2015

# Laravel and Angular

**Learn how to build apps with AngularJS in the client and Laravel on server**

+ MySql
+ RestFull
+ Composer
+ Bower
+ Bootstrap

*Laravel 5.1*
*Angular 1.4*
*Bootstrap 3.3*

**Daniel Schmitz**

# Laravel and AngularJS

## Learn how to build apps with AngularJS in the client and Laravel on server

Daniel Schmitz and Daniel Pedrinha Georgii

This book is for sale at http://leanpub.com/laravel-and-angularjs

This version was published on 2015-10-22

# Contents

If you find a mistake, you want to request an additional content, you missed something in the book or simply have any questions, feel free to contact us through our email danieljfa@gmail.com and speak directly with the author.

# Part 1- Introduction and installation

# Chapter 1 - Introduction

The main objective of this book is to address the best web development technologies on the market today. On the web, we are always splitting the systems development into two parts: server and client.

On the server, we will cover the programming language PHP 5.4, and the framework *Laravel*, in addition to the MySql database. We chose *Laravel* because it is a simple and powerful framework, with a growing acceptance in the market.

On the client, we have the Javascript language, which has consolidated its position as the best programming language for browsers. As a framework, we chose the AngularJS, which makes all the manipulation of data in forms and tables much easier. We also have the CSS, in which we use the *Bootstrap* framework to facilitate the development of web applications interface.

Even with two different technologies, their integration is entirely possible and this will be the main theme discussed throughout the chapters. Note that we will not introduce the two technologies in a separate way, we will be addressing how the technologies interact. The communication between them is RESTful, and we will be using it extensively for the development of our final application.

After addressing the main concepts of both technologies, we will create a small blog that will illustrate everything we learned.

## Windows, Mac or Linux?

Use the operating system that is best for you. In this work we will learn how to install the necessary software for both Windows and Linux. After the installation, the operating system will not influence the development.

## Source Code

The source code of this work is available on GitHub, at the following address:

https://github.com/danielschmitz/laravel_and_angular_codes

# Chapter 2 - Preparing the environment in Windows

In this chapter, we will be installing all necessary software to develop in Laravel. The list below contains all the software that we will install:

**Apache**
: The web server that will host everything on the server. Perhaps you know Apache or at least have a certain knowledge of how it works. In this work we will also learn how to create a virtual domain and perform more complex setups.

**MySql**
: Will be our default database, for all our examples.

**Composer**
: How to install the frameworks on the server is changing radically. Before, we needed to download a zip file and unzip it on the server. With the rapid evolution of PHP in recent years, appeared the package managers and among them we have the Composer, which allow us to place several frameworks in PHP through the command line (*shell*). Very similar to `apt-get` from Linux/Debian and its derivatives. The Composer works a little different from the other package managers because it is not installed globally in the operating system, but rather locally in your PHP project. In this way, the Composer is a dependency Manager of your project, not a project manager as we know.

**Bower**
: The Bower is also a package manager, except for the javascript libraries that we will use. Combining the Bower and the Composer, we can install any library for both the server and the client without the need to perform any type of external download. We also have the advantage of being able to update the libraries instantly.

**Laravel**
: We will install Laravel via the Composer.

**AngularJS**
: AngularJS will be installed via the Bower.

**Bootstrap**
: The Bootstrap is a Javascript/CSS library that will provide a significant improvement on the visual layer of the application. It will also be installed by Bower.

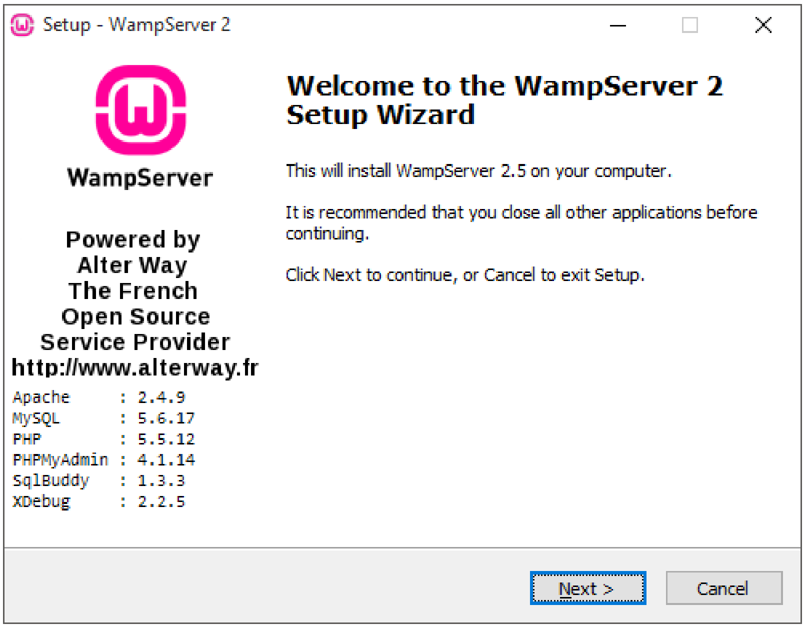
**Sublime Text**
: The Sublime Text is a versatile and powerful text editor. You can use it in all the processes of web development of this work. In fact, this book was written using the Sublime. To install the Sublime Text, go to http://www.sublimetext.com/ and do the installation according to your operating system.

## Apache

Initially we will install Apache + PHP + MySql, and this can be done very easily with the *Wamp Server*. This package will install the Apache web server, PHP and MySql as well.

Go to http://www.wampserver.com/en/[1] and click `Download`. Download the program according to your operating system, 32 or 64-bits. After selecting this option, click the download link. After download, run the installer to get a screen similar to the following screen:

[1] http://www.wampserver.com/en/



Setup - WampServer 2

WampServer

Powered by
Alter Way
The French
Open Source
Service Provider
http://www.alterway.fr

```
Apache     : 2.4.9
MySQL      : 5.6.17
PHP        : 5.5.12
PHPMyAdmin : 4.1.14
SqlBuddy   : 1.3.3
XDebug     : 2.2.5
```

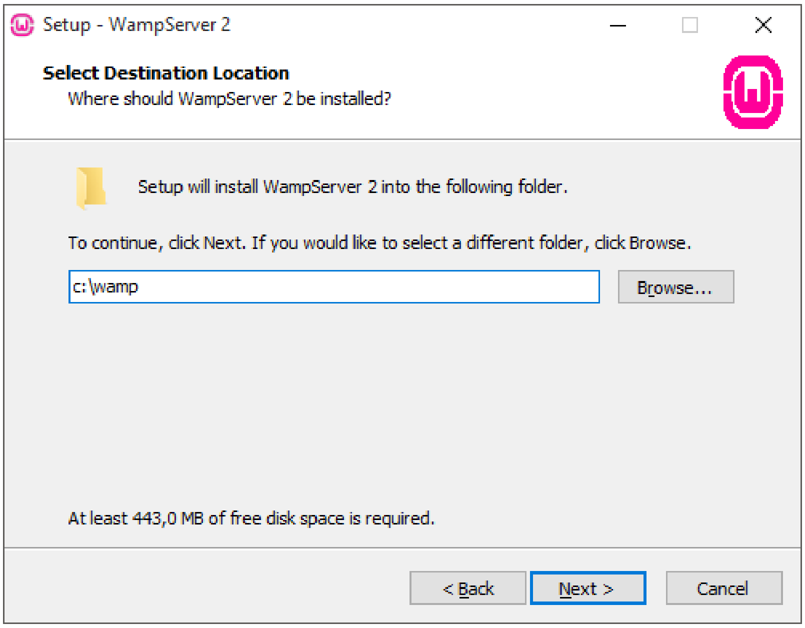
**Welcome to the WampServer 2 Setup Wizard**

This will install WampServer 2.5 on your computer.

It is recommended that you close all other applications before continuing.

Click Next to continue, or Cancel to exit Setup.

In this first window are displayed all the programs to be installed. Click the `Next` button to accept the license agreement and, after clicking `Next` again, comes up the window to set the path where the WampServer is installed. We will leave the default, which is `c:\wamp`, as the following image:



Select Destination Location
Where should WampServer 2 be installed?

Setup will install WampServer 2 into the following folder.

To continue, click Next. If you would like to select a different folder, click Browse.

c:\wamp

At least 443,0 MB of free disk space is required.

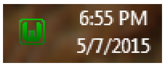
Click again on the `Next` button and select the option to `Create a Desktop icon`. This is necessary so that we can start WampServer if it is inactive. After this window, click on the `Install` to start the installation. The files will be copied and, eventually, it will be necessary to inform the browser that you want to use. In this case, we will choose the default system browser, and for this it is necessary to find the file `explorer.exe`, in which the WampServer Installer automatically opens.

**MSVCR100.dll error**

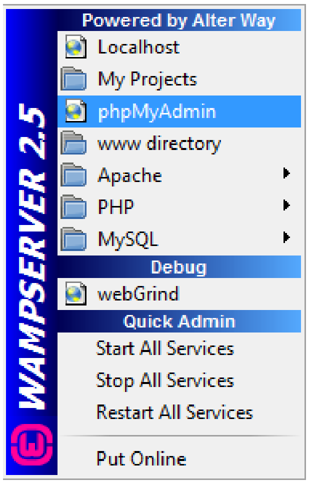
If you find an error message saying that the dll MSVCR100.dll is missing, click this link[2] to install the Microsoft Visual C++ Redistributable Package, and then reinstall the Wamp Server.

Click `Next` and finish the installation. Let selected the option to start the WampServer and check if there's a Windows tray icon as shown in the following image.

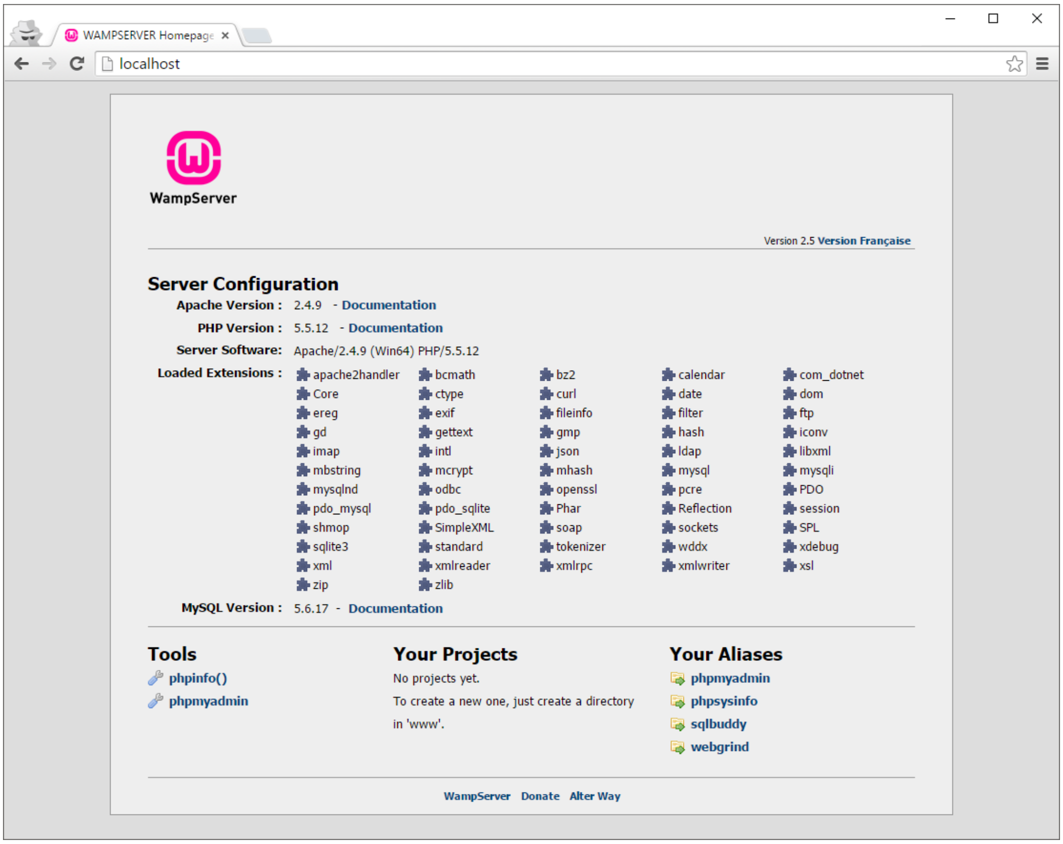
[2]http://www.microsoft.com/en-us/download/details.aspx?id=30679



Click with the left mouse button on this icon to access the WampServers options menu, similar to the following figure.



Open your browser and go to the following address: http://localhost. The default page of the WampServer shows up, as in the following figure.



Version 2.5 Version Française

**Server Configuration**

Apache Version : 2.4.9 - Documentation
PHP Version : 5.5.12 - Documentation
Server Software: Apache/2.4.9 (Win64) PHP/5.5.12
Loaded Extensions :

| | | | | |
|---|---|---|---|---|
| apache2handler | bcmath | bz2 | calendar | com_dotnet |
| Core | ctype | curl | date | dom |
| ereg | exif | fileinfo | filter | ftp |
| gd | gettext | gmp | hash | iconv |
| imap | intl | json | ldap | libxml |
| mbstring | mcrypt | mhash | mysql | mysqli |
| mysqlnd | odbc | openssl | pcre | PDO |
| pdo_mysql | pdo_sqlite | Phar | Reflection | session |
| shmop | SimpleXML | soap | sockets | SPL |
| sqlite3 | standard | tokenizer | wddx | xdebug |
| xml | xmlreader | xmlrpc | xmlwriter | xsl |
| zip | zlib | | | |

MySQL Version : 5.6.17 - Documentation

**Tools**
phpinfo()
phpmyadmin

**Your Projects**
No projects yet.
To create a new one, just create a directory in 'www'.

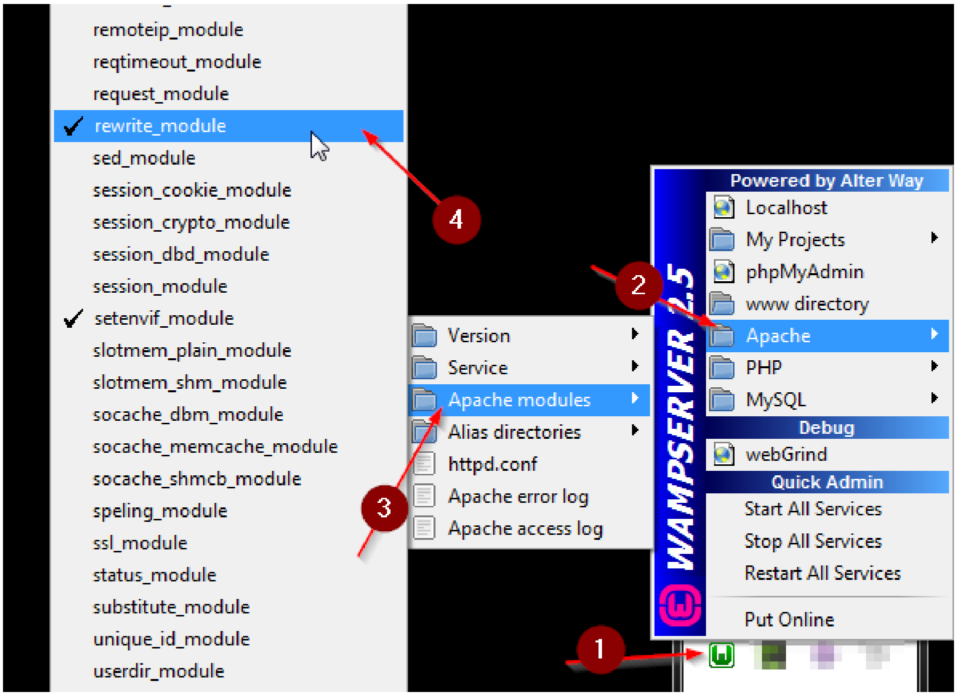
**Your Aliases**
phpmyadmin
phpsysinfo
sqlbuddy
webgrind

WampServer Donate Alter Way

If you see the WampServer page, the Apache/php/mysql are properly installed. If the page did not show up, check if the WampServer is properly started. To do this, in the Windows tray, locate the WampServer icon and make sure that it is in color *green*.

This page is located at `c:\wamp\www\index.php`, since `c:\wamp\www` is the *webroot* setup. We will see more details about these settings from Apache in the next chapter. What we need to know right now is that whenever we typed http://localhost, Apache points to the address `c:\wamp\www`.

You must also enable an Apache module called `mod_rewrite`. Click the Wamp icon and go to `Apache` >> `Apache Modules` >> `rewrite_module`. Leave this option checked, as shown in the following figure.



## Creating the virtual domain (virtual host)

It is very helpful to create a virtual domain for each system that we develop. With a virtual domain we can easily “simulate” a web address in our own computer, without the need to setup external servers. As an example, we will setup the domain

Initially, create a folder named `mysite` in the `c:\wamp\www` folder, and add file called `index.html`, with the following content:

**c:\wamp\www\mysite\index.html**

```
<!DOCTYPE html>
<html>
    <head>
        <meta charset="UTF-8">
        <title>MySite</title>
    </head>

    <body>
        This is my site !
    </body>
</html>
```

Now we must set up the `httpd.conf` file of Apache. This file is located at:

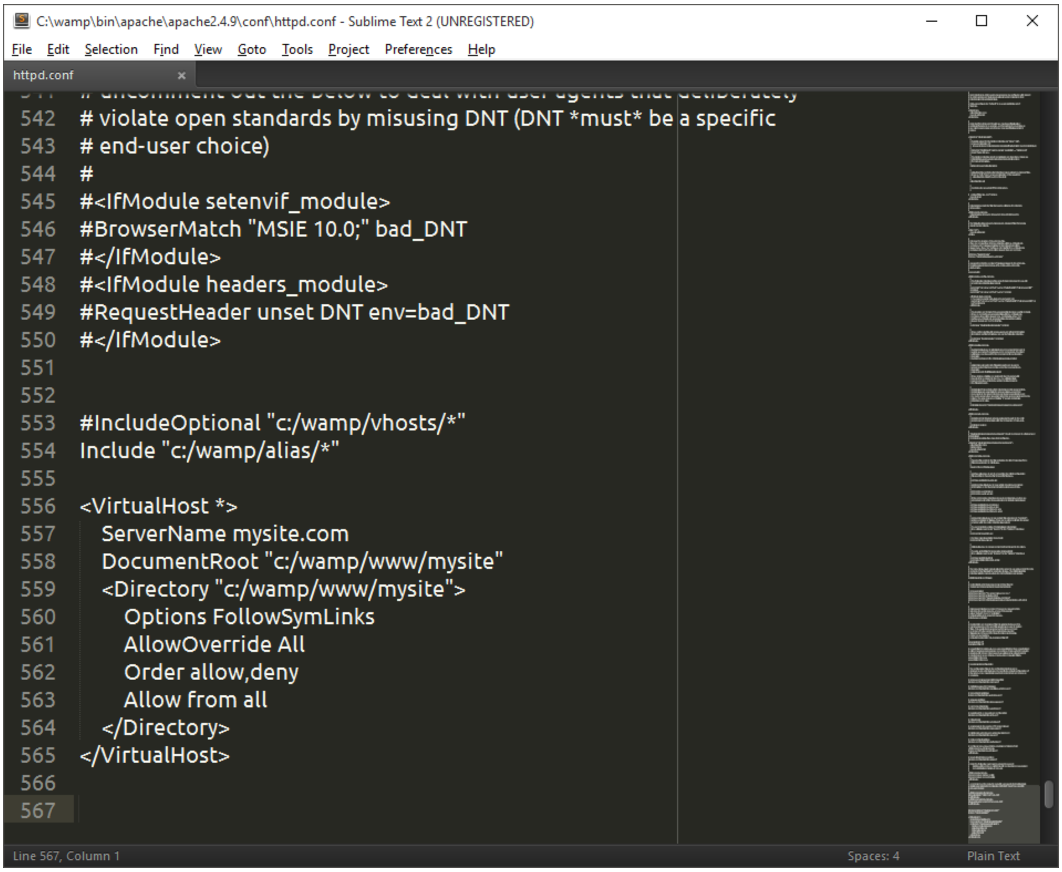
`C:\wamp\bin\apache\apache2.4.9\conf`

Open it and add the following configuration at the end of the file:

**httpd.conf**

```
<VirtualHost *>
    ServerName mysite.com
    DocumentRoot "c:/wamp/www/mysite"
    <Directory "c:/wamp/www/mysite">
        Options FollowSymLinks
        AllowOverride All
        Order allow,deny
        Allow from all
    </Directory>
</VirtualHost>
```

The Apache configuration file is similar to the following image:

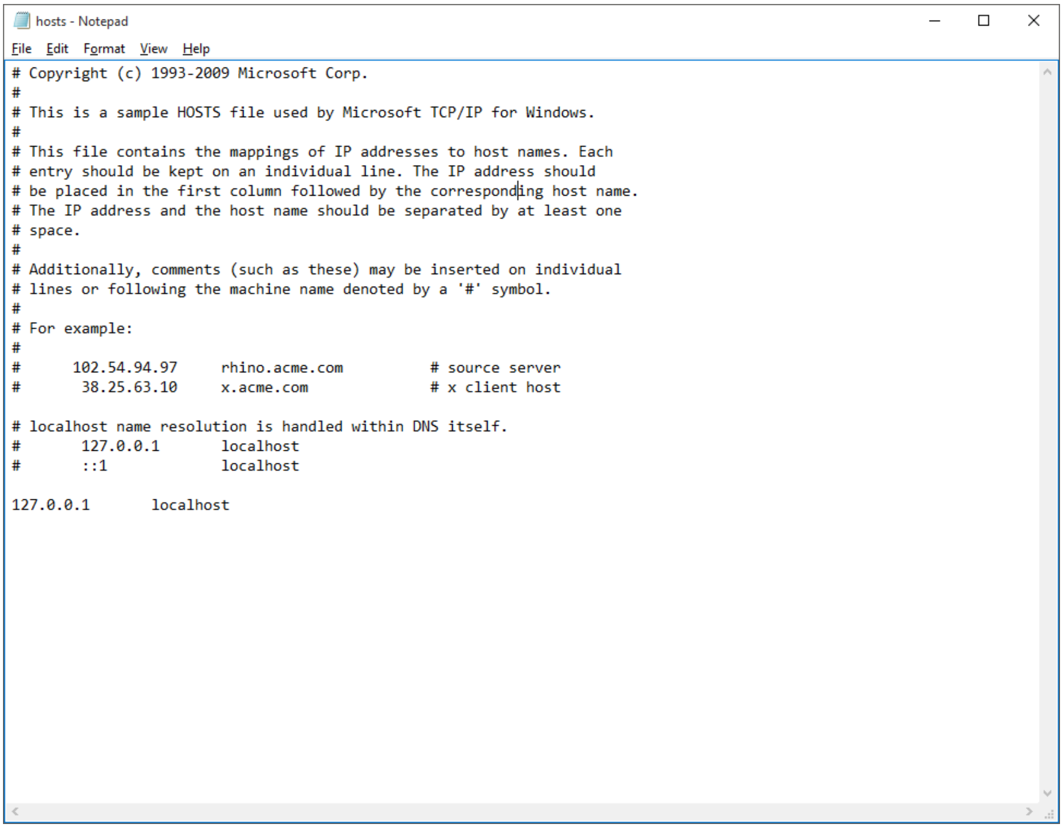

C:\wamp\bin\apache\apache2.4.9\conf\httpd.conf - Sublime Text 2 (UNREGISTERED)
File Edit Selection Find View Goto Tools Project Preferences Help
httpd.conf
Line 567, Column 1
Spaces: 4
Plain Text

```
# violate open standards by misusing DNT (DNT *must* be a specific
# end-user choice)
#
#<IfModule setenvif_module>
#BrowserMatch "MSIE 10.0;" bad_DNT
#</IfModule>
#<IfModule headers_module>
#RequestHeader unset DNT env=bad_DNT
#</IfModule>


#IncludeOptional "c:/wamp/vhosts/*"
Include "c:/wamp/alias/*"

<VirtualHost *>
   ServerName mysite.com
   DocumentRoot "c:/wamp/www/mysite"
   <Directory "c:/wamp/www/mysite">
      Options FollowSymLinks
      AllowOverride All
      Order allow,deny
      Allow from all
   </Directory>
</VirtualHost>
```

This setting creates the virtual domain in Apache, pointing directly at `c:/wamp/www/mysite`.

It is necessary to restart Apache so that the configuration is reloaded. To restart, click with the left mouse button on the WampServer icon, in the Windows tray, and choose the option `Restart All Services`. The icon will turn red for a while and then green.

