homestead VM is running. If you exit the terminal window, Homestead is still running. It'll remain active until you issue a `homestead halt` command from a terminal window.

Now you can log onto homestead with the `homestead ssh` command.

Shelling to homestead

```
~> homestead ssh
Welcome to Ubuntu 14.04.1 LTS (GNU/Linux 3.13.0-11-generic x86_64)

 * Documentation:  https://help.ubuntu.com/

  System information as of Fri Nov 28 04:24:01 UTC 2014

  System load:  0.0               Processes:           92
  Usage of /:   5.2% of 39.34GB   Users logged in:     0
  Memory usage: 33%               IP address for eth0: 10.0.2.15
  Swap usage:   0%                IP address for eth1: 192.168.10.10

  Graph this data and manage this system at:
    https://landscape.canonical.com/

  Get cloud support with Ubuntu Advantage Cloud Guest:
    http://www.ubuntu.com/business/services/cloud

Last login: Fri Nov 28 04:24:01 2014 from 10.0.2.2
vagrant@homestead:~$
```

Step 9 - Installing the Laravel Installer

For the last step we'll install the Laravel installer. Do the following from your console (not from within the Homestead Virtual Machine).

Globally requiring Laravel Installer

```
~> composer global require "laravel/installer=~1.1"
Changed current directory to /Users/chuck/.composer
./composer.json has been updated
Loading composer repositories with package information
Updating dependencies (including require-dev)
  - Installing guzzlehttp/streams (2.1.0)
    Downloading: 100%

  - Installing guzzlehttp/guzzle (4.2.3)
    Downloading: 100%

  - Installing laravel/installer (v1.1.3)
```

```
    Downloading: 100%

Writing lock file
Generating autoload files
```

Since your path was already updated in Step 7.2 to contain composer's bin directory, the `laravel` command should already be accessible from the Console window. Verify it by checking the version.

Checking the Laravel Version

```
~> laravel --version
Laravel Installer version 1.2.1
```

Congratulations!

You now have a virtual Ubuntu 64-bit machine, ready for developing your Laravel 5.1 web applications.

Recap

This chapter contained a series steps to follow in order to get Laravel Homestead up and running on your OS X or Linux machine. The good news is, these steps only have to be performed once.

The next chapter, **Using Homestead**, contains information about using Homestead.

Chapter 5 - Homestead and Laravel Installer

This chapter explores the two composer tools previously installed: **homestead** and **laravel**. A typical daily workflow is examined, as are the six steps to set up any new Laravel 5.1 project.

Chapter Contents

The Homestead Tool

Console Defined

Whenever you are prompted to do something from the console, context is important.

The **homestead console** means connecting to the Homestead VM via SSH. For Windows, this means using PuTTY *(explained in the chapter on setting up a Windows machine)*. With other operating systems you can execute the `homestead ssh` command from within the terminal. Whenever you see the `$` prompt in this book you are in the homestead console.

The **OS console** means either the Windows command prompt or the terminal application you use. (The `%` prompt in the book is used for your OS specific console.)

From the *console* of your host operating system, you can easily see what the valid homestead commands are by typing the `homestead` command without any arguments.

Homestead Commands

```
% homestead
Laravel Homestead version 2.0.9

Usage:
  [options] command [arguments]

Options:
  --help           -h Display this help message.
  --quiet          -q Do not output any message.
  --verbose        -v|vv|vvv Increase the verbosity of messages: 1 for normal \
output, 2 for more verbose output and 3 for debug.
  --version        -V Display this application version.
  --ansi              Force ANSI output.
  --no-ansi           Disable ANSI output.
  --no-interaction -n Do not ask any interactive question.

Available commands:
  destroy     Destroy the Homestead machine
  edit        Edit the Homestead.yaml file
  halt        Halt the Homestead machine
  help        Displays help for a command
  init        Create a stub Homestead.yaml file
  list        Lists commands
  provision   Re-provisions the Homestead machine
  resume      Resume the suspended Homestead machine
  run         Run commands through the Homestead machine via SSH
  ssh         Login to the Homestead machine via SSH
  status      Get the status of the Homestead machine
  suspend     Suspend the Homestead machine
  up          Start the Homestead machine
  update      Update the Homestead machine image
```

The main command you'll use each day is the `homestead up` command to start the Homestead Virtual Machine.

Overview of Common Homestead Commands

Here's a quick overview of commonly used Homestead commands.

`homestead up`
: Starts the Homestead Virtual Machine. It turns on the power to the VM. If you use the provision option (`homestead up --provision`) then any new sites you've added will be provisioned.

`homestead halt`
: Stops the Homestead Virtual Machine. In other words, powering off.

`homestead suspend`
: Suspends the Homestead Virtual Machine. It's like hibernate.

`homestead resume`
: Resumes the suspended Homestead Virtual Machine.

`homestead edit`
: Edit the Homestead.yaml file. This launches whatever editor is associated with YAML files on your operating system.

`homestead status`
: See the current status of the Homestead Virtual Machine.

Examining Homestead.yaml

The configuration settings for Laravel Homestead are contained in the `Homestead.yaml` file. This file is located in the `.homestead` directory of your Host OS's home directory.