To finish the configuration, it is necessary to change the `hosts` file of Windows. This file is located in `C:\Windows\System32\drivers\etc`. So you can edit it, it is necessary to open it as system administrator. The best way to do this is to open Notepad as administrator (right-click in the Notepad icon and select `run as administrator`). After opening Notepad, open the file `C:\Windows\System32\drivers\etc\hosts` , which should be similar to the following image.



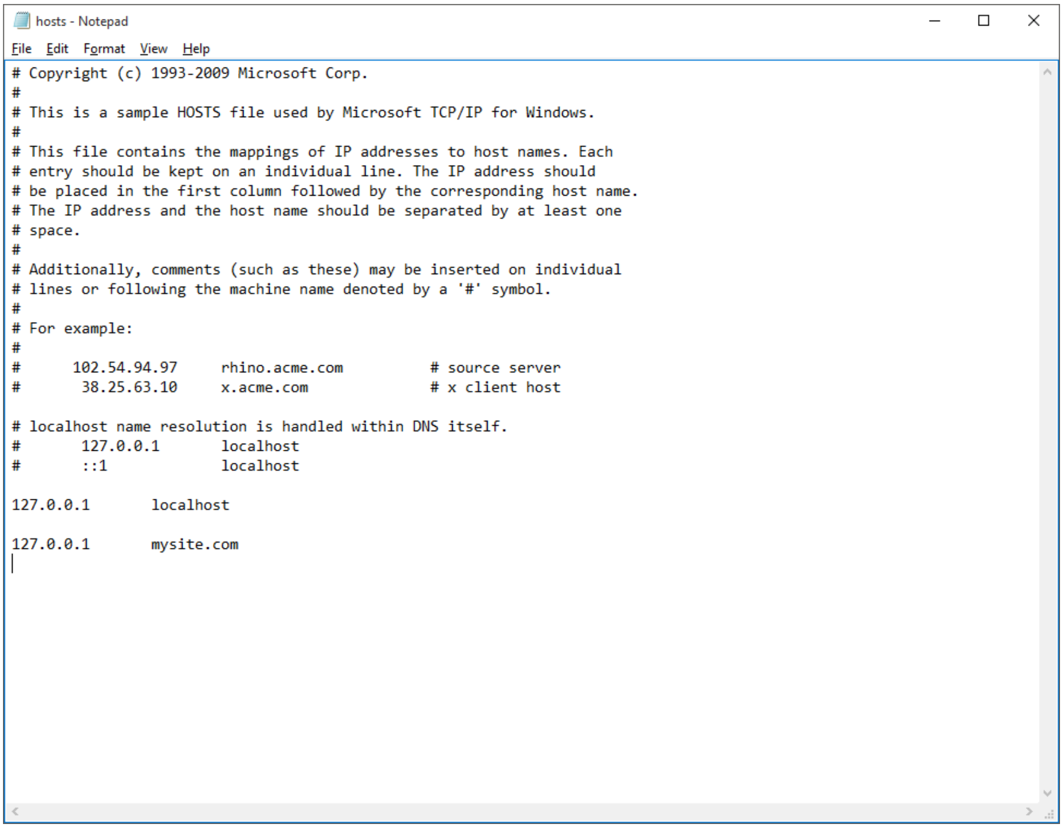
```
# Copyright (c) 1993-2009 Microsoft Corp.
#
# This is a sample HOSTS file used by Microsoft TCP/IP for Windows.
#
# This file contains the mappings of IP addresses to host names. Each
# entry should be kept on an individual line. The IP address should
# be placed in the first column followed by the corresponding host name.
# The IP address and the host name should be separated by at least one
# space.
#
# Additionally, comments (such as these) may be inserted on individual
# lines or following the machine name denoted by a '#' symbol.
#
# For example:
#
#      102.54.94.97     rhino.acme.com          # source server
#       38.25.63.10     x.acme.com              # x client host

# localhost name resolution is handled within DNS itself.
#       127.0.0.1       localhost
#       ::1             localhost

127.0.0.1       localhost
```

Add the following statement at the end of the file:

**C:WindowsSystem32\drivers\etc\hosts**

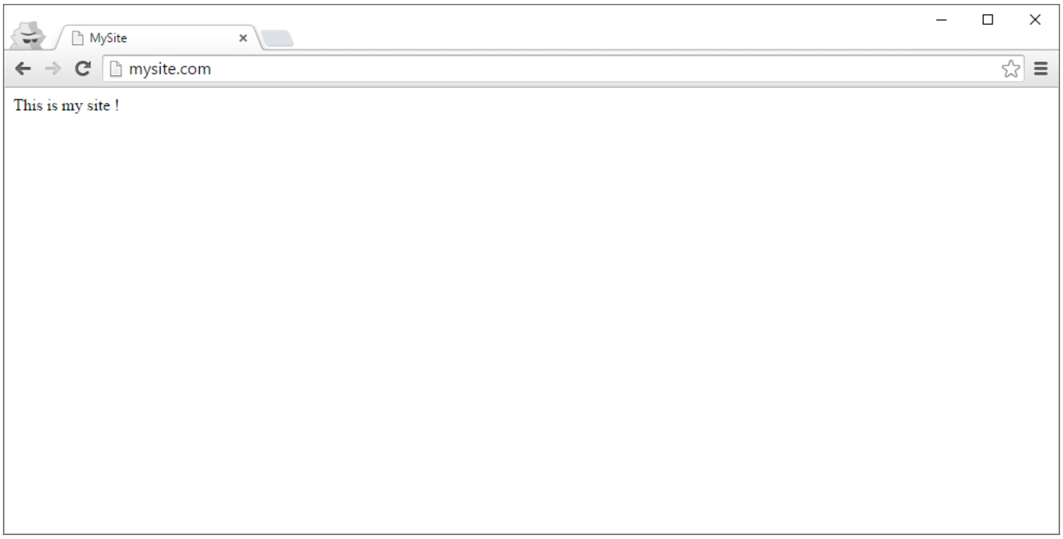
```
#virtual hosts
127.0.0.1   mysite.com
```

The `hosts` configuration is similar to the following figure.



```
# Copyright (c) 1993-2009 Microsoft Corp.
#
# This is a sample HOSTS file used by Microsoft TCP/IP for Windows.
#
# This file contains the mappings of IP addresses to host names. Each
# entry should be kept on an individual line. The IP address should
# be placed in the first column followed by the corresponding host name.
# The IP address and the host name should be separated by at least one
# space.
#
# Additionally, comments (such as these) may be inserted on individual
# lines or following the machine name denoted by a '#' symbol.
#
# For example:
#
#      102.54.94.97     rhino.acme.com          # source server
#       38.25.63.10     x.acme.com              # x client host

# localhost name resolution is handled within DNS itself.
#       127.0.0.1       localhost
#       ::1             localhost

127.0.0.1       localhost

127.0.0.1       mysite.com
```

After saving the host file, open the browser and go to the following address: `mysite.com` (without the www). You should see a page like in the following figure:



This is my site !

The loaded page is precisely the page `c:\wamp\www\mysite\index.html`, as configured by the Apache and the Windows host file.

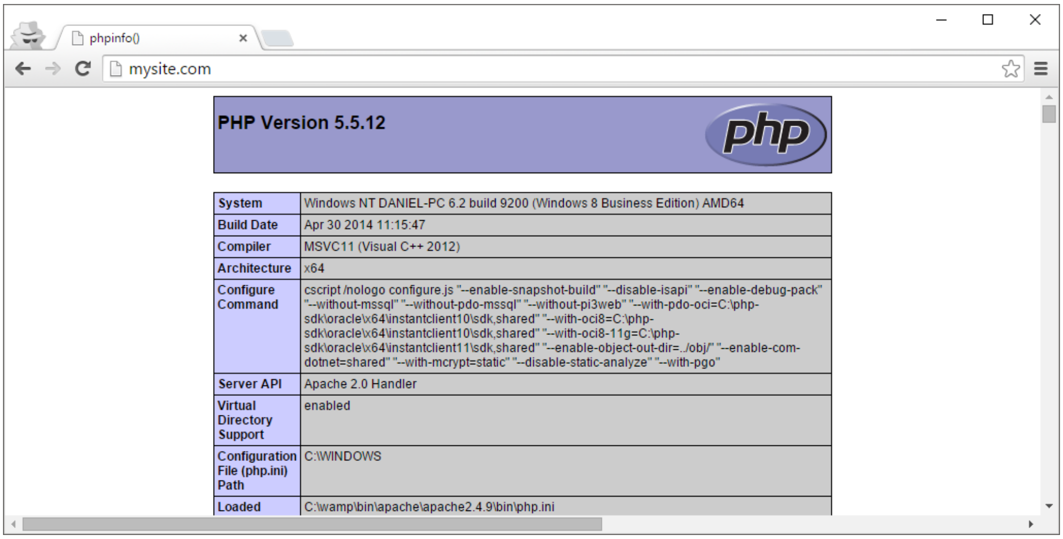
## PHP

PHP is installed together with the Apache, thanks to Wamp Server. To test it, create the file `index.php` in the folder `c:\wamp\www\mysite` with the following code:

**c:\wamp\www\mysite\index.php**

```php
<?php

phpinfo();
```

The result of the code above is similar to the following image:



PHP Version 5.5.12

| | |
|---|---|
| System | Windows NT DANIEL-PC 6.2 build 9200 (Windows 8 Business Edition) AMD64 |
| Build Date | Apr 30 2014 11:15:47 |
| Compiler | MSVC11 (Visual C++ 2012) |
| Architecture | x64 |
| Configure Command | cscript /nologo configure.js "--enable-snapshot-build" "--disable-isapi" "--enable-debug-pack" "--without-mssql" "--without-pdo-mssql" "--without-pi3web" "--with-pdo-oci=C:\php-sdk\oracle\x64\instantclient10\sdk,shared" "--with-oci8=C:\php-sdk\oracle\x64\instantclient10\sdk,shared" "--with-oci8-11g=C:\php-sdk\oracle\x64\instantclient11\sdk,shared" "--enable-object-out-dir=../obj/" "--enable-com-dotnet=shared" "--with-mcrypt=static" "--disable-static-analyze" "--with-pgo" |
| Server API | Apache 2.0 Handler |
| Virtual Directory Support | enabled |
| Configuration File (php.ini) Path | C:\WINDOWS |
| Loaded | C:\wamp\bin\apache\apache2.4.9\bin\php.ini |

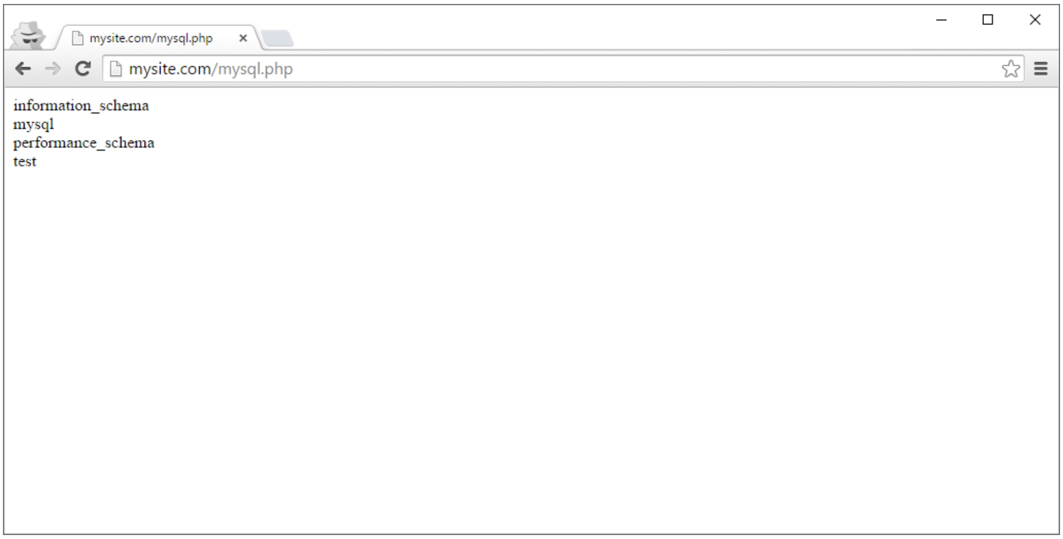
## MySql

To test MySql, we could create a PHP file to display the database created during installation. To do this, create the file `mysql.php` into directory `c:\wamp\www\mysite`, with the following code:

**c:\wamp\www\mysite\mysql.php**

```
<?php
$dbh = new PDO( "mysql:host=localhost", "root", "" );
$dbs = $dbh->query( 'SHOW DATABASES' );

while( ( $db = $dbs->fetchColumn( 0 ) ) !== false )
{
    echo $db.'<br>';
}
```

The result of the code above is similar to the following image:

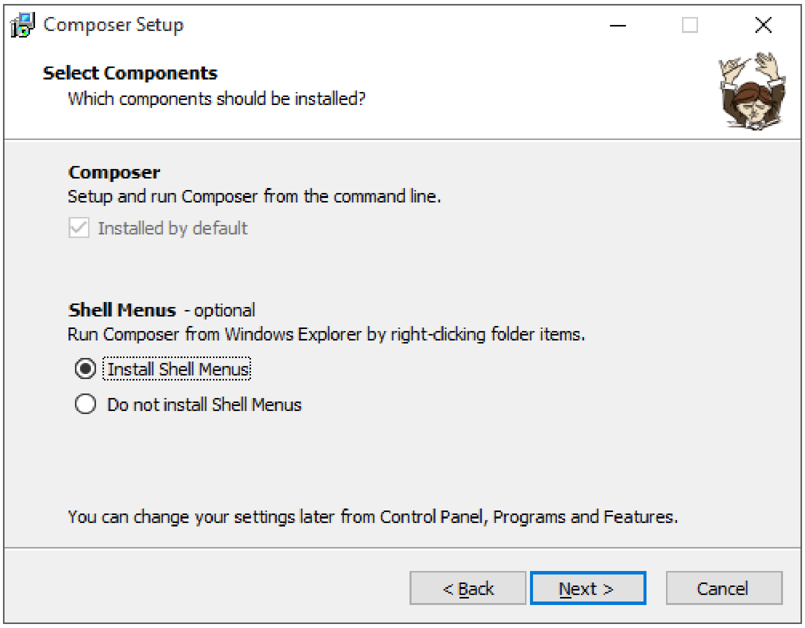


```
information_schema
mysql
performance_schema
test
```

## Composer

Access this url[3] and install the Composer for Windows. During Setup, select the option `Install Menu Shell`, as in the following figure, leaving the other installation options as default. Note that the Composer needs the PHP executable, which will be found in Wamp Server.

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

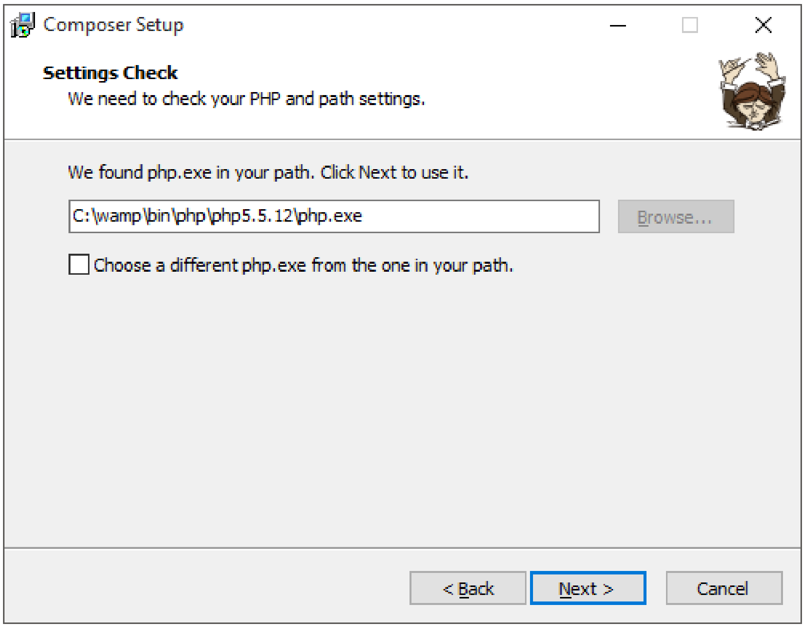

Composer Setup

**Select Components**
Which components should be installed?

**Composer**
Setup and run Composer from the command line.
✓ Installed by default

**Shell Menus** - optional
Run Composer from Windows Explorer by right-clicking folder items.
● Install Shell Menus
○ Do not install Shell Menus

You can change your settings later from Control Panel, Programs and Features.


Composer Setup

**Settings Check**
We need to check your PHP and path settings.

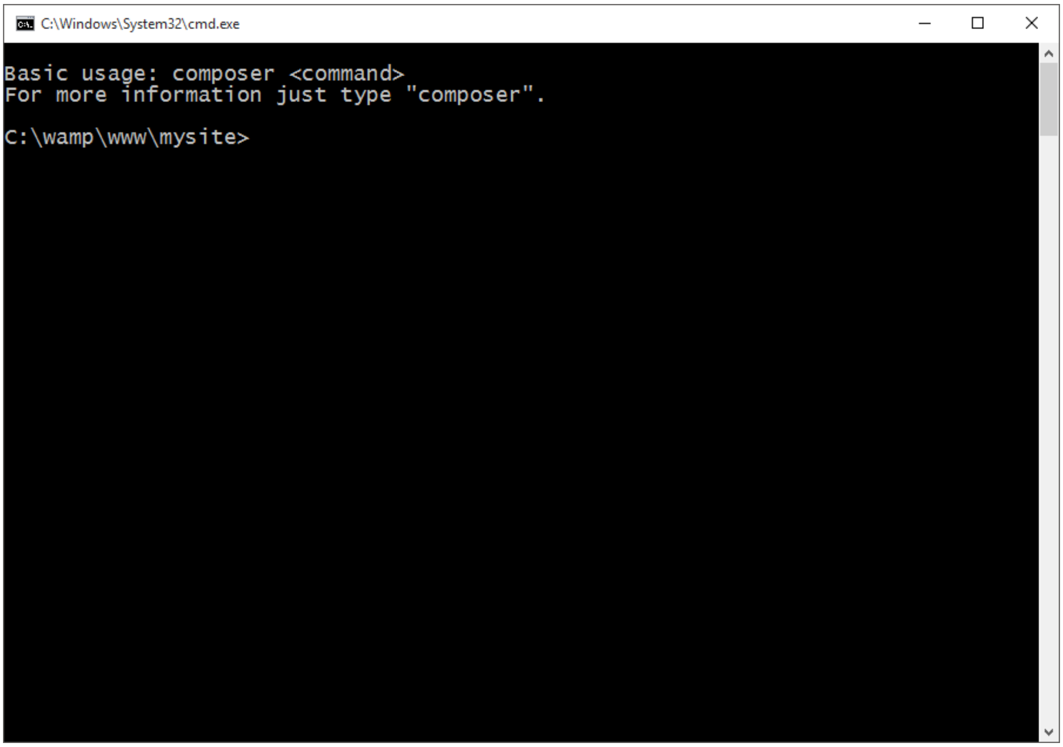
We found php.exe in your path. Click Next to use it.

C:\wamp\bin\php\php5.5.12\php.exe

☐ Choose a different php.exe from the one in your path.

## Testing the Composer

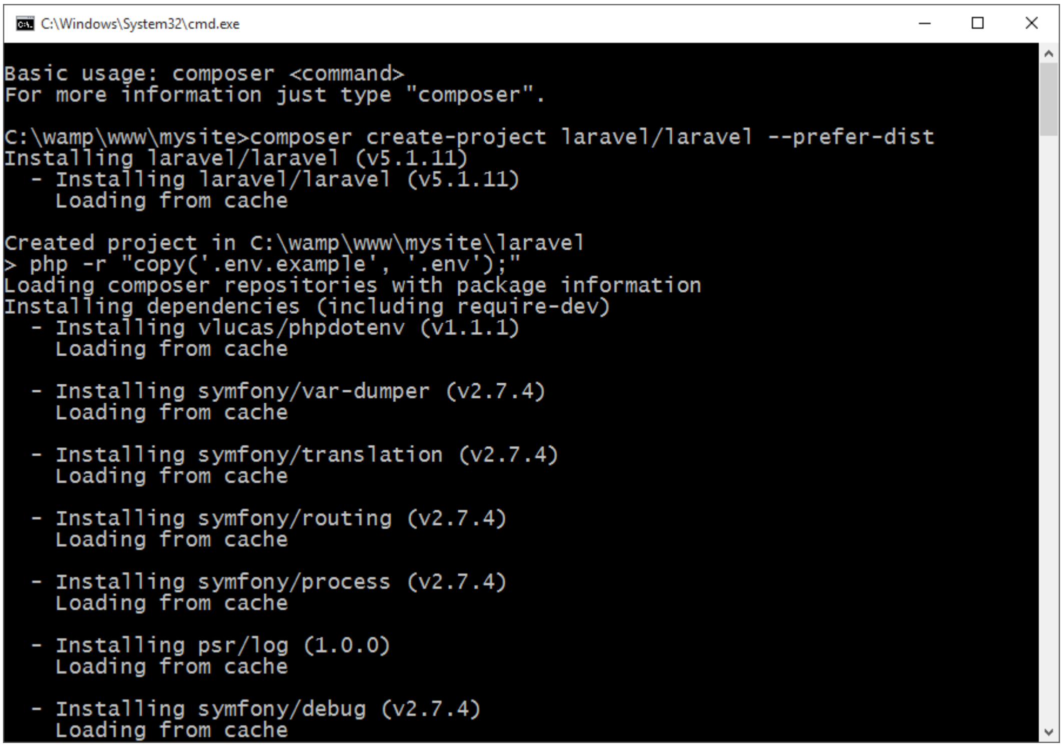
We will perform a test on the composer, installing the Laravel. Open the folder `c:\wamp\www\mysite` by the `Windows Explorer` and right-click the folder. Click the option `Use Composer Here`, to start the package manager, as shown in the following figure:



```
Basic usage: composer <command>
For more information just type "composer".

C:\wamp\www\mysite>
```

To install the Laravel, type the following command:

```
composer create-project laravel/laravel --prefer-dist
```



```
Basic usage: composer <command>
For more information just type "composer".

C:\wamp\www\mysite>composer create-project laravel/laravel --prefer-dist
Installing laravel/laravel (v5.1.11)
  - Installing laravel/laravel (v5.1.11)
    Loading from cache

Created project in C:\wamp\www\mysite\laravel
> php -r "copy('.env.example', '.env');"
Loading composer repositories with package information
Installing dependencies (including require-dev)
  - Installing vlucas/phpdotenv (v1.1.1)
    Loading from cache

  - Installing symfony/var-dumper (v2.7.4)
    Loading from cache

  - Installing symfony/translation (v2.7.4)
    Loading from cache

  - Installing symfony/routing (v2.7.4)
    Loading from cache

  - Installing symfony/process (v2.7.4)
    Loading from cache

  - Installing psr/log (1.0.0)
    Loading from cache

  - Installing symfony/debug (v2.7.4)
    Loading from cache
```

Through this command, a copy of the Laravel application will be installed in the current directory. You can install the Laravel this way, but there is another way to do this.

## Laravel

The Laravel installation is done by the following command, which can be executed via the Windows Prompt (use the option `run as administrator`):

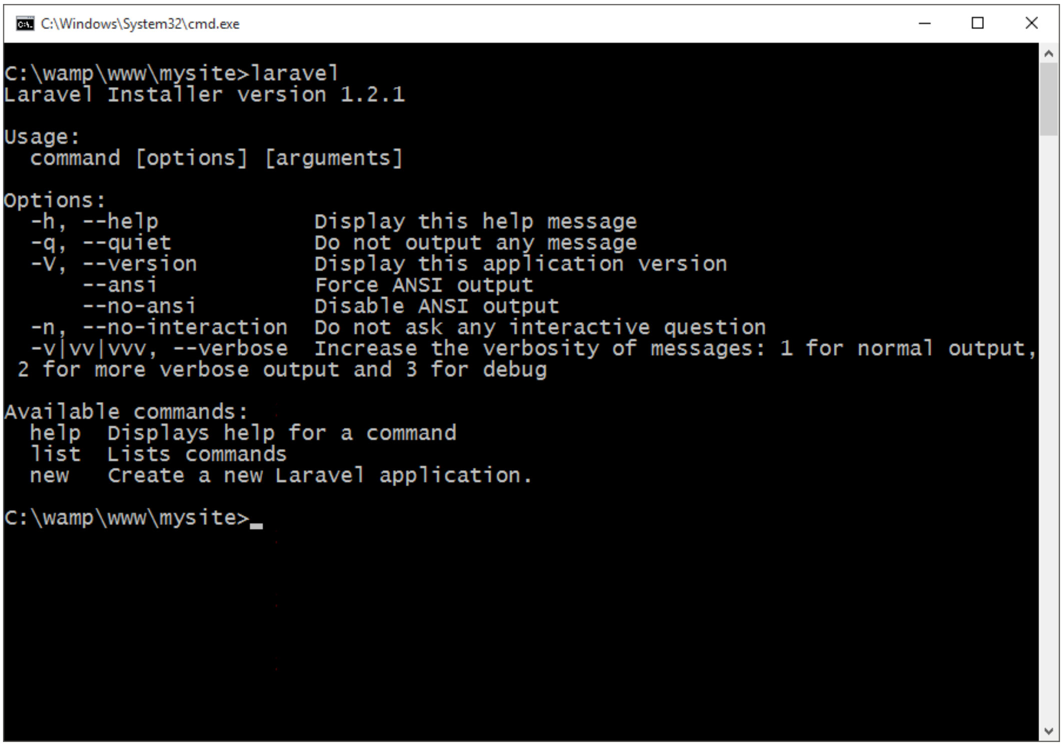
```
cd c:\wamp\www\mysite
composer global require "laravel/installer=~1.1"
```

After the installation, we must make the Laravel an application that can be executed via command line. For that, you need to add the following directory:

```
C:\Users\USER\AppData\Roaming\Composer\vendor\bin
```

on the PATH of Windows. Be sure to change the `USER` for the user name you are logged in.