If you view the contents of this file, you'll see what's below.

Contents of Homestead.yaml

```
---
ip: "192.168.10.10"
memory: 2048
cpus: 1

authorize: ~/.ssh/id_rsa.pub

keys:
    - ~/.ssh/id_rsa

folders:
    - map: ~/Code
      to: /home/vagrant/Code

sites:
    - map: homestead.app
      to: /home/vagrant/Code/Laravel/public

databases:
    - homestead

variables:
    - key: APP_ENV
      value: local
```

Here's a definition of each of the settings.

ip The internal IP used to access the machine.

memory
How much memory the VM will use.

cpus The number of CPUs the VM will use.

authorize
This should point to your public SSH key.

keys Your private SSH key.

folders
The shared folders. These are the directories in your Host Operating System and where they will appear within the VM. For Windows the ~/Code equates to something like `C:\Users\YOU\Code`. In OS X, this is `/Users/YOU/Code`. Under Linux it's usually something like `/home/YOU/Code`. Whenever you edit a file in this directory tree on your host machine, it's instantly available to the Homestead Virtual Machine.

sites A list of sites (paths each domain points to) that will be set up on the Homestead Virtual Machine each time you provision.

databases
A list of database Homestead should automatically create.

variables
Variables to make available to the homestead environment.

A configuration note

The only change I usually make to the configuration is to change the list of databases to have one database named `xhomestead` instead of `homestead`. This way if I forget create an app's database when creating a new Laravel application, an error occurs. *(Otherwise, since the default database for a new application is `homestead`, no error will occur and I'll be using the `homestead` db without realizing it.)*

For now, don't change any homestead configuration values except the **databases** setting (and then, only if you want to.)

The Homestead Virtual Machine Details

What	Value
Hostname	homestead
IP Address	192.168.10.10
Username	vagrant
SU Password	vagrant
Database Host	127.0.0.1
Database Port	33060
Database Username	homestead
Database Password	secret

Adding Software to the Homestead VM

When you need to install new software inside the Homestead Virtual Machine, use the Ubuntu utility `apt-get`.

It's an easy two step process.

1. Upgrade Ubuntu
2. Install with apt-get

For example, here's how to install **unzip**, a handy utility for dealing with zip archives.

First, Upgrade Ubuntu

Upgrading Latest Ubuntu Software

```
vagrant@homestead:~$ sudo apt-get update
vagrant@homestead:~$ sudo apt-get upgrade
```

You may have to choose "Y" to continue. If prompted during the installation to pick a configuration it's generally best to go with the existing or default.

After the Ubuntu OS within the Homestead VM is updated, install **unzip**.

Next, Install unzip with apt-get

Installing unzip in the Homestead VM

```
vagrant@homestead:~$ sudo apt-get install unzip
```

Daily Workflow

The daily workflow when working with homestead consists of three steps:

Step 1 - **homestead up** - Start the day by booting your Homestead Virtual Machine.

Step 2 - **homestead ssh** or **PuTTY** - SSH to the Homestead VM to access files directly and execute artisan commands.

Step 3 - **write beautiful code** - In your favorite code editor, on your host operating system, write code.

Optional 4th Step - **homestead halt** - When you are done for the day, you can optionally power off the Homestead Virtual Machine with the halt command.

Six Steps to Starting a New Laravel 5.1 Project

There are six simple steps to follow whenever starting a new Laravel 5.1 application.

Let's say we want to create a project called **test**.**app** and use **test** as the project folder.

Step 1 - Create the app skeleton

Using the *Laravel Installer* (the `laravel` command installed in a previous chapter) it's easy to create a new project skeleton.

Creating a new app skeleton

```
~/Code % laravel new test
Crafting application...
Generating optimized class loader
Compiling common classes
Application key [rzUhyDksVxzTXFjzFYiOWToqpunI2m6X] set successfully.
Application ready! Build something amazing.
```

Step 2 - Configure the web server

After there's an application skeleton in place you can set up the Nginx webserver within the homestead environment to serve pages from your app's public directory.

The homestead environment makes this easy with the `serve` command.

Setting up a new virtual host in Homestead

```
~/Code$ serve test.app ~/Code/test/public
dos2unix: converting file /vagrant/scripts/serve.sh to Unix format ...
 * Restarting nginx nginx                                          [ OK ]
php5-fpm stop/waiting
php5-fpm start/running, process 2169
```

The `serve` command sets up a new configuration file in `/etc/nginx/sites-available` for the domain we'll be using (**test.app**) and a symbolic link to this file within the `/etc/nginx/sites-enabled` directory.

Even when you reboot the machine, this configuration file will be there.

Why not edit Homestead.yaml

Yes. Another alternative is to set up the parameters for the **test.app** virtual host using the `homestead edit` command and adding a new entry to the *sites:* section. But this is easier, and there's no need to continuously re-provision the Homestead VM.

But, if you're setting up an app you always want configured, it's not a bad idea to edit Homestead.yaml and set up the configuration there.

Step 3 - Add the Host to Your Hosts File

Since **test.app** does not exist in any DNS, an entry must be added to the Host OS's hosts file. Edit `/etc/hosts` in Linux or OS X. In Windows the file is `C:\Windows\System32\drivers\etc\hosts`. In this hosts file point **test.app** to the IP specified in `Homestead.yaml`.

Add the following line to this file.

Host entry for test.app

```
192.168.10.10  test.app
```

Windows requires admin privileges to edit hosts

In Windows you must launch your editor (such as Notepad, Wordpad, or Sublime Text) as an administrator. In Linux or OS X you can use the `sudo` command.

Editing hosts with Linux or OS X

```
sudo nano /etc/hosts
// or
sudo vi /etc/hosts
```

Step 4 - NPM Local Installs

In order to later use **gulp** it's important to make sure all the required npm modules are locally installed.

You can skip this step if you know you will not use gulp.

Change to your project directory in your Host OS's console and execute the following.

NPM Local Installs

```
~% cd Code/test
~/Code/test% npm install
npm WARN package.json @ No repository field.

> v8flags@1.0.5 install /Users/chuck/Code/test/node_modules/gulp/\
node_modules/v8flags
> node fetch.js

flags for v8 3.14.5.9 cached.

[snip]
```

This will install everything required by gulp locally into the `node_modules` directory of your project.

Step 5 - Create the app's database

If your application requires a database, it's easy to create it within the Homestead VM using the **mysql** console.

Creating a Database in the Homestead VM

```
$ mysql --user=homestead --password=secret
mysql> create database test;
mysql> exit;
```

Once the database is created, edit the `.env` file in your project's root directory and change the `DB_NAME` appropriately.

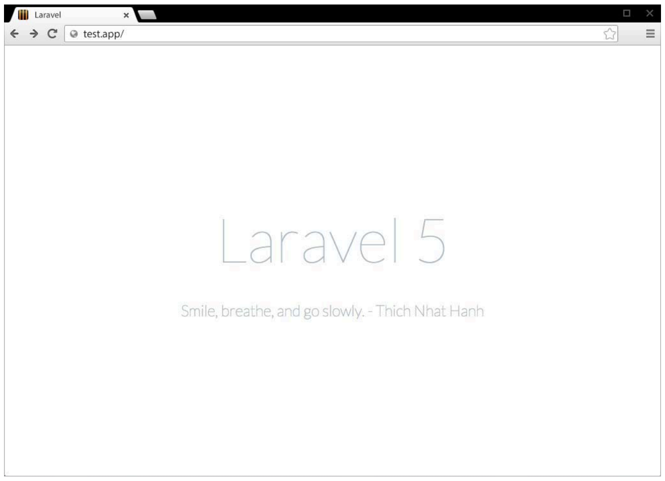
Change DB_NAME in .env

```
// Change the following line
DB_DATABASE=homestead

// To the correct value
DB_DATABASE=test
```

Easy. Now you'll be able to migrate and create tables. This is covered in a later chapter.

Step 6 - Testing in the Browser

Point your browser to `http://test.app` and you should see the page below.



Default Laravel Page

If you see anything else then something didn't work.

Other Homestead Tips

Edit Source Code in your Host Operating System

Although this has been mentioned in an earlier chapter, it bears repeating. Always edit your source code in your Host OS. Through the magic of shared folders, changes you make within the ~`/Code` directory are immediately seen within the Homestead Virtual Machine.

Use the .homestead/aliases file

Each time you re-provision Homestead with `homestead up --provision` or `homestead provision`, the `.homestead/aliases` file updates the aliases in the Homestead Virtual Machine.

This is a handy place to add aliases, or functions, or even other environment variables.

Keep the Homestead VM up-to-date

As mentioned earlier, two commands will keep the Ubuntu operating system within the Homestead Virtual Machine up to date.

Keeping Ubuntu Updated

```
$ sudo apt-get update
$ sudo apt-get upgrade
```

Recap

This chapter provided details on the `homestead` and `laravel` commands. And the *Six Steps to a New Laravel 5.1 Project* were outlined.

In the next chapter where we'll do a bit of testing.

Chapter 6 - Testing

In this chapter we'll create a project to use throughout the rest of the book and explore various options for testing. We'll create a class to convert Markdown formatted files to HTML. This class will be created using TDD principles.

Chapter Contents

Creating the l5beauty Project

Follow the **Six Steps to Starting a New Laravel 5.1 Project** below to create the *l5beauty* project.

First, from your Host OS, install the app skeleton.

Step 1 - Install the app skeleton

```
~/Code % laravel new l5beauty
Crafting application...
Generating optimized class loader
Compiling common classes
Application key [rzUhyDksVxzTXFjzFYiOWToqpunI2m6X] set successfully.
Application ready! Build something amazing.
```

Next, from within the Homestead VM, set up `l5beauty.app` as the virtual host.

Step 2 - Configure the web server

```
~/Code$ serve l5beauty.app ~/Code/l5beauty/public
dos2unix: converting file /vagrant/scripts/serve.sh to Unix format ...
 * Restarting nginx nginx                                             [ OK ]
php5-fpm stop/waiting
php5-fpm start/running, process 2169
```

Back in your Host OS, add the following line to your hosts file.