After you add the PATH, open the Windows command line and type `laravel`. The result should be similar to the following figure:



```
C:\wamp\www\mysite>laravel
Laravel Installer version 1.2.1

Usage:
  command [options] [arguments]

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

Available commands:
  help   Displays help for a command
  list   Lists commands
  new    Create a new Laravel application.

C:\wamp\www\mysite>_
```

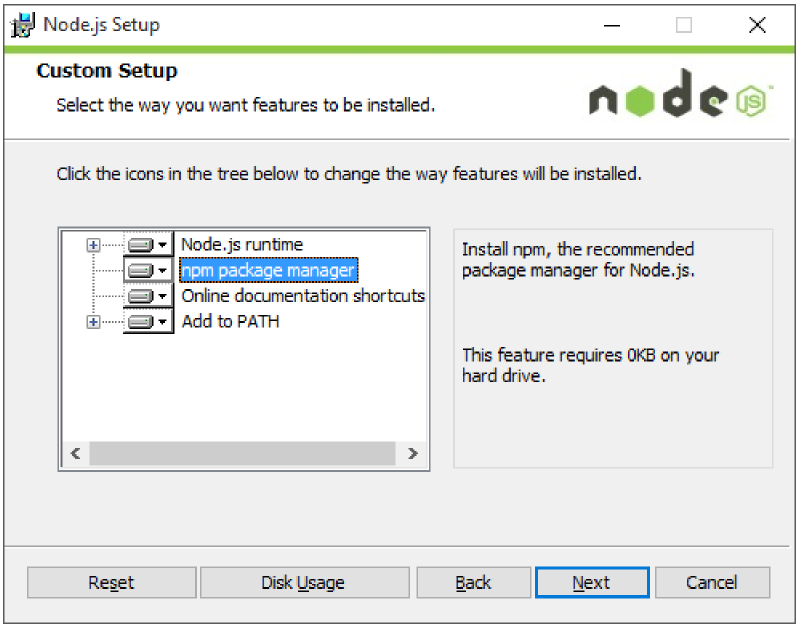
With laravel installed, you can run the following command:

```
cd c:\wamp\www\
laravel new blog
```

This command will create an implementation of the Laravel whose name is `blog`.

## Bower

Bower requires the installation of the `Node`, `npm` and `git`. To install the `Node` in Windows, go to https://nodejs.org[4] and click `Download for Windows`. Download the `msi` file and run it. Make sure the `npm` package is installed according to following image:


Custom Setup

Select the way you want features to be installed.

Click the icons in the tree below to change the way features will be installed.

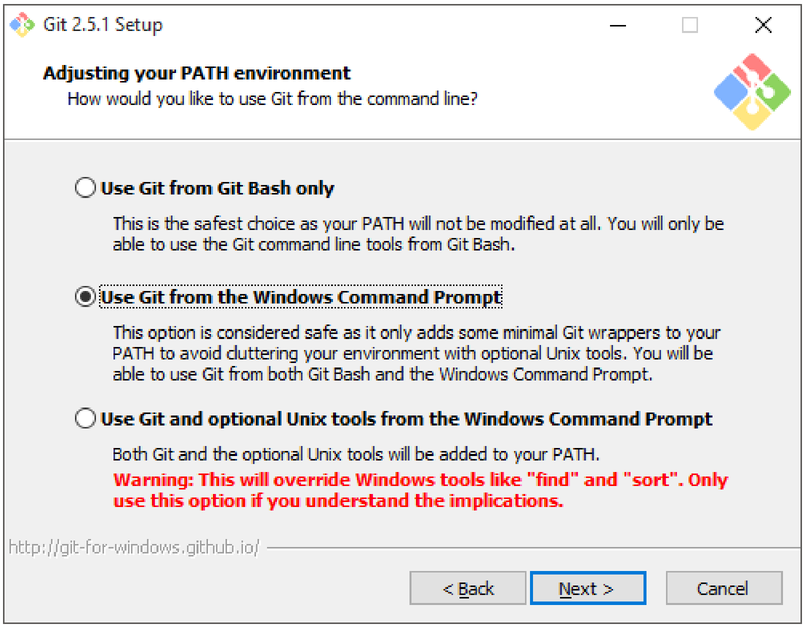
- Node.js runtime
- npm package manager
- Online documentation shortcuts
- Add to PATH

Install npm, the recommended package manager for Node.js.

This feature requires 0KB on your hard drive.

To install the `git`, visit http://git-scm.com[5] and click `Download for Windows`. Download and install using the following option: “Use Git from the Windows Command Prompt”.

[4] https://nodejs.org
[5] http://git-scm.com/



Git 2.5.1 Setup

**Adjusting your PATH environment**

How would you like to use Git from the command line?

( ) **Use Git from Git Bash only**

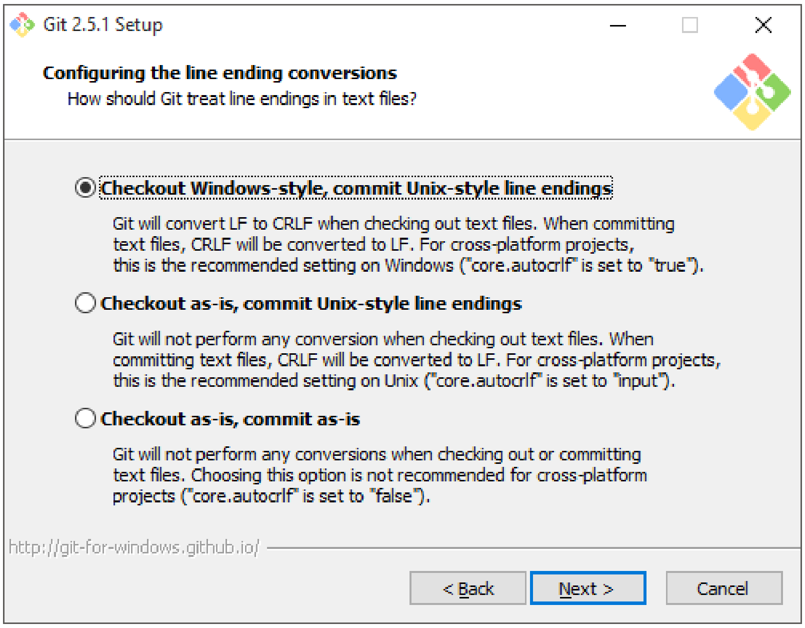
This is the safest choice as your PATH will not be modified at all. You will only be able to use the Git command line tools from Git Bash.

(✓) **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 2.5.1 Setup

**Configuring the line ending conversions**

How should Git treat line endings in text files?

(✓) **Checkout Windows-style, commit Unix-style line endings**

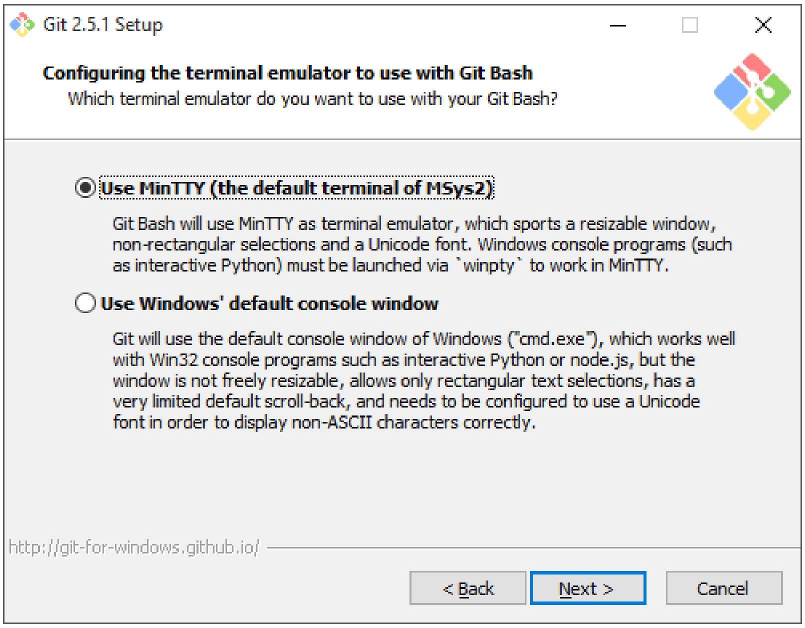
Git will convert LF to CRLF when checking out text files. When committing text files, CRLF will be converted to LF. For cross-platform projects, this is the recommended setting on Windows ("core.autocrlf" is set to "true").

( ) **Checkout as-is, commit Unix-style line endings**

Git will not perform any conversion when checking out text files. When committing text files, CRLF will be converted to LF. For cross-platform projects, this is the recommended setting on Unix ("core.autocrlf" is set to "input").

( ) **Checkout as-is, commit as-is**

Git will not perform any conversions when checking out or committing text files. Choosing this option is not recommended for cross-platform projects ("core.autocrlf" is set to "false").


Git 2.5.1 Setup

**Configuring the terminal emulator to use with Git Bash**

Which terminal emulator do you want to use with your Git Bash?

[✓ Use MinTTY (the default terminal of MSys2)]

Git Bash will use MinTTY as terminal emulator, which sports a resizable window, non-rectangular selections and a Unicode font. Windows console programs (such as interactive Python) must be launched via `winpty` to work in MinTTY.

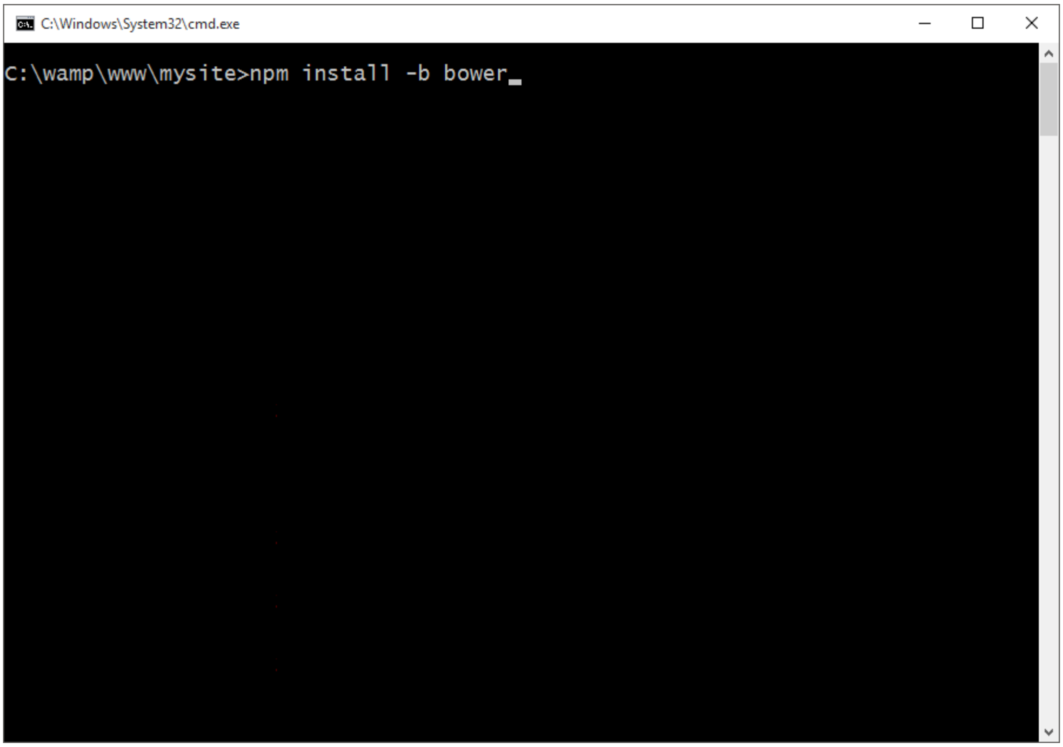
Use Windows' default console window

Git will use the default console window of Windows ("cmd.exe"), which works well with Win32 console programs such as interactive Python or node.js, but the window is not freely resizable, allows only rectangular text selections, has a very limited default scroll-back, and needs to be configured to use a Unicode font in order to display non-ASCII characters correctly.

http://git-for-windows.github.io/

After you install these two programs, you can install Bower. To do this, open the terminal (cmd.exe) in Windows and use the following command:

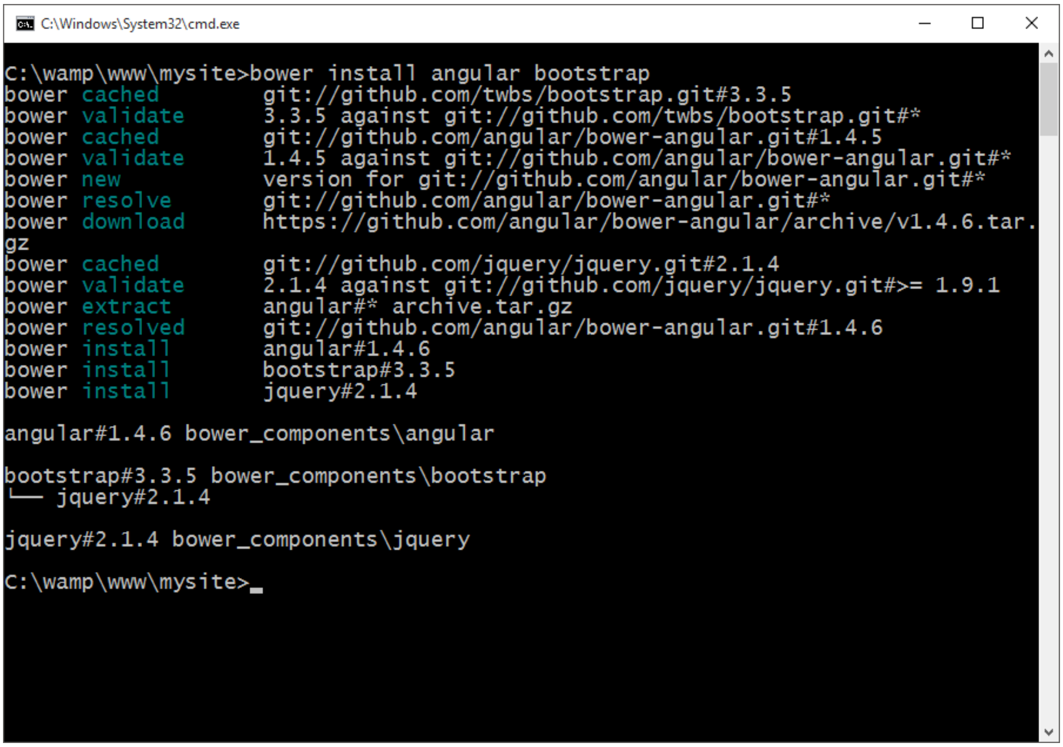
```
npm install -g bower
```



```
C:\wamp\www\mysite>npm install -b bower_
```

After installation, we can test bower by installing the AngularJS. To do this, go to the directory `c:\wamp\www\mysite\` in the command window and type the following command:

```
bower install angular bootstrap
```



```
C:\wamp\www\mysite>bower install angular bootstrap
bower cached        git://github.com/twbs/bootstrap.git#3.3.5
bower validate      3.3.5 against git://github.com/twbs/bootstrap.git#*
bower cached        git://github.com/angular/bower-angular.git#1.4.5
bower validate      1.4.5 against git://github.com/angular/bower-angular.git#*
bower new           version for git://github.com/angular/bower-angular.git#*
bower resolve       git://github.com/angular/bower-angular.git#*
bower download      https://github.com/angular/bower-angular/archive/v1.4.6.tar.
gz
bower cached        git://github.com/jquery/jquery.git#2.1.4
bower validate      2.1.4 against git://github.com/jquery/jquery.git#>= 1.9.1
bower extract       angular#* archive.tar.gz
bower resolved      git://github.com/angular/bower-angular.git#1.4.6
bower install       angular#1.4.6
bower install       bootstrap#3.3.5
bower install       jquery#2.1.4

angular#1.4.6 bower_components\angular

bootstrap#3.3.5 bower_components\bootstrap
└── jquery#2.1.4

jquery#2.1.4 bower_components\jquery

C:\wamp\www\mysite>_
```

# Chapter 3 - Preparing the environment in Linux

In this chapter we will be installing all necessary programs so that we can begin to develop in Laravel and AngularJS. We're using the Ubuntu 14.04, which is based on Debian and the package manager `apt-get`.

When we reference the path of a file in Linux, we always use user directory `home/user`. Be sure to change to the directory equivalent to your username.

The list of programs below contains all the programs that we will install:

**Apache**
: The web server that will host everything on the server. Perhaps you know Apache or at least have a certain knowledge of how it works. In this work we will also learn how to create a virtual domain and perform more complex setups.

**MySql**
: Will be our default database, for all our examples.

**Composer**
: How to install the frameworks on the server is changing radically. Before, we needed to download a zip file and unzip it on the server. With the rapid evolution of PHP in recent years, appeared the package managers and among them we have the Composer, which allow us to place several frameworks in PHP through the command line (*shell*). Very similar to `apt-get` from Linux/Debian and its derivatives. The Composer works a little different from the other package managers because it is not installed globally in the operating system, but rather locally in your PHP project. In this way, the Composer is a dependency Manager of your project, not a project manager as we know.

**Bower**
: The Bower is also a package manager, except for the javascript libraries that we will use. Combining the Bower and the Composer, we can install any library for both the server and the client without the need to perform any type of external download. We also have the advantage of being able to update the libraries instantly.

**Laravel**
: We will install Laravel via the Composer, since this is the only way to install it.

**AngularJS**
: AngularJS will be installed via the Bower.

**Bootstrap**
: The Bootstrap is a Javascript/CSS library that will provide a significant improvement on the visual layer of the application. It will also be installed by Bower.

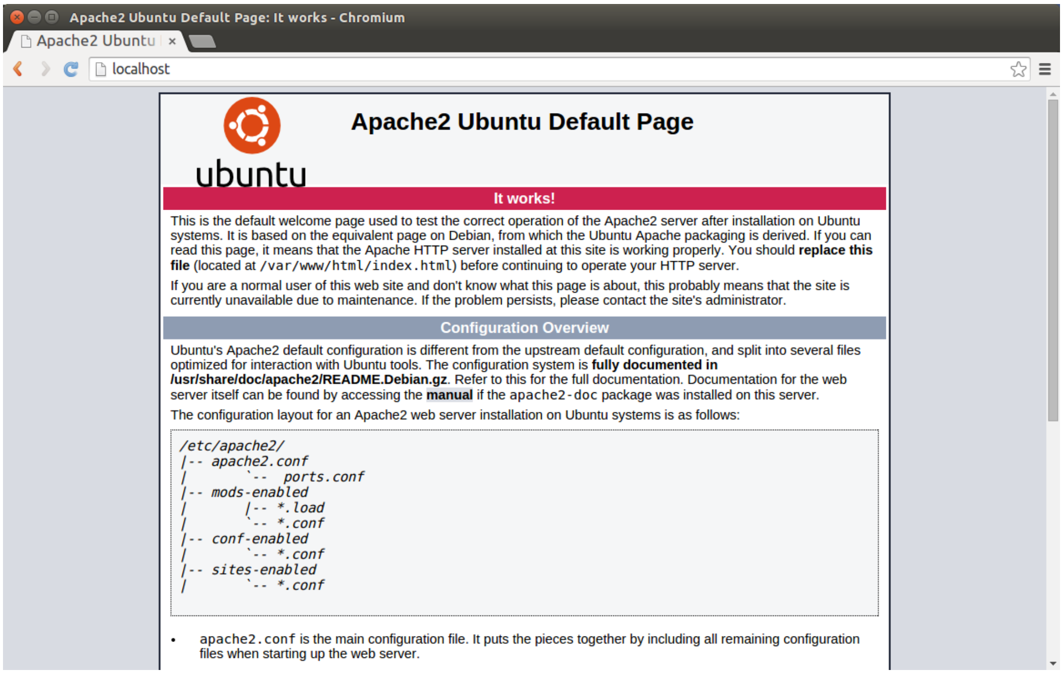
**Sublime Text**
: The Sublime Text is a versatile and powerful text editor. You can use it in all the processes of web development of this work. In fact, this book was written using the Sublime. To install the Sublime Text, go to http://www.sublimetext.com/ and do the installation according to your operating system.

## Apache

To install Apache on Linux, you can use the apt-get package manager, available in Ubuntu and in any Linux operating system that has Debian as a base.

```
$ sudo apt-get install apache2 apache2-utils
```

After installation, Apache is already running, and may be tested accessing `http://localhost` in the browser, with the following response:



Apache2 Ubuntu Default Page

It works!

This is the default welcome page used to test the correct operation of the Apache2 server after installation on Ubuntu systems. It is based on the equivalent page on Debian, from which the Ubuntu Apache packaging is derived. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should **replace this file** (located at `/var/www/html/index.html`) before continuing to operate your HTTP server.

If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.

Configuration Overview

Ubuntu's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Ubuntu tools. The configuration system is **fully documented in /usr/share/doc/apache2/README.Debian.gz**. Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the **manual** if the `apache2-doc` package was installed on this server.

The configuration layout for an Apache2 web server installation on Ubuntu systems is as follows:

```
/etc/apache2/
|-- apache2.conf
|       `--  ports.conf
|-- mods-enabled
|       |-- *.load
|       `-- *.conf
|-- conf-enabled
|       `-- *.conf
|-- sites-enabled
|       `-- *.conf
```

- `apache2.conf` is the main configuration file. It puts the pieces together by including all remaining configuration files when starting up the web server.

## Creating the virtual domain (virtual host)

It is very helpful to create a virtual domain for each system that we develop. With a virtual domain we can easily “simulate” a web address in our own computer, without the need to setup external servers. As an example, we will setup the domain `mysite.com`, so when we type `www.mysite.com` on the Browser, Apache will point to the folder `/home/user/www/mysite`. Remember that the real site will no longer be accessible, at least while the server is active, then do not use known sites for your tests.

Initially, create the folder `home/<user>/www/mysite`, and add the file `index.html` with the following content:

```
$ mkdir www
$ mkdir www/mysite
```

**/home/user/www/mysite/index.html**

```
<!DOCTYPE html>
<html>
    <head>
        <meta charset="UTF-8">
        <title>MySite</title>
    </head>

    <body>
        This is my site !
    </body>
</html>
```

Now, create the file `mysite.com.conf` in `/etc/apache2/sites-available`:

```
$ sudo gedit /etc/apache2/sites-available/mysite.com.conf

<VirtualHost *:80>
     ServerAdmin your@email.com
     ServerName mysite.com
     ServerAlias www.mysite.com
     DocumentRoot /home/user/www/mysite/
     ErrorLog /home/user/www/mysite.error.log
     CustomLog /home/user/www/mysite.access.log combined
</VirtualHost>
```

After you create the configuration file, you must enable the site with the following command:

```
$ sudo a2ensite mysite.com
```

To allow apache to access the directory `/home/user/www`, you need to add this permission in `/etc/apache2/apache2.conf` file, as follows:

```
$ sudo gedit /etc/apache2/apache2.conf
```

Add the following configuration:

```
<Directory /home/user/www>
        Options Indexes FollowSymLinks
        AllowOverride None
        Require all granted
</Directory>
```

And finally restart apache:

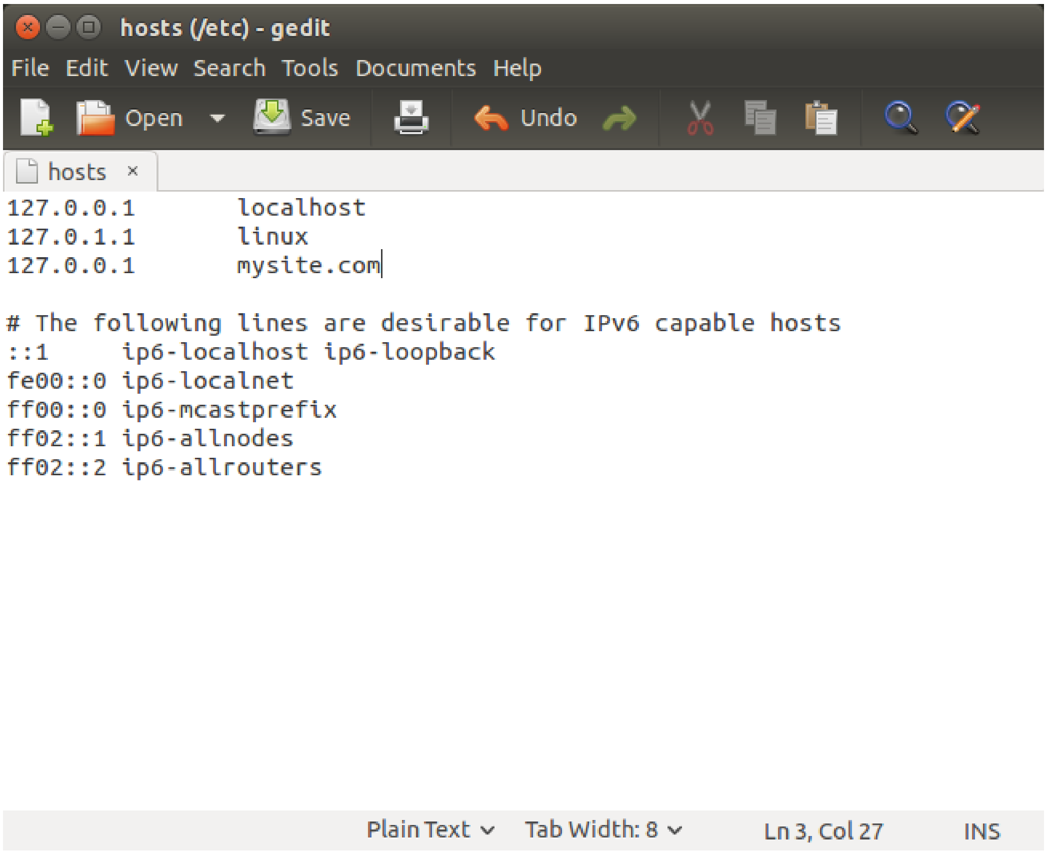
```
$ sudo service apache2 restart
```

With the apache configuration ready, we should change the `hosts` file of Linux, as follows:

```
$ sudo gedit /etc/hosts
```

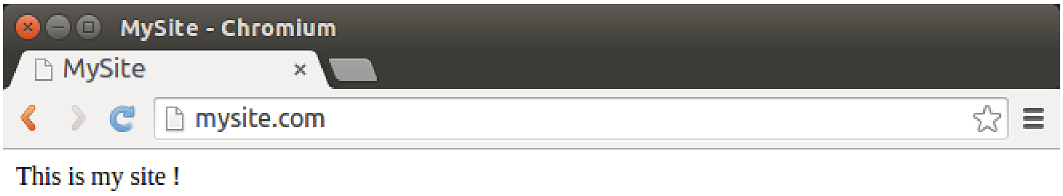
And add the following configuration:

```
127.0.0.1                mysite.com
```



```
127.0.0.1       localhost
127.0.1.1       linux
127.0.0.1       mysite.com

# The following lines are desirable for IPv6 capable hosts
::1     ip6-localhost ip6-loopback
fe00::0 ip6-localnet
ff00::0 ip6-mcastprefix
ff02::1 ip6-allnodes
ff02::2 ip6-allrouters
```

With all the settings ready, open the url `mysite.com`, the result should be similar to the following figure:



This is my site !

## PHP

To install PHP on Linux, run the following command:

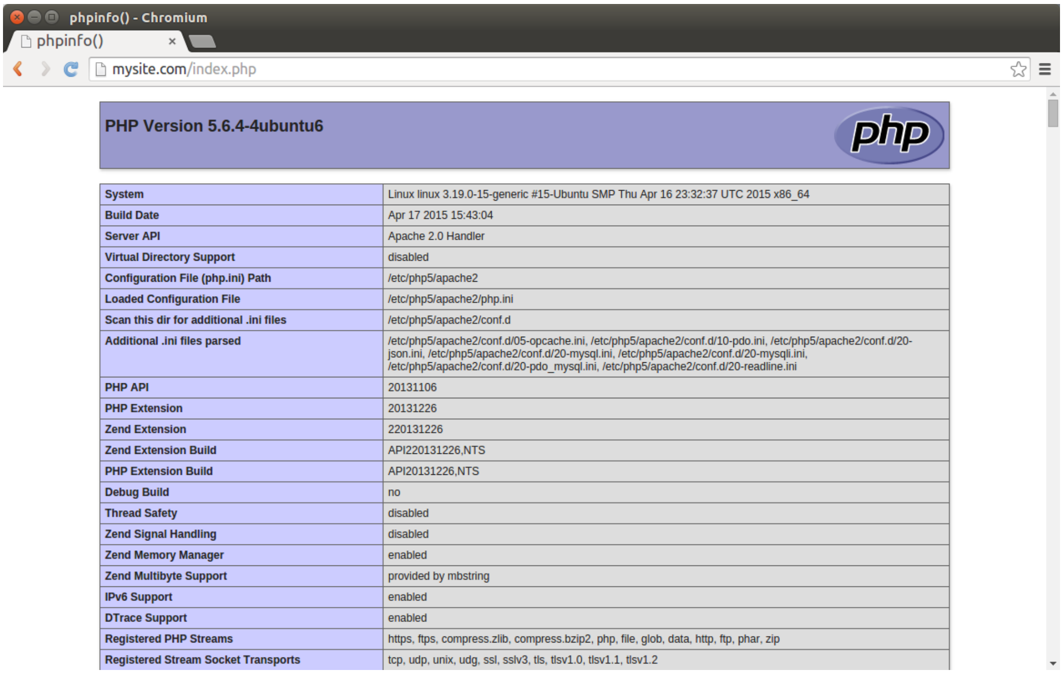
```
$ sudo apt-get install php5 php5-mysql php-pear php5-mcrypt
```

After installation, create the file `/home/user/www/mysite/index.php` with the following contents:

**/home/user/www/mysite/index.php**

```
<?php

phpinfo();
```

And access the file `index.php` in the browser with the url `http://mysite.com/index.php`, obtaining the following result:



PHP Version 5.6.4-4ubuntu6

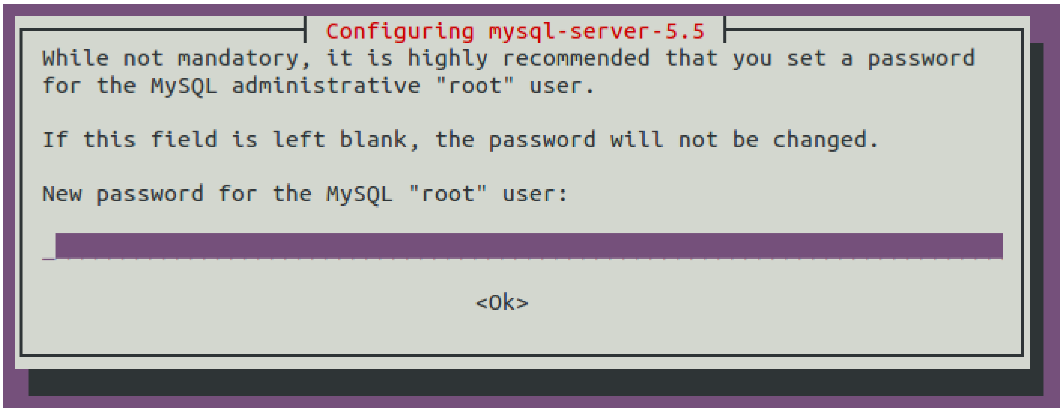
| | |
|---|---|
| System | Linux linux 3.19.0-15-generic #15-Ubuntu SMP Thu Apr 16 23:32:37 UTC 2015 x86_64 |
| Build Date | Apr 17 2015 15:43:04 |
| Server API | Apache 2.0 Handler |
| Virtual Directory Support | disabled |
| Configuration File (php.ini) Path | /etc/php5/apache2 |
| Loaded Configuration File | /etc/php5/apache2/php.ini |
| Scan this dir for additional .ini files | /etc/php5/apache2/conf.d |
| Additional .ini files parsed | /etc/php5/apache2/conf.d/05-opcache.ini, /etc/php5/apache2/conf.d/10-pdo.ini, /etc/php5/apache2/conf.d/20-json.ini, /etc/php5/apache2/conf.d/20-mysql.ini, /etc/php5/apache2/conf.d/20-mysqli.ini, /etc/php5/apache2/conf.d/20-pdo_mysql.ini, /etc/php5/apache2/conf.d/20-readline.ini |
| PHP API | 20131106 |
| PHP Extension | 20131226 |
| Zend Extension | 220131226 |
| Zend Extension Build | API220131226,NTS |
| PHP Extension Build | API20131226,NTS |
| Debug Build | no |
| Thread Safety | disabled |
| Zend Signal Handling | disabled |
| Zend Memory Manager | enabled |
| Zend Multibyte Support | provided by mbstring |
| IPv6 Support | enabled |
| DTrace Support | enabled |
| Registered PHP Streams | https, ftps, compress.zlib, compress.bzip2, php, file, glob, data, http, ftp, phar, zip |
| Registered Stream Socket Transports | tcp, udp, unix, udg, ssl, sslv3, tls, tlsv1.0, tlsv1.1, tlsv1.2 |

## MySql Server

To install the MySql Server, run the following command:

```
$ sudo apt-get install mysql-server
```

Note that some information will be requested such as the password for user `root`. In this case, leave the password blank, because we are creating a test environment.



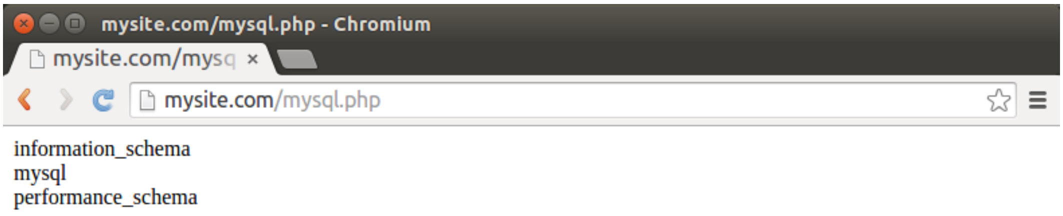
```
Configuring mysql-server-5.5
While not mandatory, it is highly recommended that you set a password
for the MySQL administrative "root" user.

If this field is left blank, the password will not be changed.

New password for the MySQL "root" user:

_

<Ok>
```

After installation, we can test the MySql creating the file `/home/user/www/mysite` in `mysql.php` with the following contents:

**/home/user/www/mysite/mysql.php**

```php
<?php
$dbh = new PDO( "mysql:host=localhost", "root", "" );
$dbs = $dbh->query( 'SHOW DATABASES' );

while( ( $db = $dbs->fetchColumn( 0 ) ) !== false )
{
    echo $db.'<br>';
}
```

The code above produces the following result:



```
information_schema
mysql
performance_schema
```

## Composer

To install the Composer on Linux, run the following command:

```
$ curl -sS https://getcomposer.org/installer | php
```

If your Linux does not have `curl`, install it with the command `sudo apt-get install curl`.

After installation, note that there is a file `composer.phar` in the directory where you ran the above command. You can run this file with PHP. For instance, run the following command line:

```
$ php composer.phar --version
```

To become the global operating system composer, you must move it to the directory `/usr/local/bin` , with the following command:

```
$ sudo mv composer.phar /usr/local/bin/composer
```

After that, you can verify that the composer is properly installed by running the following command:

```
$ composer --version
```

## Laravel

The Laravel will be installed by the Composer. To install it, run the following command:

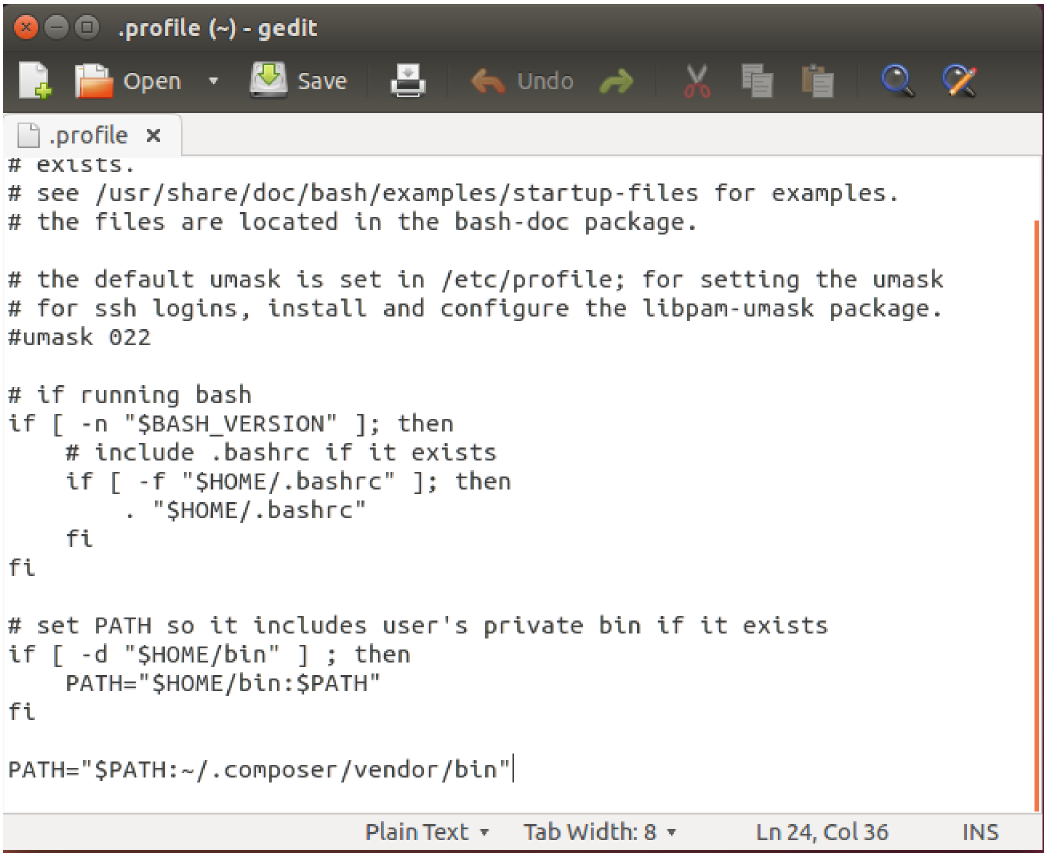
```
$ composer global require "laravel/installer=~1.1"
```

After the installation, you must add the directory ∼/.composer/vendor/bin to PATH of the system. In Ubuntu, this can be done by editing the file .profile, by the following command:

```
$ gedit /home/user/.profile
```

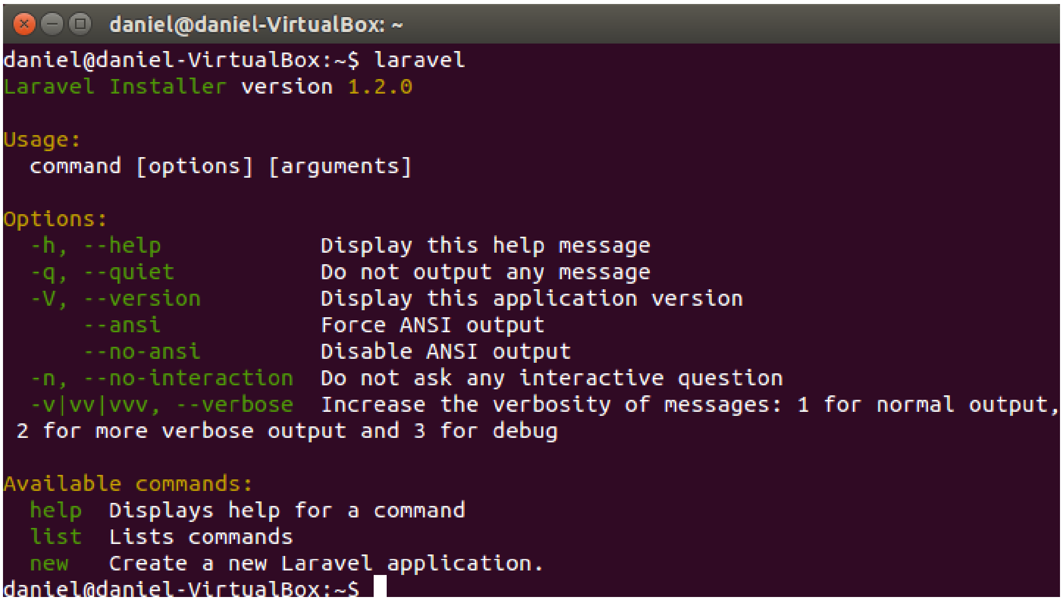
At the end of the file, add the following line:

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



```
# exists.
# see /usr/share/doc/bash/examples/startup-files for examples.
# the files are located in the bash-doc package.

# the default umask is set in /etc/profile; for setting the umask
# for ssh logins, install and configure the libpam-umask package.
#umask 022

# if running bash
if [ -n "$BASH_VERSION" ]; then
    # include .bashrc if it exists
    if [ -f "$HOME/.bashrc" ]; then
        . "$HOME/.bashrc"
    fi
fi

# set PATH so it includes user's private bin if it exists
if [ -d "$HOME/bin" ] ; then
    PATH="$HOME/bin:$PATH"
fi

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

After saving the file `.profile`, is necessary to login again on Linux, so that the `profile` is reloaded. After the login, open the terminal and type `laravel`, to have a response similar to the following image:



```
daniel@daniel-VirtualBox:~$ laravel
Laravel Installer version 1.2.0

Usage:
  command [options] [arguments]

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

Available commands:
  help  Displays help for a command
  list  Lists commands
  new   Create a new Laravel application.
daniel@daniel-VirtualBox:~$
```

This means that the laravel is installed in the system, and you can run several commands that it provides. For example, to create a new application, simply run:

```
$ laravel new blog
```

Whose result is the application “blog” duly established with all its default structure.

## Bower

To install the Bower, you need to install the `git` and the `npm`:

```
$ sudo apt-get install git npm
```

After installing these packages, run:

```
$ sudo npm install -g bower
```

And, after installation, run the following command:

```
$ sudo ln -s /usr/bin/nodejs /usr/bin/node
```

After that, you can install most javascript frameworks on the market by executing the command `bower install`. The following example installs the jQuery.

```
$ bower install jquery
```

With the above command, jQuery will be installed in the directory and you can reference it in the file `html` as follows:

```
<script src="bower_components/jquery/dist/jquery.min.js"></script>
```

## AngularJS + Bootstrap

You can install the AngularJS with the Bootstrap using the Bower, as follows:

```
$ bower install angular bootstrap
```

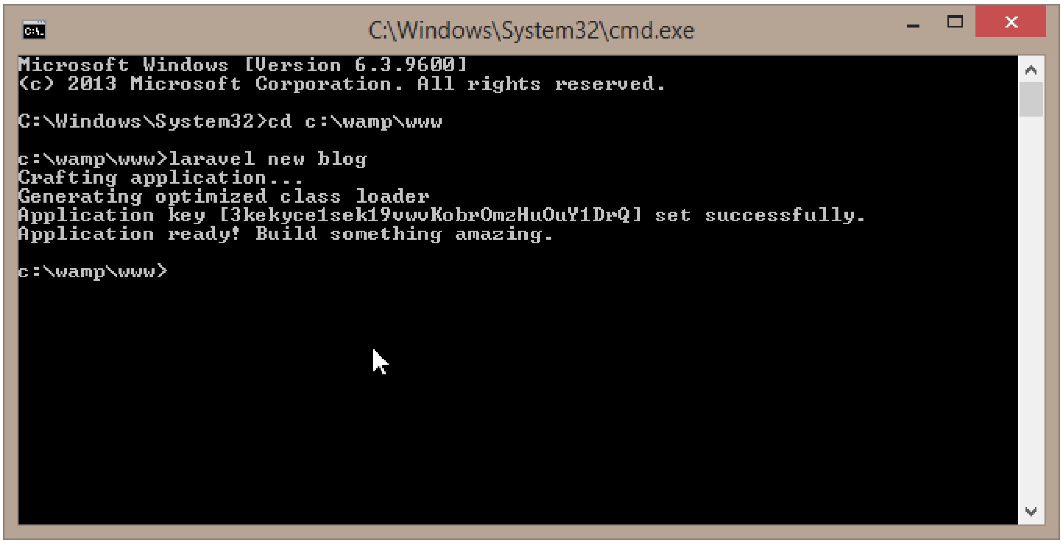
# Part 2 - Laravel

# Chapter 4- Getting to know the Laravel

Now that we have all libraries properly installed, we can initiate the study of Laravel. An application in Laravel can be created by the following command:

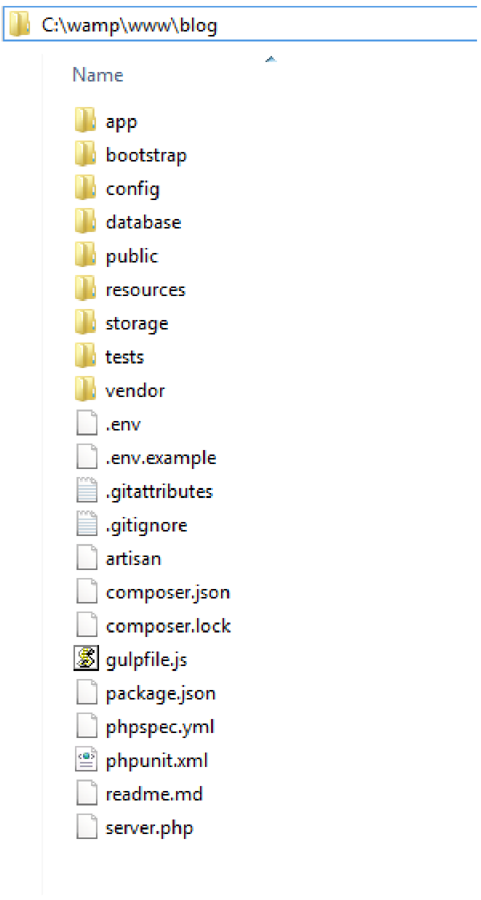
```
laravel new blog
```

With this command, an application with the name `blog` is created. Let's run this command in the web directory of our system, which can be `/home/user/www` on Linux or `c:\wamp\www` on Windows .



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

C:\Windows\System32>cd c:\wamp\www

c:\wamp\www>laravel new blog
Crafting application...
Generating optimized class loader
Application key [3kekyce1sek19vwvKobrOmzHuOuY1DrQ] set successfully.
Application ready! Build something amazing.

c:\wamp\www>
```

The file structure created in the project "blog" is similar to the following figure:



```
app
bootstrap
config
database
public
resources
storage
tests
vendor
.env
.env.example
.gitattributes
.gitignore
artisan
composer.json
composer.lock
gulpfile.js
package.json
phpspec.yml
phpunit.xml
readme.md
server.php
```

## Configuring the virtual host

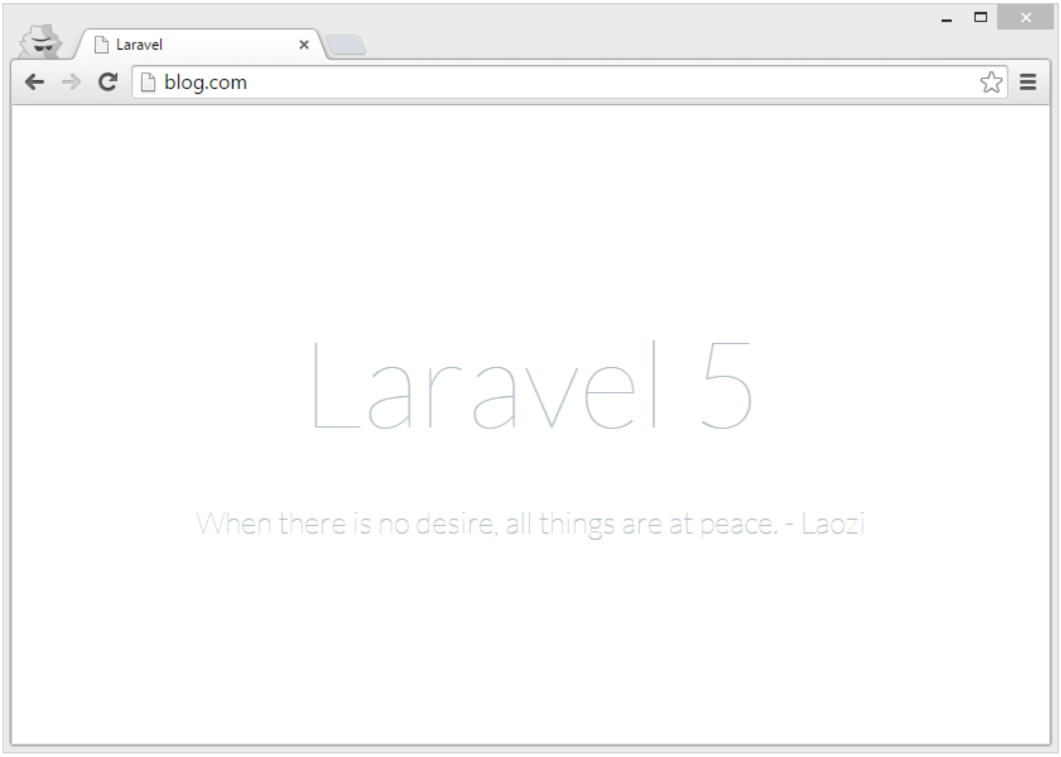
The first task after you create the application is to set up your *virtual host*. Let's assume that this application should be accessed via the url `blog.com`. For the Windows environment, edit the file `C:\wamp\bin\apache\apache2.4.9\conf\httpd.conf` including the following text in the end:

```
<VirtualHost *>
    ServerName blog.com
    DocumentRoot "c:/wamp/www/blog/public"
    <Directory "c:/wamp/www/blog/public">
        Options FollowSymLinks
        AllowOverride All
        Order allow,deny
        Allow from all
    </Directory>
</VirtualHost>
```

And change the `hosts` file including the following text:

```
127.0.0.1         blog.com
```

After restart the Wamp Server, open the url `blog.com`, getting the response:



### For Linux environments

Follow the steps in Chapter 3 to create the virtual host, as done for the domain mysite.com.