Step 3 - Add l5beauty.app to Your Hosts File

```
192.168.10.10  l5beauty.app
```

From your Host OS, do the step to install the NPM packages locally.

Step 4 - NPM Local Installs

```
~% cd Code/l5beauty
~/Code/l5beauty% npm install
|
> node-sass@2.0.1 install /Users/chuck/Code/l5beauty/node_modules/laravel-\
        elixir/node_modules/gulp-sass/node_modules/node-sass
> node scripts/install.js

> node-sass@2.0.1 postinstall /Users/chuck/Code/l5beauty/node_modules/\
        laravel-elixir/node_modules/gulp-sass/node_modules/node-sass
> node scripts/build.js

`darwin-x64-node-0.10` exists; testing
Binary is fine; exiting
```

```
gulp@3.8.11 node_modules/gulp
├── v8flags@2.0.2
├── pretty-hrtime@0.2.2

[snip]
```

Go back within the Homestead VM and create the database for this project.

Step 5 - Create the app's database

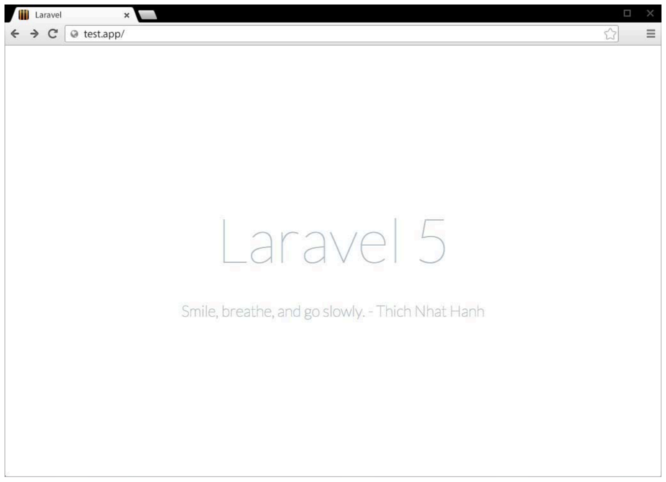
```
$ mysql --user=homestead --password=secret
mysql> create database l5beauty;
Query OK, 1 row affected (0.00 sec)

mysql> exit;
Bye
```

Then edit the `.env` file, changing the database to `l5beauty`.

Changing DB_NAME in configuration

```
// Change the following line
DB_DATABASE=homestead

// To the correct value
DB_DATABASE=l5beauty
```

Finally, bring up `http://l5beauty.app` in your browser to make sure everything is working correctly.



Default Laravel Page

Running PHPUnit

Laravel 5.1 comes out of the box ready for testing. There's even a very simple unit test supplied to make sure a web request to the application returns the expected 200 HTTP response.

To run PHPUnit, execute the `phpunit` command from the project's root directory.

Running PHPUnit

```
~% cd Code/l5beauty
~/Code/l5beauty% phpunit
PHPUnit 4.7.4 by Sebastian Bergmann and contributors.

.

Time: 544 ms, Memory: 10.25Mb

OK (1 test, 2 assertions)
```

Did you get an error?

If you receive a **command not found** or a **permissions denied** error when attempting to run the `phpunit` command it could be because of an installation bug. The `phpunit` command should be found in the `vendor/bin` directory–and this directory was added to the path in your Host OS back in Chapter 3 or 4. The problem is that the Laravel Installer has a bug that doesn't necessarily set the permissions correctly on phpunit and several other utilities.

To fix this bug, follow the two steps below.

Step 1 - Delete the `vendor` directory. Just wipe it out using whatever command is appropriate for your Host OS.

Step 2 - Recreate the `vendor` directory using the `composer update` command from your project's root directory. Do this from your Host Operating System.

That's it. Then try executing the `phpunit` command again.

Laravel 5.1's PHPUnit Configuration

In the root of each Laravel 5.1 project is the file `phpunit.xml`. This contains the configuration PHPUnit uses when `phpunit` is executed from the project's root directory.

Examination of the `phpunit.xml` will show the tests reside within the `tests` directory. There are two files located there.

1. `ExampleTest.php` - Contains one test `testBasicExample()`. The `ExampleTest` class is derived from the `TestCase` parent provided in the other file.
2. `TestCase.php` - The base class from which to derive Laravel tests.

Take a look at the `testBasicExample()` method in `ExampleTest.php`.

The testBasicExample() method

```
public function testBasicExample()
{
  $this->visit('/')
       ->see('Laravel 5');
}
```

This test says "Visit the home page and we should see the words 'Laravel 5'." Can tests get any simpler than this?

The `TestCase` class provides additional Laravel 5.1 specific application methods and properties to your unit tests. `TestCase` also provides a long list of additional assertion methods and *crawler* type tests.

Laravel 5.1 Crawler Methods and Properties

The *Crawler* tests allow you to test pages in your web application. The nice thing is that many of these tests are fluent and return `$this`, allowing you to build the `->visit()->see()` type test in the above example.