Note that the virtual domain was created pointing to the folder `blog/public`, which should be the only directory visible to external access. For security reasons, the other directories of the application, such as “app” and “config”, should never have public access. Do not create the virtual domain pointing to the directory of the application, especially on production servers. Always create it pointing to the `public` directory.

## Directory permission

If you have any problem related to permission while accessing the url `blog.com`, for instance `Failed to open stream: Permission denied`, you must give written permission to the `storage` directory of the application. On Linux, do:

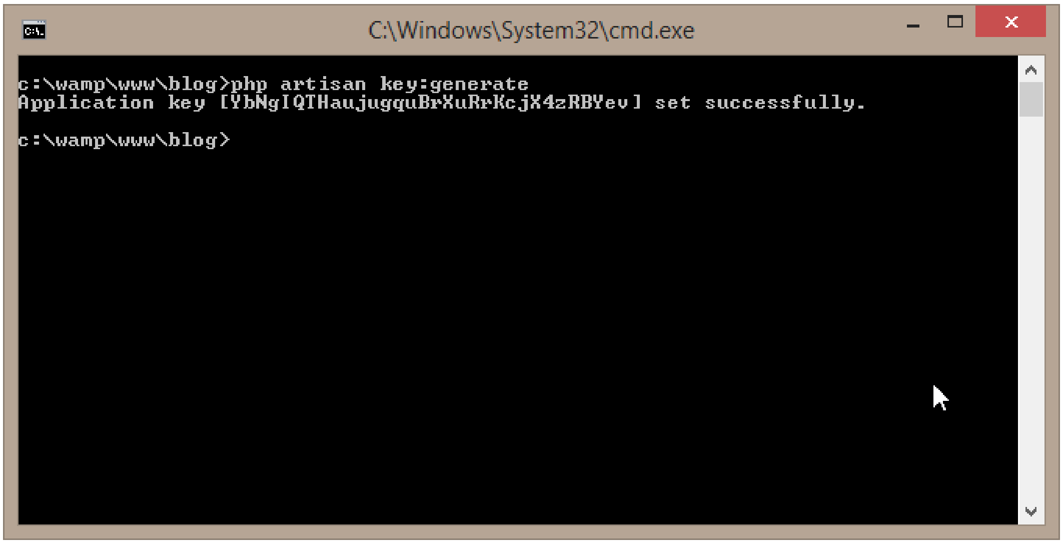
```
$ sudo chmod -R 777 www/blog/storage
```

## Generating an encryption key

It is important for the security of your application to encrypt any type of information that will be allocated in the session or the cookies that the system creates. To do this, you must run the following command:

```
php artisan key:generate
```

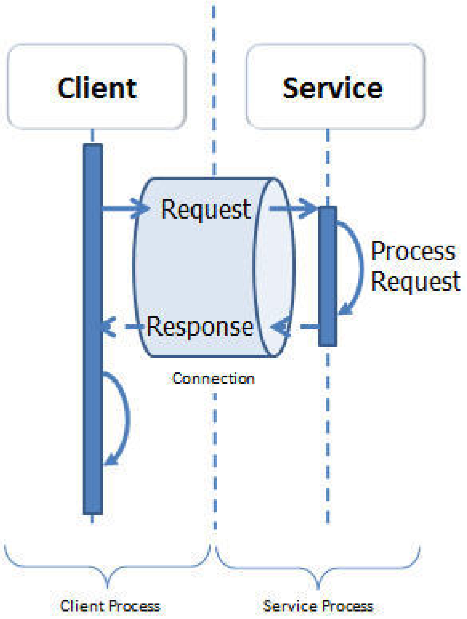
Run it in the blog directory, as shown in the following figure:



```
c:\wamp\www\blog>php artisan key:generate
Application key [YbNgIQTHaujugquBrXuRrKcjX4zRBYev] set successfully.

c:\wamp\www\blog>
```

## Routes

In the simplest definition of HTTP access, we always have two common actions in any web technology: *Request* and *Response*. A * Request * is performed when the browser (which we call client) makes an access to a server via an URL. This URL contains, in the most basic format, the access path to the server, which is commonly called web address, and the type of the request, which can be GET and POST, among others. After the web server processes this request, it sends a response to the client, usually in text format. This "conversation" between the client and the server can be illustrated in the following figure:



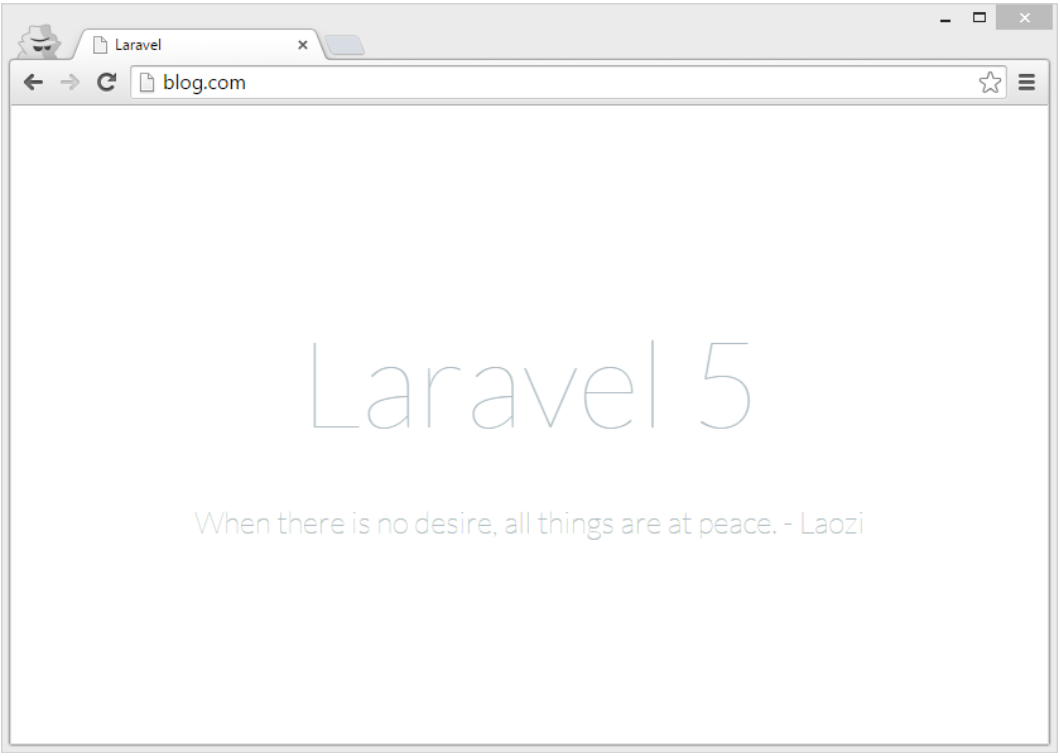
This idea must be understood so that we can continue to the routing definition. Defining a route is setting up a particular URL to perform something unique within our system. That is, through the routing we can create URLs that will define how the AngularJS will access the server to get data. This step is critical for us to understand how AngularJS will "talk" to the Laravel.

First, let's open the Laravel routing, which is located in `app/Http/routes.php`:

**blog\appHttp\routes.php**

```
<?php
Route::get('/', function () {
    return view('welcome');
});
```

Using the `Route::get` we are creating a custom configuration for the GET request, which is the request made by the browser when we access any URL. The first parameter of this method is `/` which means the root of the Web site address, in this case `blog.com`. The second parameter is an anonymous function that will be executed to set the response to the client. This function contains the following code `return view('welcome');` that defines the creation of a `view` from laravel, as in the following image:

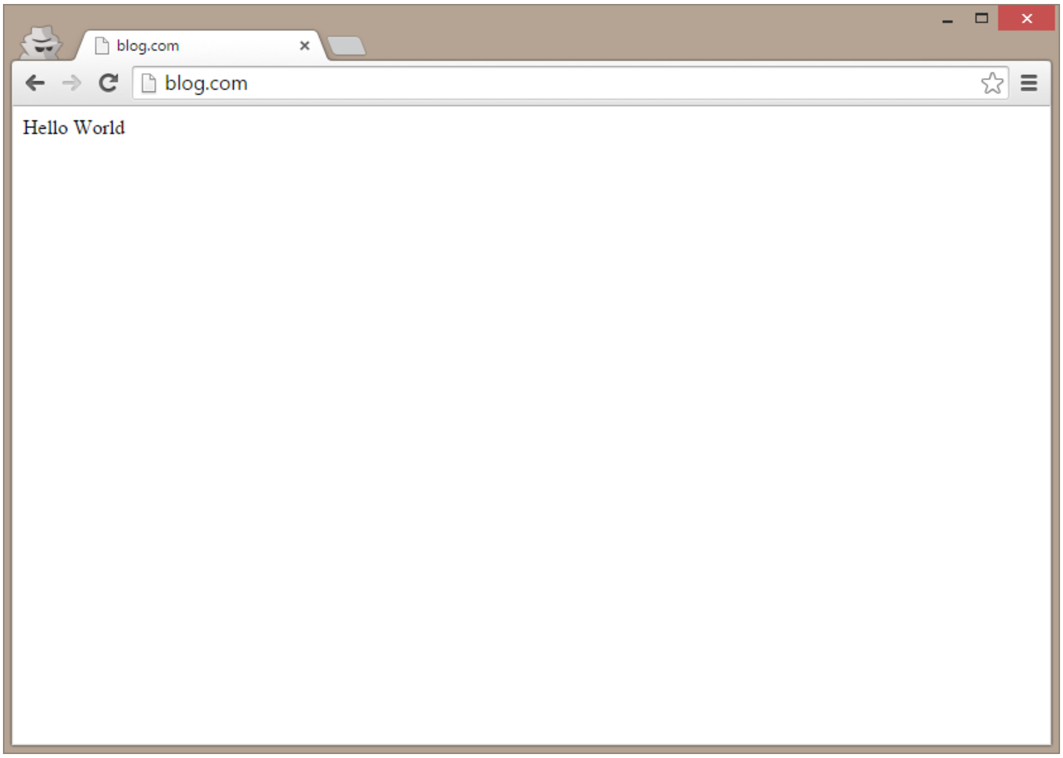


Let's do a simple change to the code so that instead of generating a view from Laravel, it returns the text "Hello World". See:

**blog\appHttp\routes.php**

```
<?php
Route::get('/', function () {
    return "Hello World";
});
```

After refreshing the blog.com page, we have the following result:



Hello World

With this, we can use the Laravel routing to create all the necessary functions for the AngularJS to communicate with the server. When we create a real project, you will see that the starting point of the project is to create the routing configuration, that we will call RESTful API, even though the term API is not the correct definition for this process.

To create a RESTful API, it is necessary to know all the routing configurations that the Laravel provides, and we will see that below in detail.

## Routing types (verbs)

A web request can be classified in many different types, that we call by the term `VERBS`. In our examples, we will use the following types: `GET, POST, PUT, DELETE`. Each type will define a common action, which can be understood by the following table:

| Method | Action | Example |
|---|---|---|
| GET | Responds with simple information about a resource | GET blog.com/user/1 |
| POST | Used to add data and information | POST blog.com/user |
| PUT | Used to edit data and information | PUT blog.com/user |
| DELETE | Used to remove an information | DELETE blog.com/user/1 |

To use other types of request in addition to GET, you can use the following code:

**blog\app\Http\routes.php**

```
<?php
Route::get('/', function () {
    return "Hello World";
});

Route::post('user/', function () {
    return "POST USER";
});

Route::put('user/', function () {
    return "PUT USER";
});

Route::delete('user', function () {
    return "DELETE USER";
});
```

You can also use more than one type of request, as in the following example:

**blog\app\Http\routes.php**

```
<?php
Route::match(['get', 'post'], '/', function () {
    return 'Hello World with GET or POST';
});
```

Is valid to remember that, by convention, everytime we change data, we should use POST or PUT, and when any data is deleted, use DELETE. In current browsers, PUT and DELETE are not yet supported, but that will not be a problem for our system because all AngularJS client requests made to the Laravel server will be via Ajax.

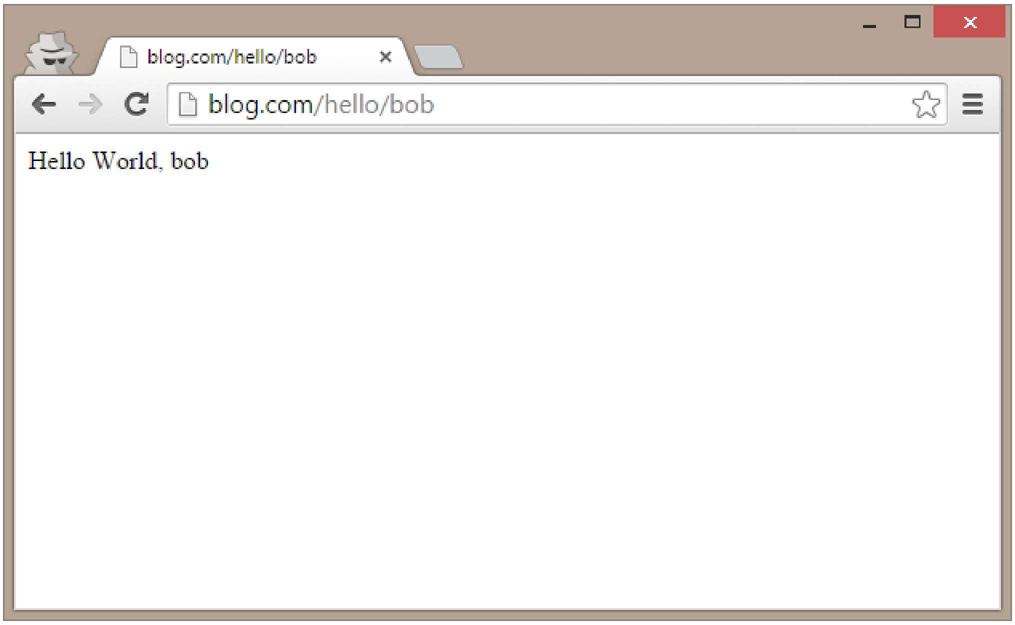
## Passing parameters in routing

You can configure one or more parameters that must be passed by the URL. For instance, the URL "/hello/bob" has the following response: "Hello world!". To do this, create the parameter `{name}`, according to the code as follows:

**blog\app\Http\routes.php**

```
<?php
Route::get('/hello/{name}', function ($name) {
    return "Hello World, $name";
});
```

Note that the parameter created is defined in the URL with the use of keys, and also set as a parameter in the anonymous function. The result of the code above should be as below:



Hello World, bob

You can create as many parameters as needed, recommending only that use `/` to each of them. You can also pass an optional parameter through the use of the `?`. The following example shows a simple way to add 2 or 3 numbers:

**blog\app\Http\routes.php**

```php
<?php
Route::get('/sum/{value1}/{value2}/{value3?}',
                        function ($value1,$value2,$value3=0) {

        $sum =  $value1+$value2+$value3;
        return "Sum: $sum";

});
```

## Using regular expressions

Sometimes it is necessary to set up a condition for the routing to be successful. In the sum of numbers example, what would happen if we used the url "blog.com/sum/1/two/4"? Possibly throw an error in PHP, since we need to sum only numbers. In this way, we can use the attribute `where` as a condition for routing to be performed. The following example ensures that the sum is performed only with numbers:

**blog\app\Http\routes.php**

```
<?php
Route::get('/sum/{value1}/{value2}/{value3?}',
                    function ($value1,$value2,$value3=0) {
    $sum =  $value1+$value2+$value3;
    return "Sum: $sum";
})->where([
                        'value1'=>'[0-9]+',
                        'value2'=>'[0-9]+',
                        'value3'=>'[0-9]+'
                        ]);
```

To validate a string, you can use `[A-Za-z]`. Any level of regular expression validation can be used.

Many routes use the primary key of the record in their URLs, which makes it necessary to verify if this key is an integer. For example, to delete a user, we could use the following setup:

**blog\app\Http\routes.php**

```
<?php
Route::delete('/user/{id}', function ($id) {
    return "delete from user where idUser=$id";
})->where('id', '[0-9]+');
```

The example above is perfectly valid, but assume that almost all its routes have ids, and must be validated. In that case all routes would have the `->where()`, making the code more repetitive and breaking the DRY (Don't Repeat Yourself) principle.

To fix this problem we can set up that every variable called `id` must be a number. To do this in Laravel, we must add a `pattern` in the file `app/Providers/RouteServiceProvider.php`, as follows:

**blog\app\Providers\RouteServiceProvider.php**

```
<?php

namespace App\Providers;

use Illuminate\Routing\Router;
use Illuminate\Foundation\Support\Providers\RouteServiceProvider as \
ServiceProvider;

class RouteServiceProvider extends ServiceProvider
{
    protected $namespace = 'App\Http\Controllers';

    public function boot(Router $router)
    {

        $router->pattern('id', '[0-9]+');

        parent::boot($router);
    }
    /// code continues

}
```

The class `RouteServiceProvider` provides all the routing functionality of your application, including the creation of routes that are in the file `app\http\routes.php`. Using the `pattern` you can set a default regular expression for a variable, in this case `id`. This way, any variable called `id` in routing will have the regular expression tested.

## Naming routings

You can add a name to a route to use it in other routes. This avoids the use of writing directly to the URL route, improving the code stream. In the following example, assume two distinct routes, it will create a new user and return a text with a link to his profile. You can write the following code:

**blog\app\Http\routes.php**

```
<?php
Route::get('user/{id}/profile', function ($id) {
    return "Show Profile id: $id";
});

Route::get('user/new', ['as' => 'newUser', function () {
    return "User created.  <a href='blog.com/user/1/profile'>See Pro\
file</a> ";
}]);
```

Note that the link `< a href ... >` created, include the domain name and the path of `blog.com` route, which is not good because if there is any change in the name of the domain or URL of the route this link will no longer work. To fix it, we should initially name the route that displays the user's profile, as follows:

**blog\app\Http\routes.php**

```
<?php
Route::get('user/{id}/profile',
    ['as' => 'profileUser', function ($id) {
    return "User profile id: $id";
}]);
```

Note that the second parameter of the method `Route::get` becomes an *array*, which contains two elements, the first being identified by the `key` and containing the name of the routing, and the second the function we already know.

After you create the name of the route, you can get the full URL using the `route`, as in the following code:

**blog\app\Http\routes.php**

```
<?php
Route::get('user/{id}/profile',
        ['as' => 'profileUser', function ($id) {
    return "User profile id $id";
}]);

Route::get('user/new', ['as' => 'newUser', function () {
    $userProfileLink = route('profileUser',['id'=>1]);
    return "User Created.
    <a href='$userProfileLink'>Profile</a>";
}]);
```

In this code, we use the `route` method passing the name of the route and the parameter `id`.

## Grouping routes

Laravel routes configuration allows the grouping of routes to keep a better reading of the source code. The following example is perfectly valid:

**blog\app\Http\routes.php**

```php
<?php
Route::get('/post/new', function () {
    return "/post/new";
});

Route::get('/post/edit/{id}', function ($id) {
    return "/post/edit/$id";
});

Route::get('/post/delete/{id}', function ($id) {
    return "/post/delete/$id";
});
```

But the code of these 3 routes can be improved with the command `Route::group` and a prefix, as follows:

**blog\app\Http\routes.php**

```php
<?php
Route::group(['prefix' => 'post'], function () {
    Route::get('/new', function () {
        return "/post/new";
    });

    Route::get('/edit/{id}', function ($id) {
        return "/post/edit/$id";
    });

    Route::get('/delete/{id}', function ($id) {
        return "/post/delete/$id";
    });
});
```

That is, by creating a prefix, all routes within the `Route::group` will be bound to it.

## Middleware

A middleware is a way to filter the requests that are processed by Laravel. There are routes that, for instance, can only be performed if the user is authenticated, or any other type of requirement. A middleware is created in the folder `app/Http/Middleware`, which already has some ready for use.

To better understand the concept, let's focus on authentication. The Laravel already has a system ready to authenticate (login) the user, and we will use it here to perform a test. The authentication middleware is located in `app/Http/Middleware/Authenticate.php` and you can use it on its route through the following example:

**blog\app\Http\routes.php**

```
<?php
Route::get('/testLogin', ['middleware' => 'auth', function () {
   return "logged!";
}]);
```

In this code, by accessing `blog.com/testLogin`, the page will either be redirected to the login screen, or throw an unauthorized access error. These details can be viewed in the file `app/Http/Middleware/Authenticate.php`, on the `handle` method. The main idea of the middleware is providing a way to perform actions before and after the request, in order to accomplish some specific task.

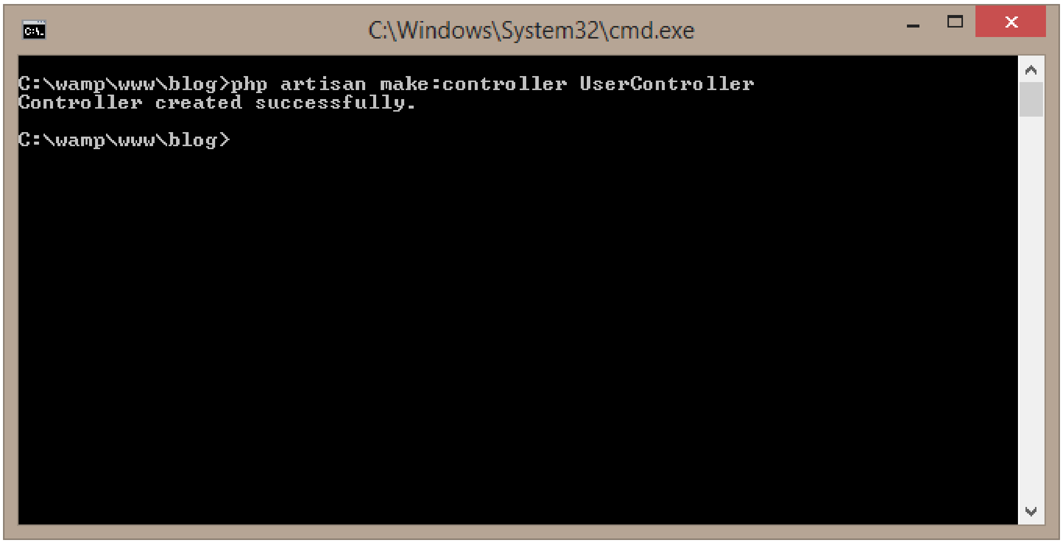
## Controllers

Until now we addressed several concepts about the routing in Laravel and how we can, through the URL of an application, perform different tasks. The file `blog\app\Http\routes.php` create several routes, but we will not program all the system functionalaties in it. Following the MVC development pattern, most of the functionality of the system are allocated in the controller and the model of the application.