Here are some of the available properties and methods.

`$response`
The last response returned by the web application.

`$currentUri`
The current URL being viewed.

`visit($uri)`
(Fluent) Visit the given URI with a GET request.

`get($uri, array $headers = [])`
(Fluent) Fetch the given URI with a GET request, optionally passing headers.

`post($uri, array $data = [], array $headers = [])`
(Fluent) Make a POST request to the specified URI.

`put($uri, array $data = [], array $headers = [])`
: (Fluent) Make a PUT request to the specified URI.

`patch($uri, array $data = [], array $headers = [])`
: (Fluent) Make a PATCH request to the specified URI.

`delete($uri, array $data = [], array $headers = [])`
: (Fluent) Make a DELETE request to the specified URI.

`followRedirects()`
: (Fluent) Follow any redirects from latest response.

`see($text, $negate = false)`
: (Fluent) Assert the given text appears (or doesn't appear) on the page.

`seeJson(array $data = null)`
: (Fluent) Assert the response contains JSON. If `$data` passed, also asserts the JSON value exactly matches.

`seeStatusCode($status)`
: (Fluent) Assert the response has the expected status code.

`seePageIs($uri)`
: (Fluent) Assert current page matches given URI.

`seeOnPage($uri)` and `landOn($uri)`
: (Fluent) Aliases to `seePageIs()`

`click($name)`
: (Fluent) Click on a link with the given body, name or id.

`type($text, $element)`
: (Fluent) Fill an input field with the given text.

`check($element)`
: (Fluent) Check a checkbox on the page.

`select($option, $element)`
: (Fluent) Select an option from a dropdown.

`attach($absolutePath, $element)`
: (Fluent) Attach a file to a form field.

`press($buttonText)`
: (Fluent) Submit a form using the button with the given text.

`withoutMiddleware()`
: (Fluent) Disable middleware for the test.

`dump()`
: Dump the content of the latest response.

Laravel 5.1 PHPUnit Application methods and properties

Here's a brief rundown of some of the additional application methods and properties Laravel 5.1 provides to PHPUnit.

`$app` The instance of the Laravel 5.1 application.

`$code`
: The latest code returned by artisan

`refreshApplication()`
: Refreshes the application. Automatically called by the TestCase's `setup()` method.

`call($method, $uri, $parameters = [], $cookies = [], $files = [], $server = [], $content = null)`
: Calls the given URI and returns the response.

`callSecure($method, $uri, $parameters = [], $cookies = [], $files = [], $server = [], $content = null)`
: Calls the given HTTPS URI and returns the response.

`action($method, $action, $wildcards = [], $parameters = [], $cookies = [], $files = [], $server = [], $content = null)`
: Calls a controller action and returns the response.

`route($method, $name, $routeParameters = [], $parameters = [], $cookies = [], $files = [], $server = [], $content = null)`
: Calls a named route and returns the response.

`instance($abstract, $object)`
: Register an instance of an object in the container.

`expectsEvents($events)`
: Specify a list of events that should be fired for the given operation.

`withoutEvents()`
: Mock the event dispatcher so all events are silenced.

`expectsJobs($jobs)`
: Specify a list of jobs that should be dispatched for the given operation.

`withSession(array $data)`
: Set the session to the given array.

`session(array $data)`
: Starts session and sets the session values from the array.

`flushSession()`
: Flushes the contents of the current session.

`startSession()`
: Starts the application's session.

`actingAs($user)`
: (Fluent) Sets the currently logged in user for the application.

`be($user)`
: Sets the currently logged in user for the application.

`seeInDatabase($table, array $data, $connection = null)`
: (Fluent) Asserts a given where condition exists in the database.

`notSeeInDatabase($table, $array $data, $connection = null)`
: (Fluent) Asserts a given where condition does not exist in the database.

`missingFromDatabase($table, array $data, $connection = null)`
: (Fluent) Alias to `notSeeInDatabase()`.

`seed()`
: Seeds the database.

`artisan($command, $parameters = [])`
: Executes the artisan command and returns the code.

Any of these methods or properties can be accessed within your test classes. The provided `ExampleTest.php` file contains a line using `$this->call(...)` inside the `testBasicExample()` method.

Laravel 5.1 PHPUnit Assertions

In addition to the standard PHPUnit assertions (such as `assertEquals()`, `assertContains()`, `assertInstanceOf()`, ...), Laravel 5.1 provides many additional assertions to help write tests dealing with the web application.

`assertPageLoaded($uri, $message = null)`
: Assert the latest page loaded; throw exception with $uri/$message if not.

`assertResponseOk()`
: Assert that the client response has an OK status code.

`assertReponseStatus($code)`
Assert that the client response has a given code.

`assertViewHas($key, $value = null)`
Assert that the response view has a given piece of bound data.

`assertViewHasAll($bindings)`
Assert that the view has a given list of bound data.

`assertViewMissing($key)`
Assert that the response view is missing a piece of bound data.

`assertRedirectedTo($uri, $with = [])`
Assert whether the client was redirected to a given URI.

`assertRedirectedToRoute($name, $parameters = [], $with = [])`
Assert whether the client was redirected to a given route.

`assertRedirectedToAction($name, $parameters = [], $with = [])`
Assert whether the client was redirected to a given action.

`assertSessionHas($key, $value = null)`
Assert that the session has given key(s)/value(s).

`assertSessionHasAll($bindings)`
Assert that the session has a given list of values.

`assertSessionHasErrors($bindings = [])`
Assert that the session has errors bound.

`assertHasOldInput()`
Assert that the session has old input.

Using Gulp for TDD

Gulp[18] is a build and automation system written in JavaScript. It allows common tasks such as minification of source files to be automated. Gulp can even watch your source code for changes and automatically run tasks when this occurs.

Laravel 5.1 includes Laravel Elixir[19] which allows Gulp tasks to be built in easy ways. Elixir adds an elegant syntax to gulp. Think of it this way … what Laravel is to PHP, Elixir is to Gulp.

One of the most common uses of Gulp is to automate unit tests. We'll follow the TDD (Test Driven Development) process here and let Gulp automatically run our tests.

First, edit the `gulpfile.js` file in the `l5beauty` project's root directory to match what's below.

[18] http://gulpjs.com/
[19] http://laravel.com/docs/5.1/elixir

Configuring Gulp to run PHPUnit Tests

```
var elixir = require('laravel-elixir');

elixir(function(mix) {
    mix.phpUnit();
});
```

Here we call the `elixir()` function, passing a function. The `mix` object this function receives is a stream on which multiple things can occur. You might want to build LESS files into CSS files here, then concatenate those CSS files together, and then provide versioning on the resulting concatenated files. All of those things can be specified by using a fluent interface on the `mix` object.

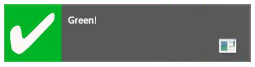
But for now, we're only running PHPUnit tests.

Next, from the project root on your Host OS, run gulp to see what happens.

Running Gulp

```
~% cd Code/l5beauty
~/Code/l5beauty% gulp
[15:26:23] Using gulpfile ~/Code/l5beauty/gulpfile.js
[15:26:23] Starting 'default'...
[15:26:23] Starting 'phpunit'...
[15:26:25] Finished 'default' after 2.15 s
[15:26:25]

       *** Debug Cmd: ./vendor/bin/phpunit --colors --debug ***

[15:26:28] PHPUnit 4.7.4 by Sebastian Bergmann and contributors.

Configuration read from /Users/chuck/Code/l5beauty/phpunit.xml

Starting test 'ExampleTest::testBasicExample'.
.

Time: 2.07 seconds, Memory: 10.25Mb

OK (1 test, 2 assertions)
[15:26:28] gulp-notify: [Green!]
[15:26:28] Finished 'phpunit' after 4.96 s
```

You should have received a notification, a popup alert of some sort, on your Host OS. The notification should be green which indicates everything tested successfully.


Green!

PHPUnit Success

To have gulp go into automatic mode for unit tests, use the `gulp tdd` command in your Host OS.

Running Gulp

```
~% cd Code/l5beauty
~/Code/l5beauty% gulp tdd
[15:29:49] Using gulpfile ~/Code/l5beauty/gulpfile.js
[15:29:49] Starting 'tdd'...
[15:29:49] Finished 'tdd' after 21 ms
```

The command will just *hang* there, watching for source file changes and running unit tests when needed.

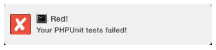
To see how this works, let's break the existing unit test.

Change the `see()` line in `tests/ExampleTest.php` to what's below.

Breaking ExampleTest.php

```
  ->see('Laravel 5x');
```

When you save this file, gulp will notice and run PHPUnit again. The will fail and you will see a notice on your computer similar to the one below.


Red!
Your PHPUnit tests failed!

PHPUnit Failure

Change the line back to what it was before, save it, and again gulp will run PHPUnit. This time you should receive a notice indicating you are *"back to green"*.

To exit Gulp's *tdd* mode

Press `Ctrl+C`

Creating a Markdown Service

The blogging application we'll be building will allow editing posts in Markdown format. Markdown is an easy-to-read *and* easy-to-write format that transforms easily to HTML.

To illustrate testing, we'll build a service to convert markdown text to HTML text using TDD.

Pulling in Markdown Packages

There are many PHP packages out there for converting Markdown to HTML. If you go to `http://packagist.org` and search for *markdown*, there are twenty pages of packages.

We'll use the package created by Michel Fortin because there's another package called `SmartyPants` by the same author that converts quotation marks to the nice looking curly quotes.

From your Host OS's console do the following to pull in the packages.

Adding Markdown and SmartyPants

```
~/Code/l5beauty% composer require michelf/php-markdown
Using version ^1.5 for michelf/php-markdown
./composer.json has been updated
Loading composer repositories with package information
Updating dependencies (including require-dev)
  - Installing michelf/php-markdown (1.5.0)
    Downloading: 100%

Writing lock file
Generating autoload files
Generating optimized class loader

~/Code/l5beauty% composer require "michelf/php-smartypants=1.6.0-beta1"
./composer.json has been updated
Loading composer repositories with package information
Updating dependencies (including require-dev)
  - Installing michelf/php-smartypants (1.6.0-beta1)
    Loading from cache

Writing lock file
Generating autoload files
Generating optimized class loader
```

Did you notice that the specific version of the package was specified when requiring SmartyPants? This is because at the time of this writing there isn't a stable package that can be pulled in automatically.