A controller is a piece of the application that usually reflects a common entity. For example, a blog have several entities such as the user, a post and a comment. All these entities, which usually are also system tables, have their own controllers. With that we leave the `routes.php` file to configure less common routes of the application, and use the controllers to set up routes that relate to the entity in question. That is, the routes related to the user will be configured in the `User` controller, and the routes related to a comment will be set up in the `Comment` controller. All the controllers are created in the folder `app\Http\Controllers`, with the suffix "Controller".

Create a controller is relatively simple, you can create a php file or use the command line, as the following example:

```
php artisan make:controller UserController
```



```
C:\wamp\www\blog>php artisan make:controller UserController
Controller created successfully.

C:\wamp\www\blog>
```

## Implicit Controllers (automatic)

After running the command, the controller `UserController` is created, with some relevant code. But what we want for our system is link the routing to the methods of the controller. That is, after we create the controller `UserController` we want to somehow make the URL "blog.com/user/new" to call a method within the controller, there is no more need to edit the file `routes.php`. Setting up is relatively easy with the code `Route::controller`, which must be added to the `routes.php` file, and must reference the part of the URL that will contain the redirection and the controller itself.

In the case of the controller `UserController`:

**blog\app\Http\routes.php**

```
<?php
Route::get('/', function () {
    return "Hello World";
});

Route::controller("user","UserController");
```

After you setting up the URL, that contains `/user`, will call `UserController` methods, we just need to create these methods, whose default is to prefix the request type (Get, Post, Put, etc) and concatenate with the method name. We can then change the class `blog\app\Http\Controllers\UserController.php` to:

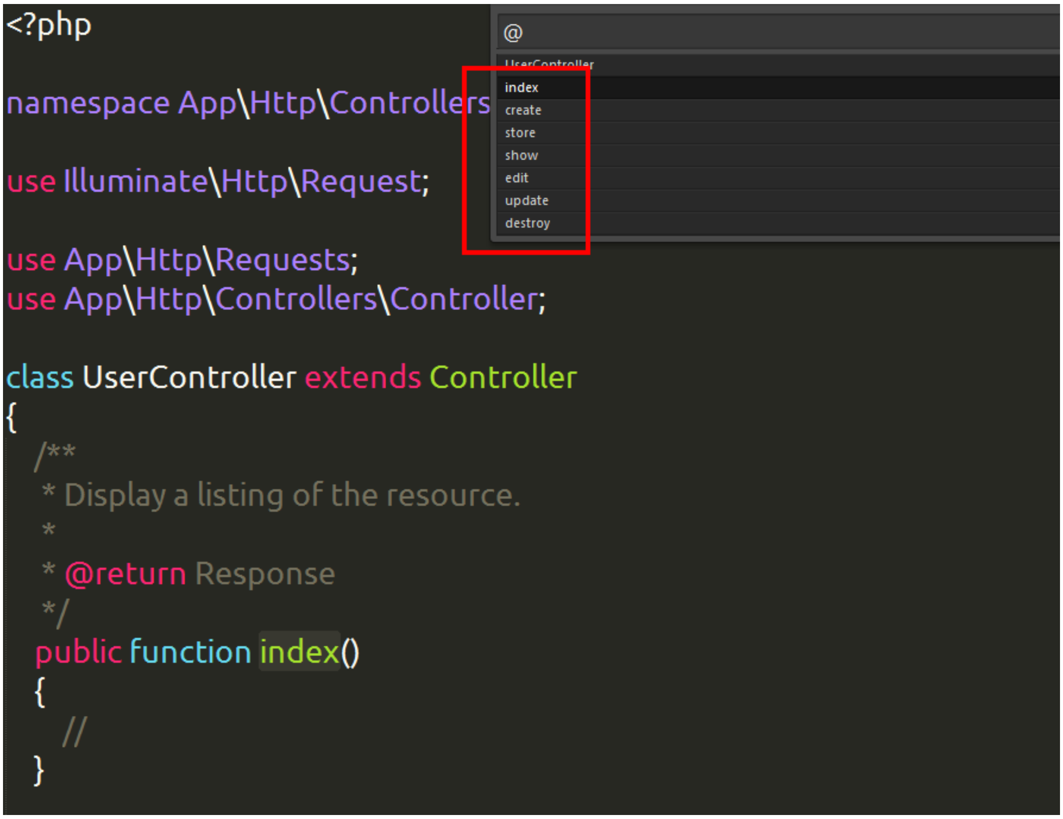
**blog\app\Http\Controllers\UserController.php**

```
<?php

namespace App\Http\Controllers;

use Illuminate\Http\Request;

use App\Http\Requests;
use App\Http\Controllers\Controller;

class UserController extends Controller
{

    public function getIndex(){
        return "user/";
    }
    // ....

}
```

This means that, when performing a call GET with the URL “blog.com/user/show/1”, the method `getShow` of class `UserController` is called, assigning the parameter `id` of the method, and returning the text “get user/show/1”. Note that only the configuration of the controller is in the `routes.php`, and the whole Setup to access the methods of the entity `User` is in the `UserController` class.

## Controllers and Resource

We have seen how to call the routes of an application to a specific controller, but we can go a little further in the configuration of a controller and create a resource, which is a set of preconfigured methods with its pre-designed request types. When we create the controller with the PHP command `make artisan: controller` the following methods are created automatically:



```
<?php

namespace App\Http\Controllers

use Illuminate\Http\Request;

use App\Http\Requests;
use App\Http\Controllers\Controller;

class UserController extends Controller
{
   /**
    * Display a listing of the resource.
    *
    * @return Response
    */
   public function index()
   {
      //
   }
```

Create a resource in the `routes.php` file , with the following code:

**blog\app\Http\routes.php**

```
<?php
Route::get('/', function () {
    return "Hello World";
});

Route::controller("user","UserController");

//Resource:
Route::resource('user', 'UserController');
```

We have enabled the following configuration:

| Type | Path | Action | Method |
|---|---|---|---|
| GET | /user | index | user.index |
| GET | /user/create | create | user.create |
| POST | /user | store | user.store |
| GET | /user/{id} | show | user.show |
| GET | /user/{id}/edit | edit | user.edit |
| PUT | /user/{id} | update | user.update |
| DELETE | /user/{id} | delete | user.delete |

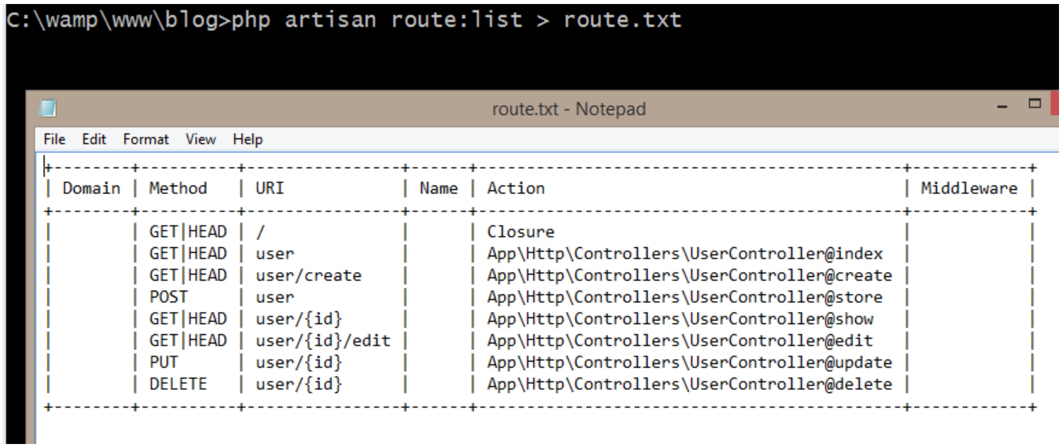
## Explicit controllers (manual)

When we use `Route::controller`, we define an automatic access between the request and the controller, needing only to prefix the method name of the controller. There is another way to set up the controller application access with the creation of each method, as the following example:

**blog\app\Http\routes.php**

```
<?php
Route::get('/', function () {
    return "Hello World";
});

Route::get('user/', 'UserController@index');
Route::get('user/create', 'UserController@create');
Route::post('user/', 'UserController@store');
Route::get('user/{id}', 'UserController@show');
Route::get('user/{id}/edit', 'UserController@edit');
Route::put('user/{id}', 'UserController@update');
Route::delete('user/{id}', 'UserController@delete');
```

In this way, you need to write each route in the `routes.php` file, but the implementation of each route continues in the controller. There are some small advantages in writing the routes manually. One of them is to use the PHP command `artisan route:list` to get the list of routes of your application, as the following image.



```
C:\wamp\www\blog>php artisan route:list > route.txt
```

```
+--------+----------+-----------------+------+-------------------------------------------------+------------+
| Domain | Method   | URI             | Name | Action                                          | Middleware |
+--------+----------+-----------------+------+-------------------------------------------------+------------+
|        | GET|HEAD | /               |      | Closure                                         |            |
|        | GET|HEAD | user            |      | App\Http\Controllers\UserController@index       |            |
|        | GET|HEAD | user/create     |      | App\Http\Controllers\UserController@create      |            |
|        | POST     | user            |      | App\Http\Controllers\UserController@store       |            |
|        | GET|HEAD | user/{id}       |      | App\Http\Controllers\UserController@show        |            |
|        | GET|HEAD | user/{id}/edit  |      | App\Http\Controllers\UserController@edit        |            |
|        | PUT      | user/{id}       |      | App\Http\Controllers\UserController@update      |            |
|        | DELETE   | user/{id}       |      | App\Http\Controllers\UserController@delete      |            |
+--------+----------+-----------------+------+-------------------------------------------------+------------+
```

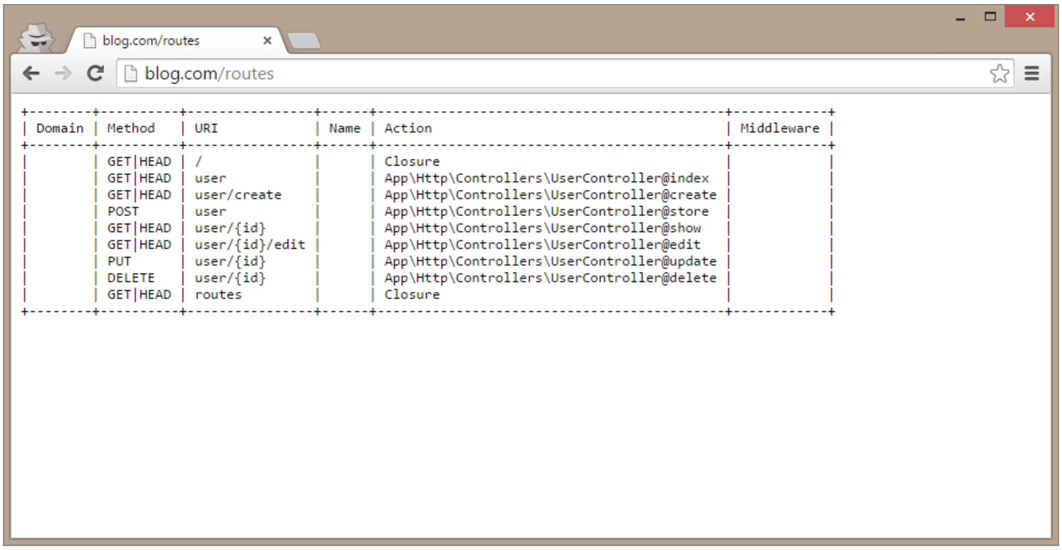
This will be very useful for the server access API documentation. Another advantage is having the accurate control of how your web application is being exposed via the API, thus ensuring a better comfort when debugging the code.

You can also create a routing to display all existing routes in the browser itself, as the following code:

**blog\app\Http\routes.php**

```
<?php

Route::get('routes', function() {
     \Artisan::call('route:list');
     return "<pre>".\Artisan::output();
});
```

It displays the following output:



```
+--------+----------+----------------+------+--------------------------------------------+------------+
| Domain | Method   | URI            | Name | Action                                     | Middleware |
+--------+----------+----------------+------+--------------------------------------------+------------+
|        | GET|HEAD | /              |      | Closure                                    |            |
|        | GET|HEAD | user           |      | App\Http\Controllers\UserController@index  |            |
|        | GET|HEAD | user/create    |      | App\Http\Controllers\UserController@create |            |
|        | POST     | user           |      | App\Http\Controllers\UserController@store  |            |
|        | GET|HEAD | user/{id}      |      | App\Http\Controllers\UserController@show   |            |
|        | GET|HEAD | user/{id}/edit |      | App\Http\Controllers\UserController@edit   |            |
|        | PUT      | user/{id}      |      | App\Http\Controllers\UserController@update |            |
|        | DELETE   | user/{id}      |      | App\Http\Controllers\UserController@delete |            |
|        | GET|HEAD | routes         |      | Closure                                    |            |
+--------+----------+----------------+------+--------------------------------------------+------------+
```

## Implicit or explicit routing?

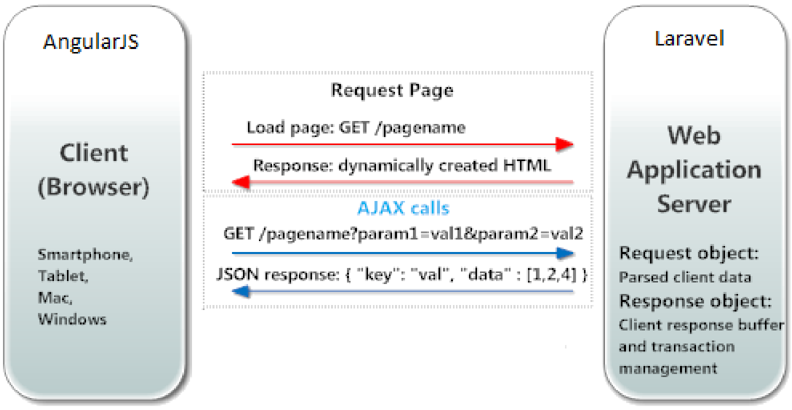
There is no consensus among the most correct way. Many programmers like the implicit mode because they don't have to define all the routes in the `routes.php` file, while others argue that creating these routes manually is the right thing to do. In this work, the focus is to create something that is simple and intuitive, so instead of having various methods in the controller that can be accessed freely by AngularJS, we have, in the `routes.php` file, all access setting, clearly and concisely.

The way, when we program the server access methods with AngularJS, we know that these methods are in a single file (API). There are other advantages to use the explicit access, as the response data formatting (JSON or XML), which will be discussed in a later chapter.

## Ajax

A request is the client (browser) access to the server. In this work, we will be addressing a Request as being AngularJS connecting to Laravel, via Ajax. This process is widely used to get data from the server, to populate an AngularJS table or just to persist data.

When Laravel respond to AngularJS, we have the answer (Response), which must necessarily be performed with a standard format, called JSON, which is a lighter format than XML and widely used in Ajax requests. The following image illustrates the process.


AngularJS
Client (Browser)
Smartphone, Tablet, Mac, Windows
Request Page
Load page: GET /pagename
Response: dynamically created HTML
AJAX calls
GET /pagename?param1=val1&param2=val2
JSON response: { "key": "val", "data" : [1,2,4] }
Laravel
Web Application Server
Request object: Parsed client data
Response object: Client response buffer and transaction management

We are here setting a data communication standard between the AngularJS and the Laravel, a pattern used in any client/server communication via Ajax. One of the advantages of this pattern is that both sides, server and client, are independent in the process, which means that if any some reason there is an change in the technology on the client or on the server, the pattern will stay the same.

For example, if there is a need to change the Laravel for some framework in Java (note that we changed even the programming language), simply create the same API with the same JSON responses and the client in AngularJS will stay the same.

Similarly, if we keep the Laravel on the server and use another client, as Android in a mobile device, it can make Ajax requests to the server and get the same data from the AngularJS.

## JSON Response

For the Laravel to reply in JSON, all we need is that the method on the controller return an Array or an object from Eloquent (we will see Eloquent in a later chapter).

For example, assuming the `routes.php` file contains:

**blog\app\Http\routes.php**

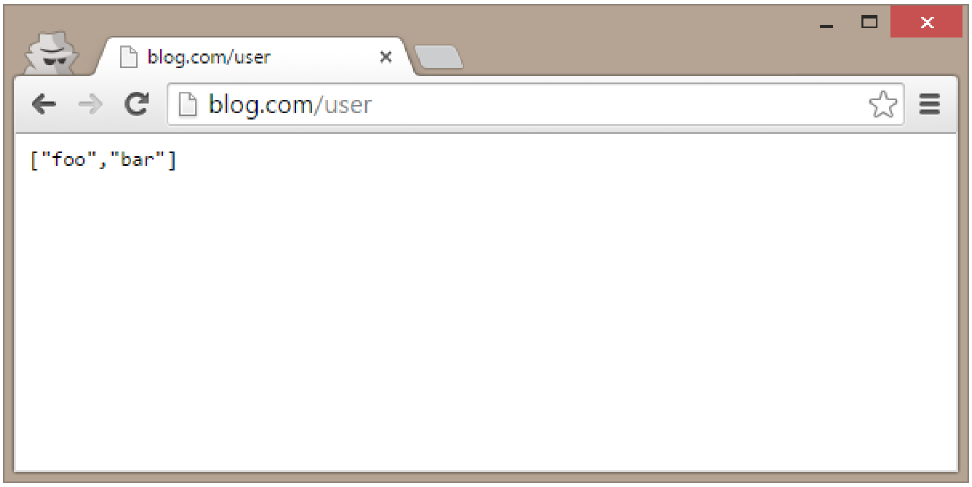
```php
<?php

Route::get('user/', 'UserController@index');
```

And the `index` method of the `UserController` is:

**blog\app\Http\Controllers\UserController.php**

```php
<?php

namespace App\Http\Controllers;

use Illuminate\Http\Request;

use App\Http\Requests;
use App\Http\Controllers\Controller;

class UserController extends Controller
{

    public function index(){
        $array = array('foo', 'bar');
        return $array;
    }

    // .......
}
```

We have the following response in the browser:



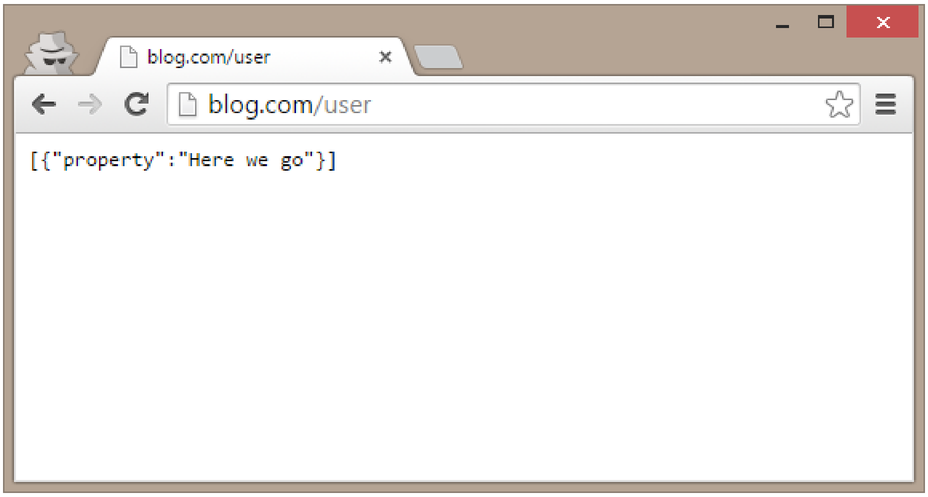
```
["foo","bar"]
```

That is the Array in JSON format. If there is the need to return an object, the ideal is to add this object to an Array and return it, as in the following example:

**blog\app\Http\Controllers\UserController.php**

```php
<?php

namespace App\Http\Controllers;

use Illuminate\Http\Request;

use App\Http\Requests;
use App\Http\Controllers\Controller;

class UserController extends Controller
{

    public function index(){
        $object = new \stdClass();
        $object->property = 'Here we go';
        return array($object);
    }

    // .......
}
```

Whose answer will be:



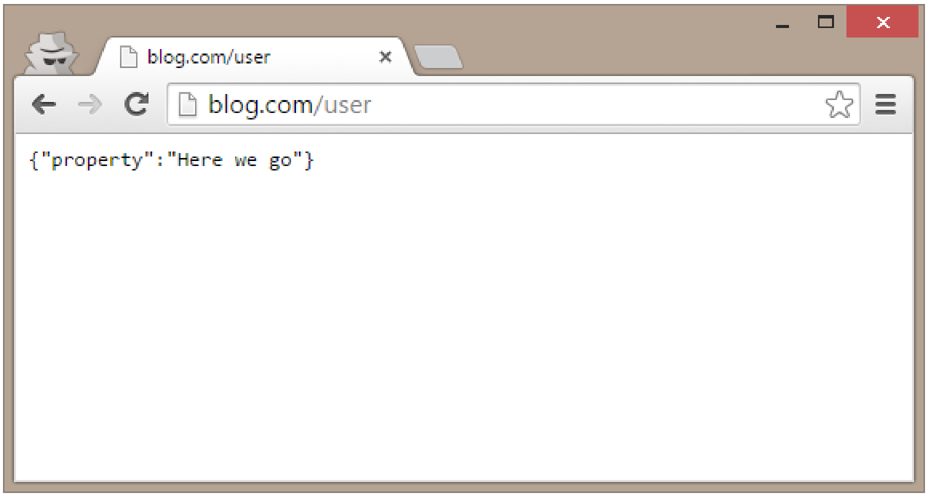
```
[{"property":"Here we go"}]
```

You can also use the method `response ()->json()`, as the following example:

**blog\app\Http\Controllers\UserController.php**

```
<?php

namespace App\Http\Controllers;

use Illuminate\Http\Request;

use App\Http\Requests;
use App\Http\Controllers\Controller;

class UserController extends Controller
{
    public function index(){
        $object = new \stdClass();
        $object->property = 'Here we go';
        return response()->json($object);
    }

    // .......
}
```

The result is displayed in the following image.



```
{"property":"Here we go"}
```

By Convention, we can define the Laravel Controller will always return an array or an object of Eloquent, always in JSON format.

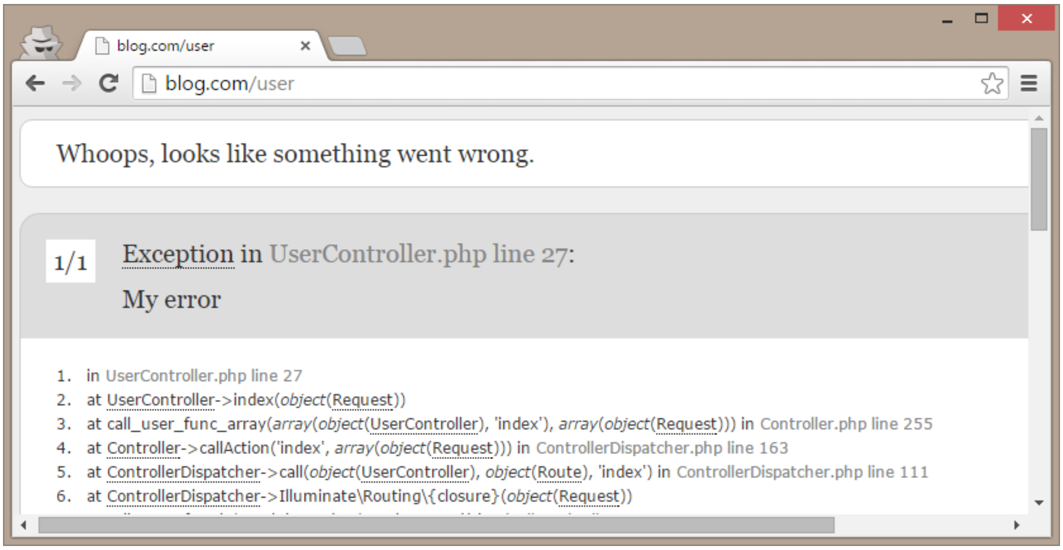
## Exceptions in JSON format

It is vital that the exceptions in Laravel return the same JSON format that we are adopting. In the following example, when you create a generic exception:

**blog\app\Http\Controllers\UserController.php**

```php
<?php

namespace App\Http\Controllers;

use Illuminate\Http\Request;

use App\Http\Requests;
use App\Http\Controllers\Controller;

class UserController extends Controller
{

    public function index(){
        throw new \Exception("My error");
        return array("ok");
    }

    // .......
}
```

We got the following reply:



Whoops, looks like something went wrong.