Creating the Markdown Test Class

The first thing to do when starting a TDD session is to fire up Gulp in TDD mode.

Starting Gulp in TDD mode

```
~/Code/l5beauty% gulp tdd
[19:41:38] Using gulpfile ~/Code/l5beauty/gulpfile.js
[19:41:38] Starting 'tdd'...
[19:41:38] Finished 'tdd' after 23 ms
```

Now that Gulp is watching for changes and ready to run PHPUnit as soon as it detects any, let's create the test class.

In the `tests` directory, create a new folder named `Services` and a file called `MarkdownerTest.php`.

Initial tests/Services/MarkdownerTest.php

```
 1  <?php
 2
 3  class MarkdownerTest extends TestCase
 4  {
 5
 6    protected $markdown;
 7
 8    public function setup()
 9    {
10      $this->markdown = new \App\Services\Markdowner();
11    }
12
13    public function testSimpleParagraph()
14    {
15      $this->assertEquals(
16        "<p>test</p>\n",
17        $this->markdown->toHTML('test')
18      );
19    }
20  }
```

Line 6
Store an instance of the markdown object

Line 8
Have the `setup()` method create a new instance of the `Markdowner` class. (Yes, this doesn't exist yet.)

Line 13
A simple test we know should work.

You should have received a failure notice. *(If you didn't Ctrl+C out of Gulp and restart it.)*

Even though a notice appeared saying the test failed, sometimes it's useful to look at the console to determine what the failure was. In this case, it's pretty obvious. The `App\Services\Markdowner` class doesn't exist.

Creating the Markdowner Service

What we'll do here is create a simple service that wraps the php-markdown and php-smartypants packages we imported earlier.

In the `app\Services` directory create a `Markdowner.php` file with the following contents.

Contents of app/Services/Markdowner.

```php
<?php

namespace App\Services;

use Michelf\MarkdownExtra;
use Michelf\SmartyPants;

class Markdowner
{

  public function toHTML($text)
  {
    $text = $this->preTransformText($text);
    $text = MarkdownExtra::defaultTransform($text);
    $text = SmartyPants::defaultTransform($text);
    $text = $this->postTransformText($text);
    return $text;
  }

  protected function preTransformText($text)
  {
    return $text;
  }

  protected function postTransformText($text)
  {
    return $text;
  }
}
```

Line 3
: Don't forget the namespace.

Lines 5 and 6
: The classes we'll be using.

Line 11
: The toHTML() method which runs the text through the transformations.

Line 14
: Notice we're using the Markdown Extra version of the library.

Line 20
: In case we want to later do our own transformations before anything else.

Line 25
: Like `preTransformText()`, but this time if we later want to add our own final transformations.

When you save this file, Gulp should notice and you will receive a "GREEN" alert telling you everything worked as expected.

If you don't receive the green alert, go back and check for typos in both the `App\Services\Markdowner` and `MarkdownerTest` classes.

A Few More Tests

Admittedly, this isn't a great example of TDD because it's simple a test and a complete class created to fix the test. In actual practice TDD would have many more iterations, resulting in a flow like the one below:

- Create MarkdownerTest w/ testSimpleParagraph()
- Tests Fail
- Create Markdowner class, hard-coding toHTML() to pass the test
- Tests Succeed
- Update Markdowner class to use MarkdownExtra
- Tests Succeed
- Add a testQuotes() to MarkdownerTest class
- Tests Fail
- Update Markdowner class to use SmartyPants
- Tests Succeed

And so forth. Even the structure of our `Markdowner` class is flawed when it comes to testing. To do *pure* unit testing on this class it should be structured such that instances of both the `MarkdownExtra` and `SmartyPants` classes are injected into the constructor. This way our unit test could inject mock objects and only verify the behavior of `MarkdownExtra` and not the subordinate classes it calls.

But this isn't a book on testing. In fact, this is the only chapter where testing occurs.

For now, we'll leave the structure as is but add a few more tests.

Update `MarkdownerTest` to match what's below.

Final Contents of app/Services/Markdowner.

```php
<?php

class MarkdownerTest extends TestCase
{

  protected $markdown;

  public function setup()
  {
    $this->markdown = new \App\Services\Markdowner();
  }

  /**
   * @dataProvider conversionsProvider
   */
  public function testConversions($value, $expected)
  {
    $this->assertEquals($expected, $this->markdown->toHTML($value));
  }

  public function conversionsProvider()
  {
    return [
      ["test", "<p>test</p>\n"],
      ["# title", "<h1>title</h1>\n"],
      ["Here's Johnny!", "<p>Here&#8217;s Johnny!</p>\n"],
    ];
  }
}
```

Here we changed the test class to test multiple conversions at once and added three tests in `conversionsProvider()`. Your tests should be green before moving forward.