1/1 Exception in UserController.php line 27:

My error

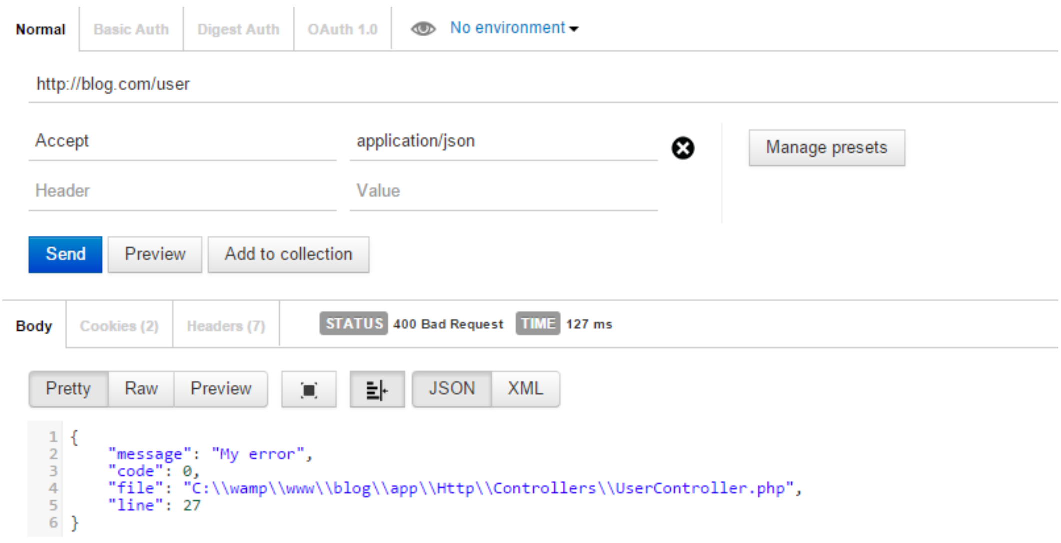
```
1. in UserController.php line 27
2. at UserController->index(object(Request))
3. at call_user_func_array(array(object(UserController), 'index'), array(object(Request))) in Controller.php line 255
4. at Controller->callAction('index', array(object(Request))) in ControllerDispatcher.php line 163
5. at ControllerDispatcher->call(object(UserController), object(Route), 'index') in ControllerDispatcher.php line 111
6. at ControllerDispatcher->Illuminate\Routing\{closure}(object(Request))
```

What definitely is not valid for the standard JSON. We have to somehow return this error in JSON. Fortunately this is entirely possible with Laravel, simply change the file `app\Exceptions\Handler.php` as shown in the following code:

**blog\app\Exceptions\Handler.php**

```php
<?php

namespace App\Exceptions;

use Exception;
use Symfony\Component\HttpKernel\Exception\HttpException;
use Illuminate\Foundation\Exceptions\Handler as ExceptionHandler;

class Handler extends ExceptionHandler
{
    protected $dontReport = [
        HttpException::class,
    ];

    public function report(Exception $e)
    {
        return parent::report($e);
    }

    public function render($request, Exception $e)
    {
        if ($request->wantsJson()){
            $error = new \stdclass();
            $error->message = $e->getMessage();
            $error->code = $e->getCode();
            $error->file = $e->getFile();
            $error->line = $e->getLine();
            return response()->json($error, 400);
        }
        return parent::render($request, $e);
    }
}
```

In this code, change the method `render` including a custom error in JSON format. This error will only be generated in Ajax requests, thanks to `if ($request->wantsJson())`. This is useful to define how the message is presented to the user. In order to be able to test this error, we must simulate an Ajax request to Laravel, and this can be accomplished with an extension of Google Chrome called *Postman*, adding the URL `blog.com/user` to the header in the GET request, as the following image:



http://blog.com/user

Accept: application/json

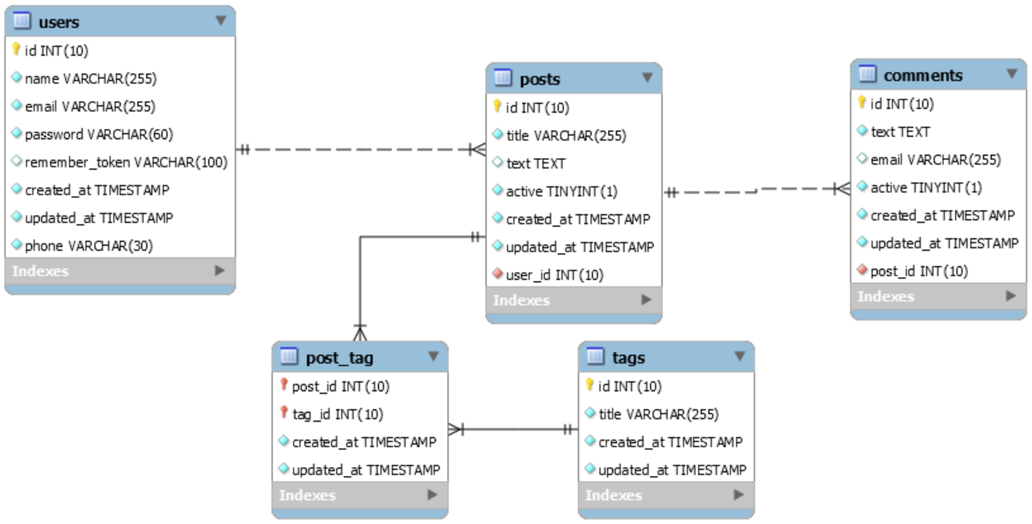
STATUS 400 Bad Request TIME 127 ms

```
{
    "message": "My error",
    "code": 0,
    "file": "C:\\wamp\\www\\blog\\app\\Http\\Controllers\\UserController.php",
    "line": 27
}
```

Summing up, the error is displayed as the request, and as the AngularJS will always make an Ajax call to Laravel, the error will also be displayed in the JSON format.

# Chapter 5 - Database and persistence

In this chapter we will learn how to manipulate the database from the application via Laravel, using its tools and persistence library, the Eloquent ORM. We will also learn how to create the tables with migration and enter the initial data (seeders). As our purpose in this work is to create a fully functional blog using Laravel and AngularJS, we will create a table structure similar to the following image.



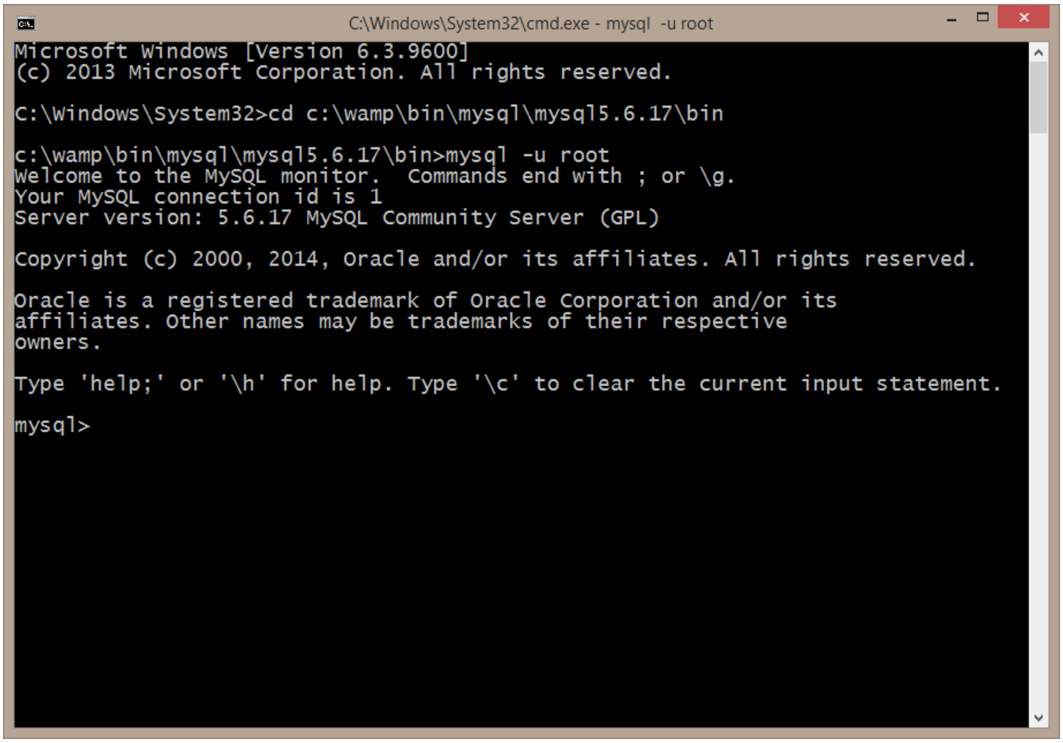
## Configuration

To configure MySQL database access, you must change the file `config/database.php`, informing the data needed for access, as shown in the following code:

**blog\config\database.php**

```
<?php

    //..........

        'mysql' => [
            'driver'    => 'mysql',
            'host' => 'localhost',
            'database'  => 'blog',
            'username'  => 'root',
            'password'  => '',
            'charset'   => 'utf8',
            'collation' => 'utf8_unicode_ci',
            'prefix'    => '',
            'strict'    => false,
        ],


        //..........
```

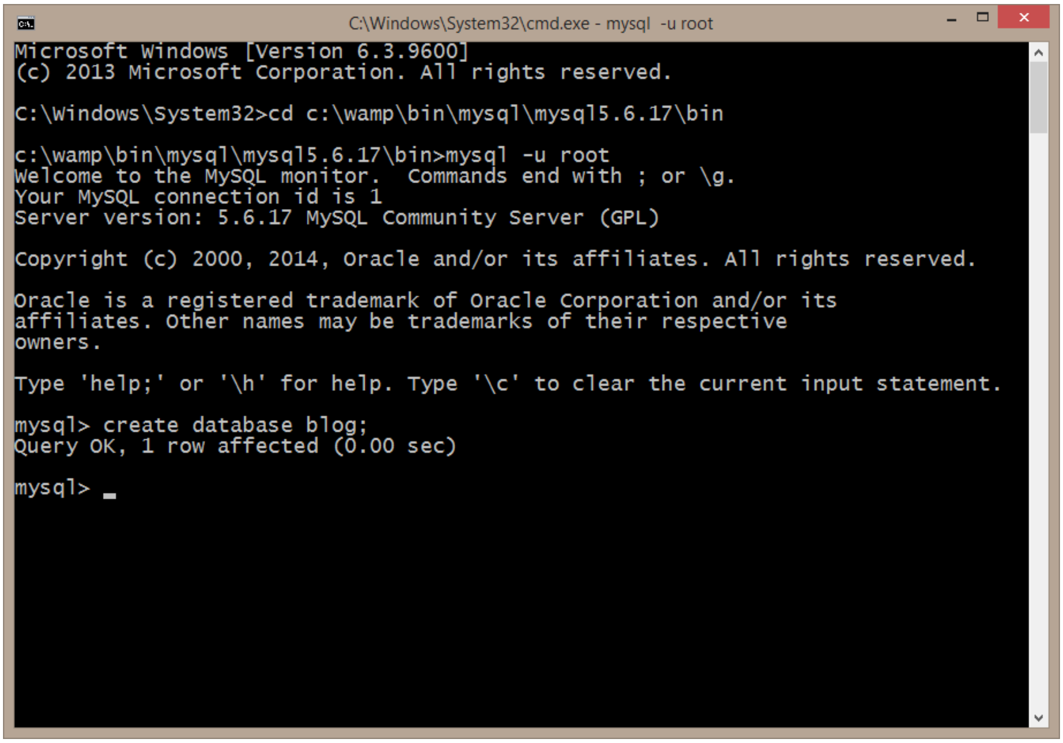
Note that the database in this example is "blog", but he has not yet been created. To do this, open the terminal and access the MySQL command line. In Windows, navigate to the folder of the Wamp MySQL Server, according to the following image. On Linux, just enter `mysql -u root` in the terminal, in order to obtain the same result.



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

C:\Windows\System32>cd c:\wamp\bin\mysql\mysql5.6.17\bin

c:\wamp\bin\mysql\mysql5.6.17\bin>mysql -u root
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 1
Server version: 5.6.17 MySQL Community Server (GPL)

Copyright (c) 2000, 2014, Oracle and/or its affiliates. All rights reserved.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql>
```

After entering the MySQL command line, create the database “blog” with the following command:

```
create database blog
```



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

C:\Windows\System32>cd c:\wamp\bin\mysql\mysql5.6.17\bin

c:\wamp\bin\mysql\mysql5.6.17\bin>mysql -u root
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 1
Server version: 5.6.17 MySQL Community Server (GPL)

Copyright (c) 2000, 2014, Oracle and/or its affiliates. All rights reserved.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> create database blog;
Query OK, 1 row affected (0.00 sec)

mysql> _
```

With the database created, we can create the system tables.

## Using Laravel to create the tables (Migration)

Laravel as other robust frameworks have a concept called *Migration*, which defines a way to create tables, fields, indexes etc, as if we were in a file version control. That means that instead of run instructions like "create table …" in the database, Laravel will take care of it, according to what we want.

As a test, let's take advantage of Laravel's ready template, which is the `User` class, that is created since we generate the application `blog` in the previous chapter. This class is located in `/app/User.php` and has, initially, three fields: `name, email,` and `password`. As the class has already been created by Laravel, the migration for it is also created. All migration files are located in the folder `blog/database/migrations`. Check this folder and find the file `XXXX_XX_XX_XXXXX_create_users_table.php`, where `X` is a date when the migration was created. This date is important for Laravel to know the order of migration to be performed. Analyzing migration "create_users_table", we have:

**blog\database\migrationsXXXX_create_users_table.php**

```
<?php

use Illuminate\Database\Schema\Blueprint;
use Illuminate\Database\Migrations\Migration;

class CreateUsersTable extends Migration
{
    /**
     * Run the migrations.
     *
     * @return void
     */
    public function up()
    {
        Schema::create('users', function (Blueprint $table) {
            $table->increments('id');
            $table->string('name');
            $table->string('email')->unique();
            $table->string('password', 60);
            $table->rememberToken();
            $table->timestamps();
        });
    }

    /**
     * Reverse the migrations.
     *
     * @return void
     */
    public function down()
    {
        Schema::drop('users');
    }
}
```

Note that we have two methods in the class, `up` and `down`. They exist so that we have the ability to move forward in the maintenance of the database, or back, as needed. This means that, if a table is created in the `up` method, it must be removed in the method `down`. The same for a field or index.

Inspecting the `up` method, we find the command `Schema::create('users')....` that initiates the creation of the *users* table. Note that a class in the template called `User` has a plural table called `users`. To keep this pattern (which is followed in all frameworks), let's keep the Model class names in singular, and table names in plural.

## Migration fields creation types

After create the table `users`, we have several statements to create the table fields. The following list enumerate the main commands:

| Command | Description | |
|---|---|---|
| $table->bigIncrements(`id`); | Creates a primary key to increment using the field "big integer" | |
| $table->bigInteger(`votes`); | | Equivalent to the BIGINT type |
| $table->binary(`data`); | Equivalent to the BLOB type | |
| $table->boolean(`confirmed`); | Equivalent to a BOOLEAN type | |
| $table->char(`name`, 4); | Equivalent to type CHAR, with defined size | |
| $table->date(`created_at`); | Equivalent to type DATE | |

| Command | Description |
|---|---|
| $table->dateTime(created_at); | Equivalent to the DATETIME type |
| $table->decimal(amount, 5, 2); | Equivalent to DECIMAL (5.2) |
| $table->double(column, 15, 8); | Equivalent to type DOUBLE (15.8) |
| $table->enum(choices, [foo, bar]); | Equivalent to the ENUM type |
| $table->float(amount); | Equivalent to type FLOAT |
| $table->increments(id); | Equivalent to auto-increment primary key |
| $table->integer(votes); | Equivalent to type INTEGER |
| $table->json(options); | Equivalent to the JSON type |
| $table->jsonb(options); | equivalent to JSONB type |
| $table->longText(description); | Equivalent to LONGTEXT |
| $table->mediumInteger(numbers); | Equivalent to MEDIUMINT type |
| $table->mediumText(description); | Equivalent to MEDIUMTEXT type |

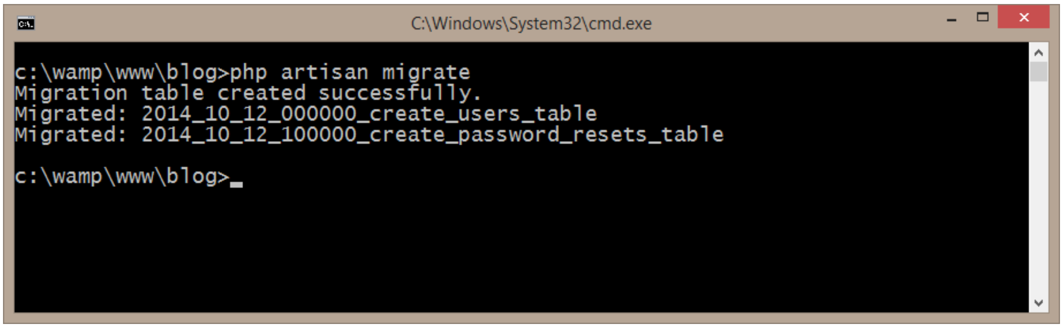
| Command | Description | |
|---|---|---|
| $table->morphs(`taggable`); | | Adds a column "taggable_id" of type INTEGER and another column "taggable_type" of type STRING |
| $table->nullableTimestamps(); | Equivalent to Timestamps(), allowing null | |
| $table->rememberToken(); | Adds a field "remember_token" as VARCHAR (100) | |
| $table->smallInteger(`votes`); | Equivalent to type SMALLINT | |
| $table->softDeletes(); | Adds a deleted_at column | |
| $table->string(`email`); | Equivalent to VARCHAR type | |
| $table->string(`name`, 100); | Equivalent to the type VARCHAR (100) | |
| $table->text(`description`); | Equivalent to type TEXT | |
| $table->time(`sunrise`); | Equivalent to the TIME type | |
| $table->tinyInteger(`numbers`); | Equivalent to the type TINYINT | |
| $table->timestamp(`added_on`); | Equivalent to the TYMESTAMP type | |
| $table->timestamps(); | Adds two columns, "created_at" and "updates_at" | |

## Running the migration

With *migration* ready, we can run it with the following command:

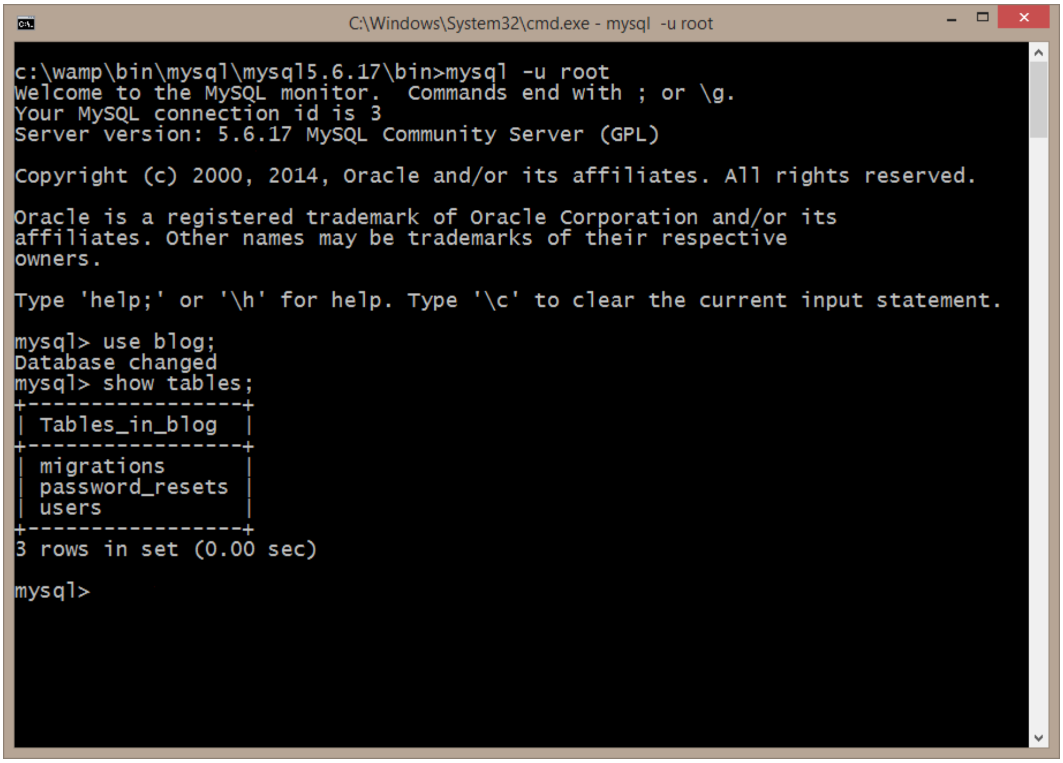
```
php artisan migrate
```

The response to this command is similar to the following image.



```
c:\wamp\www\blog>php artisan migrate
Migration table created successfully.
Migrated: 2014_10_12_000000_create_users_table
Migrated: 2014_10_12_100000_create_password_resets_table

c:\wamp\www\blog>_
```

To verify that the table was created correctly, use the command `show tables` with the database `blog` selected, as in the following image.


C:\Windows\System32\cmd.exe - mysql -u root

```
c:\wamp\bin\mysql\mysql5.6.17\bin>mysql -u root
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 3
Server version: 5.6.17 MySQL Community Server (GPL)

Copyright (c) 2000, 2014, Oracle and/or its affiliates. All rights reserved.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> use blog;
Database changed
mysql> show tables;
+-----------------+
| Tables_in_blog  |
+-----------------+
| migrations      |
| password_resets |
| users           |
+-----------------+
3 rows in set (0.00 sec)

mysql>
```

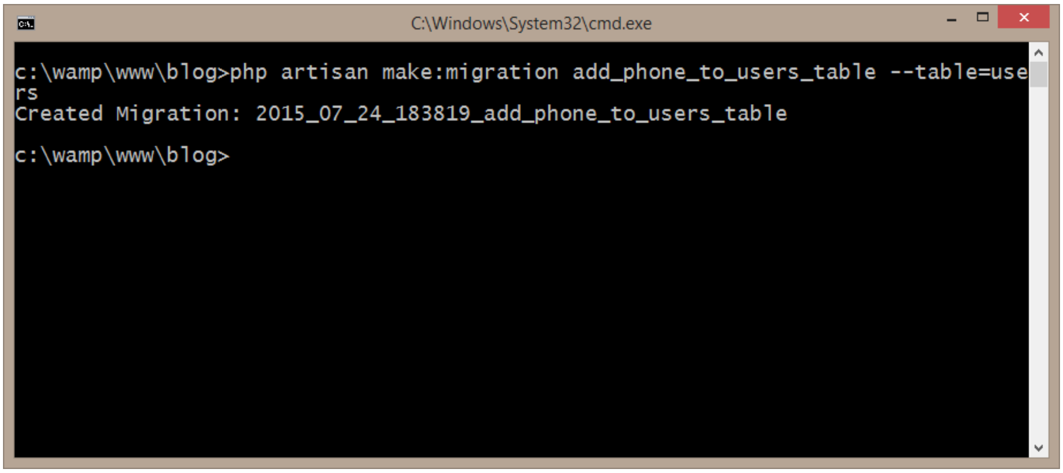
If the `php artisan migrate` command is executed again the response will be `Nothing to migrate` since all migrations were already done.