Once the tests are green hit `Ctrl+C` in your Host OS console to stop Gulp.

Other Ways to Test

It's not the intent here to provide a definitive list of all the ways to test with Laravel 5.1 because there's really no single way to do testing in PHP. Therefore, there's no single way to test in Laravel 5.

But, we'll explore some alternatives.

phpspec

Besides PHPUnit, Laravel 5.1 also provides phpspec[20] out of the box. This is another popular PHP test suit with more of a focus on Behavior Driven Development.

Here's a few notes on phpspec.

- The binary is in `vendor/bin`, thus you can call `phpspec` from your project's root directory.
- The configuration file is in the project root. It's named `phpspec.yml`.
- To run phpspec from Gulp, Laravel Elixir provides the `phpSpec()` function you can call on the `mix` object.
- If you change your application's namespace from `App` to something else, be sure to update `phpspec.yml` accordingly.

Unit Testing

Although PHPUnit is the standard when it comes to PHP unit testing, there are other packages you can use.

- Enhance PHP[21] - A unit testing framework with support for mocks and stubs.
- SimpleTest[22] - Another unit testing framework with mock objects.

Integration and Acceptance Testing

These tests actually use your application instead of just verifying that units of code within your application work as expected. When using the fluent test methods Laravel 5.1 provides you can do some integration tests using PHPUnit. `ExampleTest.php` shows a simple example. But there are other testing frameworks that focus on integration and acceptance testing.

[20]http://phpspec.net
[21]https://github.com/Enhance-PHP/Enhance-PHP
[22]http://simpletest.org

- Codeception[23] - Problem the most popular framework for acceptance testing.
- Selenium[24] - Browser automation.
- Mink[25] - Brower automation.

Behavior Driven Development

BDD comes in two flavors: SpecBDD and StoryBDD.

SpecDD focuses on the technical aspects of your code. Laravel 5.1 includes *phpspec* which is the standard for SpecDD.

StoryBDD emphasizes business or feature testing. Behat is the most popular StoryBDD framework. Although, Codeception can also be used for StoryBDD.

Recap

The first thing we did in this chapter was creating a project named **l5beauty**. Then we explored unit testing using PHPUnit within this project. Finally, we created a `Markdowner` service class for the dual purposes of having something to test and to use later to convert markdown text to HTML.

This was a pretty long chapter because testing is a large topic and a single chapter cannot give it justice. But, as I've mentioned, testing is not the focus of this book. There will be no more testing in subsequent chapters.

How about something quicker? In the next chapter we'll create a blog in 10 minutes.

[23]http://codeception.com
[24]http://seleniumhq.org
[25]http://mink.behat.org

End of Preview

Although this was a very large sample, there's so much more to this book.

Chapter 7 - The 10 Minute Blog

In this chapter we'll turn the l5beauty project into a blog, complete with test data. Harnessing the power of Laravel 5 a blog can be created in less than 10 minutes. This time is from start to finish, without spending time reviewing the detailed discussions below. There's not many bells or whistles, and no administration of the blog, but what do you expect for less than 10 minutes of development time.

Chapter 8 - Starting the Admin Area

In this chapter we'll continue building on the l5beauty project and start developing the administration area. Laravel 5 provides some basic boilerplate for user authentication and registration. We'll use this to create the skeleton of our administration area.

Chapter 9 - Using Bower

In this chapter we'll work on some of the supporting software the administration area will be built on. Namely, how the assets are pulled in and which assets are used. The build system will use bower and gulp to automatically download and combine jQuery, Bootstrap, Font Awesome, and DataTables from the Internet.

Chapter 10 - Blog Tags

The basic blog built in the 10 Minute Blog chapter wasn't very fancy. Most blogging platforms allow blog posts to be categorized or "tagged" in different ways. In this chapter we'll develop a tagging system for the l5beauty project.

Chapter 11 - Upload Manager

In this chapter we'll create an Upload Manager for the blog administration. First, the local file system will be used to store any uploaded files. Then, we'll change the configuration to allow files to be stored on Amazon's S3 cloud storage.

Chapter 12 - Posts Administration

In this chapter we'll finish the post functionality in the blog's administration area. This includes modifying the structure of the `posts` table with a new migration, pulling in some additional assets, and adding the basic Create, Update, and Delete methods.

Chapter 13 - Cleaning Up the Blog

In this chapter we'll get the front end of our blog cleaned up. This includes both the index page showing the list of posts and the pages showing individual posts.

Chapter 14 - Sending Mail and Using Queues

In this chapter we'll add a *Contact Us* form to the blog. To do this we'll explore Laravel's mailing functions and set up a queue for asynchronous processing.

Chapter 15 - Adding Comments, RSS, and a Site Map

In this chapter we'll add comments and social links to the blog. Then we'll create a RSS feed for the Laravel 5.1 Beauty blog. Finally, we'll add a Site Map which finishes the project.

Chapter 16 - General Recap and Looking Forward

The **L5Beauty** project is complete, but there's an additional chapter exploring various features of Laravel 5.1.