## Create a new record in the table

Now let's suppose we need to add a new field to table `users`, for example the field `phone`, of type `VARCHAR (30)`. At this point you should not add the field directly to the table, or change the migration that created the table `users`, but rather add a new migration, with the command:

```
php artisan make:migration add_phone_to_users_table --table=users
```

This command generates the following result:



```
c:\wamp\www\blog>php artisan make:migration add_phone_to_users_table --table=use
rs
Created Migration: 2015_07_24_183819_add_phone_to_users_table

c:\wamp\www\blog>
```

After running the command, see that the file: `blog/database/migrations/XXXXX_-add_phone_to_users_table.php` was created, which should be similar to the following code:

**blog\database\migrations\XXXX-add_phone_to_users_table.php**

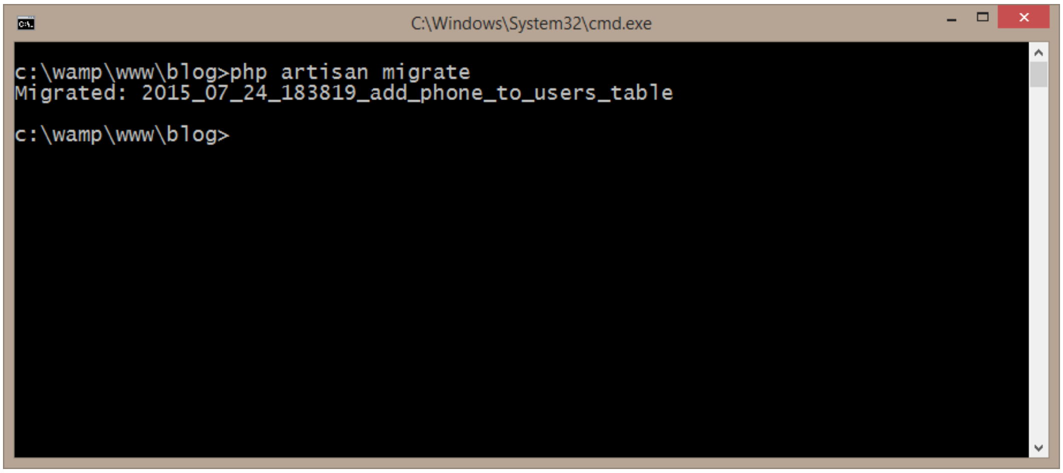
```php
<?php

use Illuminate\Database\Schema\Blueprint;
use Illuminate\Database\Migrations\Migration;

class AddPhoneToUsersTable extends Migration
{
    /**
     * Run the migrations.
     *
     * @return void
     */
    public function up()
    {
        Schema::table('users', function (Blueprint $table) {
            //
        });
    }
    /**
     * Reverse the migrations.
     *
     * @return void
     */
    public function down()
    {
        Schema::table('users', function (Blueprint $table) {
            //
        });
    }
}
```

In the `up`, the `users` table is referenced, since we used the the parameter `--table=users` to create the migration command. To add a new field to the table, use `$table->string('phone', 30);` in the `Schema::table`, not forgetting to also remove the field in the method down. The final code for this migration is:

**blog\database\migrations\XXXX-add_phone_to_users_table.php**

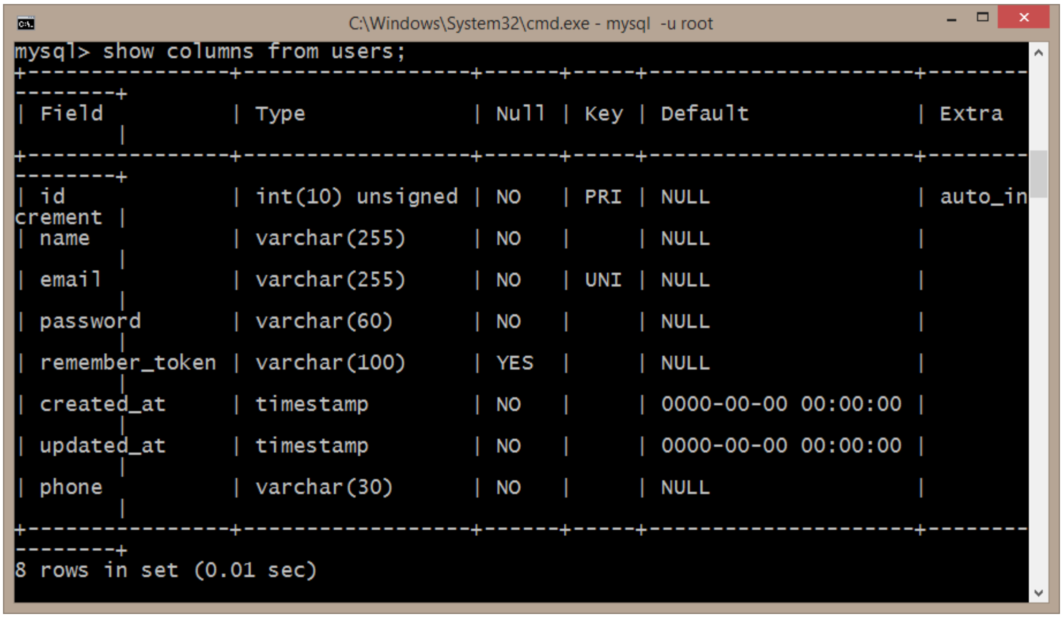
```
<?php

use Illuminate\Database\Schema\Blueprint;
use Illuminate\Database\Migrations\Migration;

class AddPhoneToUsersTable extends Migration
{
    /**
     * Run the migrations.
     *
     * @return void
     */
    public function up()
    {
        Schema::table('users', function (Blueprint $table) {
            $table->string('phone', 30);
        });
    }

    /**
     * Reverse the migrations.
     *
     * @return void
     */
    public function down()
    {
        Schema::table('users', function (Blueprint $table) {
            $table->dropColumn('phone');
        });
    }
}
```

When we execute the command `php artisan migrate` we have:



```
c:\wamp\www\blog>php artisan migrate
Migrated: 2015_07_24_183819_add_phone_to_users_table

c:\wamp\www\blog>
```

After migration is complete, the phone field is added to the table, as shown in the following image:



```
mysql> show columns from users;
+---------------+------------------+------+-----+---------------------+--------
--------+
| Field         | Type             | Null | Key | Default             | Extra
        |
+---------------+------------------+------+-----+---------------------+--------
--------+
| id            | int(10) unsigned | NO   | PRI | NULL                | auto_in
crement |
| name          | varchar(255)     | NO   |     | NULL                |
        |
| email         | varchar(255)     | NO   | UNI | NULL                |
        |
| password      | varchar(60)      | NO   |     | NULL                |
        |
| remember_token | varchar(100)    | YES  |     | NULL                |
        |
| created_at    | timestamp        | NO   |     | 0000-00-00 00:00:00 |
        |
| updated_at    | timestamp        | NO   |     | 0000-00-00 00:00:00 |
        |
| phone         | varchar(30)      | NO   |     | NULL                |
        |
+---------------+------------------+------+-----+---------------------+--------
--------+
8 rows in set (0.01 sec)
```

## Rollback a migration

To return a migration, use the command `php artisan migrate:rollback`. If we run this command after creating the `phone`, the migration will be reversed and the field will be removed.

## Additional migration operations

In theory, all the table-level operations and fields can be performed with migration. The following list displays the main operations.

| Command | Description |
|---|---|
| $table->engine = InnoDB; | Sets the *engine* table for tables in MySql. |
| Schema::rename($from, $to); | Renames a table |
| $table->string(name, 50)->change(); | Changes the size of the field to 50 |
| $table->string(name)->nullable(); | Allows the column to have null value |
| $table->string(email)->unique(); | Creates an index on the field email |
| $table->unique(email); | Creates an index on the field email |
| $table->dropUnique(users_-email_unique); | Removes the index |
| $table->first(“); | Adds the `first` type the column (MySql Only) |
| $table->default($value); | Add the default value to the field |
| $table->unsigned(“); | Set the field as UNSIGNED |

## Referencing columns from other tables

You can create a relationship between the tables, as the following example:

```
Schema::table(`posts`, function ($table) {
    $table->foreign(`user_id`)->references(`id`)->on(`users`);
});
```

In this example, the field “user_id” will reference the “id” field of the table `users`. You can also inform the kind of integrity between the columns, as in the following example:

```
$table->foreign(`user_id`)->references(`id`)->on(`users`)
      ->onDelete(`cascade`);
```

## Adding data

You can add dummy data in the tables. This process is called "seed". To create data in table `users`, run the following command:

```
php artisan make:seeder UserTableSeeder
```

Then check if the file `blog/database/seeds/UserTableSeeder.php` was created, and then edit it adding the following code in the `run()` method:

**blog\database\seeds\UserTableSeeder.php**

```
<?php

use Illuminate\Database\Seeder;

class UserTableSeeder extends Seeder
{
    /**
     * Run the database seeds.
     *
     * @return void
     */
    public function run()
    {
          DB::table('users')->insert([
            'name' => "joe",
            'email' => 'joe@gmail.com',
            'password' => bcrypt('secret'),
        ]);

          DB::table('users')->insert([
            'name' => "mike",
            'email' => 'mike@gmail.com',
            'password' => bcrypt('secret2'),
        ]);

    }
}
```

See that we added 2 records in the table. To perform exclusively this seed, type:

```
php artisan db:seed --class=UserTableSeeder
```

If the attribute `--class` is not informed, the file `DatabaseSeeder.php` will be executed. In it, you can reference the file `UserTableSeeder.php` .

## Tables and additional data

### Creating the `posts` data

As we are creating a blog, we need to create a few more tables, such as `posts` and `comments`. To create the `posts` table, run a migration again:

```
php artisan make:migration create_posts_table
```

After you run this command, the file `XXXX-create_posts_table.php` is created in the folder `blog/database/migrations`. Edit the file by adding the following fields:

**blog\database\migrations\XXXX-create_posts_table.php**

```
<?php

use Illuminate\Database\Schema\Blueprint;
use Illuminate\Database\Migrations\Migration;

class CreatePostsTable extends Migration
{
    /**
     * Run the migrations.
     *
     * @return void
     */
    public function up()
    {
         Schema::create('posts', function (Blueprint $table) {
            $table->increments('id');
            $table->string('title');
            $table->text('text')->nullable();
            $table->boolean('active')->default(true);
            $table->timestamps();
            $table->integer('user_id')->unsigned();
            $table->foreign('user_id')->references('id')
                            ->on('users') ->onDelete('restrict');
        });
    }

    /**
     * Reverse the migrations.
     *
     * @return void
     */
    public function down()
    {
        Schema::drop('posts');
    }
}
```

Add the fields that are related to a post, such as title, the text of the post, if it is active, among others. In the end, we add the field `user_id` which relates the author of the Post, from the table `users`. This defines a `one-to-many` relationship between the tables `users` and `posts`. Run the migration as follows:

```
php artisan migrate
```

With the table `posts` created, let's add some data. First, run the command `PHP artisan make:seeder PostTableSeeder` and change the file `PostTableSeeder.php` in the folder `blog/database/seeds`, by inserting the following content:

**blog\database\seeds\PostTableSeeder.php**

```
<?php

use Illuminate\Database\Seeder;

class PostTableSeeder extends Seeder
{
    /**
     * Run the database seeds.
     *
     * @return void
     */
    public function run()
    {
        DB::table('posts')->insert([
            'title' => "My First Post",
            'text' => 'Lorem ipsum dolor sit amet, consectetur adipi\
scing elit, sed do eiusmod tempor incididunt ut labore et dolore mag\
na aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamc\
o laboris nisi ut aliquip ex ea commodo consequat',
            'user_id' => 1
        ]);

       DB::table('posts')->insert([
            'title' => "My Second Post",
            'text' => ' Duis aute irure dolor in reprehenderit in vo\
luptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur\
 sint occaecat cupidatat non proident, sunt in culpa qui officia des\
erunt mollit anim id est laborum.',
            'user_id' => 1
        ]);

        DB::table('posts')->insert([
            'title' => "Hello World",
            'text' => 'Sed ut perspiciatis unde omnis iste natus err\
or sit voluptatem accusantium doloremque laudantium, totam rem aperi\
am, eaque ipsa quae ab illo inventore veritatis et quasi architecto \
beatae vitae dicta sunt explicabo',
            'user_id' => 2
        ]);

    }
}
```

After including these three records, run the command to populate the table with the Seeder data:

```
php artisan db:seed --class=PostTableSeeder
```

## Creating the comments table

We already have the tables `users` and `posts`. Now we will create the table `comments`, which are the comments of the blog readers to each Post. First, we create the migration:

```
php artisan make:migration create_comments_table
```

And then we create the columns in table `comments`:

**blog\database\migrations\XXXX-create_comments_table.php**

```
<?php

use Illuminate\Database\Schema\Blueprint;
use Illuminate\Database\Migrations\Migration;

class CreateCommentsTable extends Migration
{
    /**
     * Run the migrations.
     *
     * @return void
     */
    public function up()
    {
          Schema::create('comments', function (Blueprint $table) {
            $table->increments('id');
            $table->text('text');
            $table->string('email')->nullable();
            $table->boolean('active')->default(false);
            $table->timestamps();
            $table->integer('post_id')->unsigned();
            $table->foreign('post_id')->references('id')
                                    ->on('posts')
                                    ->onDelete('restrict');
        });
    }

    /**
     * Reverse the migrations.
     *
     * @return void
     */
    public function down()
    {
        Schema::drop('comments');
    }
}
```

With the migration complete, execute the command `php artisan migrate` to generate the table `comments` and `php artisan make:seeder CommentTableSeeder` to create the seeder and add some records, as the following code:

**blog\database\seeds\CommentTableSeeder.php**

```
<?php

use Illuminate\Database\Seeder;

class CommentTableSeeder extends Seeder
{
    /**
     * Run the database seeds.
     *
     * @return void
     */
    public function run()
    {
         DB::table('comments')->insert([
            'email' => "mary@mail.com",
            'text' => 'Very Nice!',
            'active' => true,
            'post_id' => 1
        ]);

        DB::table('comments')->insert([
            'email' => "mordor@mail.com",
            'text' => 'So dark',
            'post_id' => 1
        ]);

        DB::table('comments')->insert([
            'email' => "nacy@mail.com",
            'text' => 'Very funny lol',
            'active' => true,
            'post_id' => 1
        ]);

    }
}
```

After adding some data for the comments, we use `php artisan db:seed--class = CommentTableSeeder` to populate the data into the table.

## Creating the table tags

Another table matches the tags of the Post. First, create the table `tags`, with the command `php make artisan: migration create_tags_table` and with the following fields:

**blog\database\migrations\XXXX-create_tags_table.php**

```
<?php

use Illuminate\Database\Schema\Blueprint;
use Illuminate\Database\Migrations\Migration;

class CreateTagsTable extends Migration
{
    /**
     * Run the migrations.
     *
     * @return void
     */
    public function up()
    {
        Schema::create('tags', function (Blueprint $table) {
            $table->increments('id');
            $table->string('title');
            $table->timestamps();
        });
    }

    /**
     * Reverse the migrations.
     *
     * @return void
     */
    public function down()
    {
         Schema::drop('tags');
    }
}
```

Then, execute the command `php artisan migrate` to generate the table and the the command `php artisan make:seeder TagTableSeeder` to populate table `tags`:

**blog\database\seeds\TagTableSeeder.php**

```
<?php

use Illuminate\Database\Seeder;

class TagTableSeeder extends Seeder
{
    /**
     * Run the database seeds.
     *
     * @return void
     */
    public function run()
    {
         DB::table('tags')->insert([
                ['title' => "php"],
                ['title' => "laravel"],
                ['title' => "angular"],
                ['title' => "book"]
        ]);
    }
}
```

Note that the file `TagTableSeeder.php`, instead of using multiple commands `DB::table()->insert` we use it only once, but we pass an array of records instead of a single record. Remember to run `php artisan db:seed --class=TagTableSeeder` to populate the data in the table.

## Creating the post_tag

Our last table is a little more complex than the others, just for being part of the "many-to-many" relationship between table `posts` and `tags`. It has a composite key that is the reference between the two tables. Initially create the migration with the command:

```
php artisan make:migration create_post_tag_table
```

The file `XXXX-create_post_tag_table.php` contains:

**blog\database\migrations\XXXX-create_post_tag_table.php**

```
<?php

use Illuminate\Database\Schema\Blueprint;
use Illuminate\Database\Migrations\Migration;

class CreatePostTagTable extends Migration
{
    /**
     * Run the migrations.
     *
     * @return void
     */
    public function up()
    {
    Schema::create('post_tag', function (Blueprint $table) {
        $table->integer('post_id')->unsigned();
        $table->foreign('post_id')->references('id')
                                    ->on('posts')
                                    ->onDelete('restrict');
        $table->integer('tag_id')->unsigned();
         $table->foreign('tag_id')->references('id')
                                        ->on('tags')
                                        ->onDelete('restrict');
        $table->timestamps();
        $table->primary(array('post_id','tag_id'));
    });
    }

    /**
     * Reverse the migrations.
     *
     * @return void
     */
    public function down()
    {
        Schema::drop('post_tag');
    }
}
```

After running the command `php artisan migrate` to create the table, run the command `php artisan make:seeder PostTagTableSeeder` to create the initial data in table `post_tag`:

**blog\database\seeds\PostTagTableSeeder.php**

```
<?php

use Illuminate\Database\Seeder;

class PostTagTableSeeder extends Seeder
{
    /**
     * Run the database seeds.
     *
     * @return void
     */
    public function run()
    {
         DB::table('post_tag')->insert([
            'post_id' => 1,
            'tag_id' => 1
        ]);
          DB::table('post_tag')->insert([
            'post_id' => 1,
            'tag_id' => 2
        ]);
           DB::table('post_tag')->insert([
            'post_id' => 2,
            'tag_id' => 1
        ]);
```

```
            DB::table('post_tag')->insert([
            'post_id' => 2,
            'tag_id' => 2
        ]);
    }
}
```

And add this data with the command `php artisan db:seed --class=PostTagTableSeeder`.

## Recreating the full database structure

If there is the need to recreate the entire database structure for `blog`, you can run the following command:

```
php artisan migrate:refresh
```

For the data to be inserted, you must edit the file `seeds\DatabaseSeeder.php`, including all the seeds that we created:

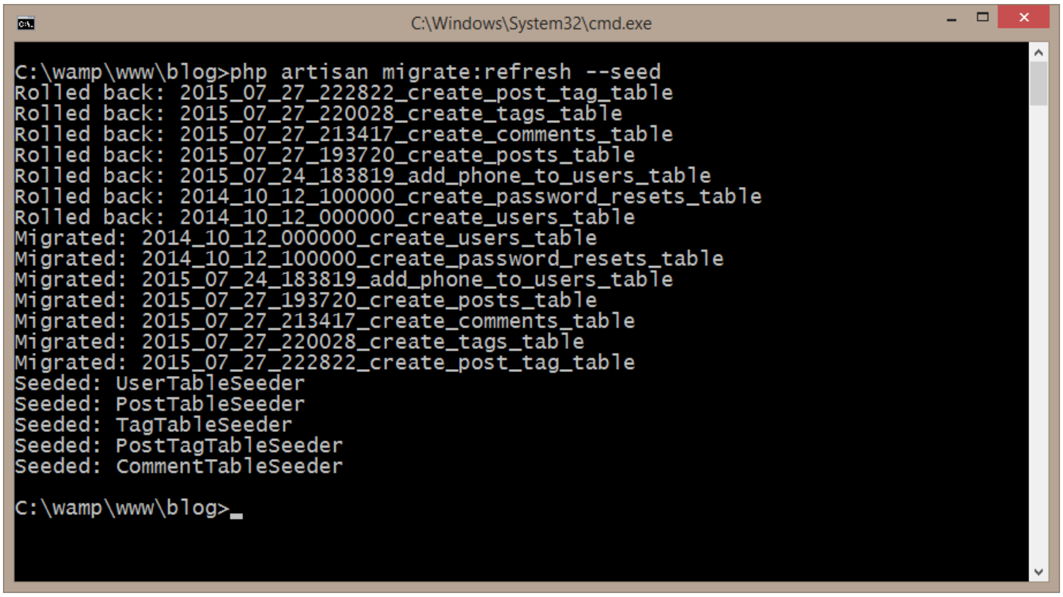
**blog\database\migrations\DatabaseSeeder.php**

```
<?php

use Illuminate\Database\Seeder;
use Illuminate\Database\Eloquent\Model;

class DatabaseSeeder extends Seeder
{
    /**
     * Run the database seeds.
     *
     * @return void
     */
    public function run()
    {
        Model::unguard();

        $this->call('UserTableSeeder');
        $this->call('PostTableSeeder');
        $this->call('TagTableSeeder');
        $this->call('PostTagTableSeeder');
        $this->call('CommentTableSeeder');

        Model::reguard();
    }
}
```

After including all seeds in that file, just run the command:

```
php artisan migrate:refresh --seed
```

To get a result similar to this:



```
C:\wamp\www\blog>php artisan migrate:refresh --seed
Rolled back: 2015_07_27_222822_create_post_tag_table
Rolled back: 2015_07_27_220028_create_tags_table
Rolled back: 2015_07_27_213417_create_comments_table
Rolled back: 2015_07_27_193720_create_posts_table
Rolled back: 2015_07_24_183819_add_phone_to_users_table
Rolled back: 2014_10_12_100000_create_password_resets_table
Rolled back: 2014_10_12_000000_create_users_table
Migrated: 2014_10_12_000000_create_users_table
Migrated: 2014_10_12_100000_create_password_resets_table
Migrated: 2015_07_24_183819_add_phone_to_users_table
Migrated: 2015_07_27_193720_create_posts_table
Migrated: 2015_07_27_213417_create_comments_table
Migrated: 2015_07_27_220028_create_tags_table
Migrated: 2015_07_27_222822_create_post_tag_table
Seeded: UserTableSeeder
Seeded: PostTableSeeder
Seeded: TagTableSeeder
Seeded: PostTagTableSeeder
Seeded: CommentTableSeeder

C:\wamp\www\blog>_
```

This way, your original database is ready for use and now we can address another very important concept in Laravel, the Query Builder.

## Query Builder

Laravel's Query Builder is a library used to perform queries in the database. We are still not addressing the persistence (ORM Eloquent), but learn to manipulate the Query Builder is important because you can use it also on persistence.

### Consulting the SQL generated by the Query Builder

Whenever you want you can return the SQL generated by the Query Builder using the `toSQL()` method. The following example illustrates this process.

```
echo DB::table('users')->toSql();
```

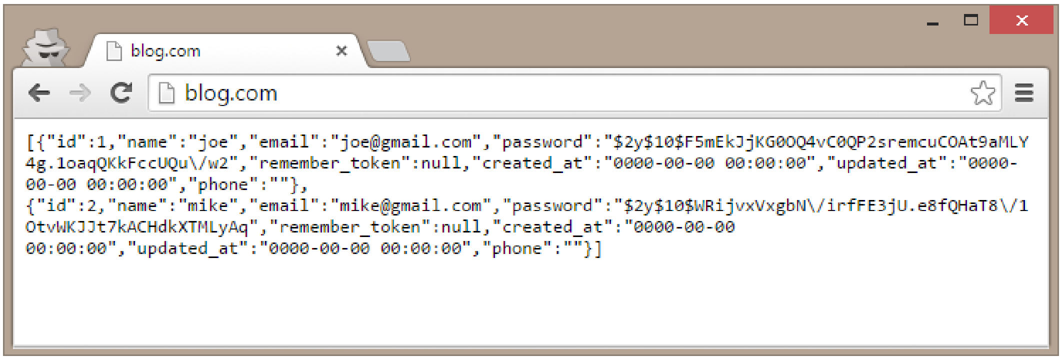
```
Result:
select * from `users`
```

### Returning all records in the table

At first, we will test the Query Builder on `blog.com` website default route, in file `/app/blog Http/routes.php` . All commands can be tested according to the following example:

```
    Route::get('/', function () {
            $users = DB::table('users')->get();
            return $users;
    });
```

This code returns the following result in the browser:



```
[{"id":1,"name":"joe","email":"joe@gmail.com","password":"$2y$10$F5mEkJjKG0OQ4vC0QP2sremcuCOAt9aMLY
4g.1oaqQKkFccUQu\/w2","remember_token":null,"created_at":"0000-00-00 00:00:00","updated_at":"0000-
00-00 00:00:00","phone":""},
{"id":2,"name":"mike","email":"mike@gmail.com","password":"$2y$10$WRijvxVxgbN\/irfFE3jU.e8fQHaT8\/1
OtvWKJJt7kACHdkXTMLyAq","remember_token":null,"created_at":"0000-00-00
00:00:00","updated_at":"0000-00-00 00:00:00","phone":""}]
```

For all instances on the Query Builder, we will always use the `Route::get ('/'`, but display only the code of the Query Builder. In other words, the above example should be in this format:

```
$users = DB::table('users')->get();
return $users;
```

And the answer in this format:

```
[
   {
      "id":1,
      "name":"joe",
      "email":"joe@gmail.com",
      "created_at":"0000-00-00 00:00:00",
      "updated_at":"0000-00-00 00:00:00",
      "phone":""
   },
   {
      "id":2,
      "name":"mike",
      "email":"mike@gmail.com",
      "created_at":"0000-00-00 00:00:00",
      "updated_at":"0000-00-00 00:00:00",
      "phone":""
```

```
    }
]
```

## Stepping through the records after the query

The method `get()`, seen above, returns an object that can be iterated, in accordance with the following code:

```
$users = DB::table('users')->get();
foreach ($users as $user) {
    echo $user->name;
    echo "<br/>";
}

Result:

joe
mike
```

## Returning the first row of a table

You can use the method `first()` for the first record in the table.

```
$user = DB::table('users')->where('name','mike')->first();
return $user->name;

Result:

mike
```

If you want to return a single value of a single record, you can use the `value()` method ‘:

```
$email = DB::table('users')->where('name','mike')->value('email');
return $email;

Result:

mike@gmail.com
```

## Returning a list of values from a table

For a list of values of a given table field, use the method `lists()`:

```
$tags = DB::table('tags')->lists('title');
return $tags;

Result:

["php","laravel","angular","book"]
```

## Aggregating values

The Query Builder provides various methods for aggregation of values. They are: count(), max(), min(), avg(), sum(). Examples:

```
$tags = DB::table('tags')->count();
return $tags;

Result: 4
```

## Selecting fields

Use the `select()` method to select fields from a query. For example:

```
$users = DB::table('users')
    ->select("name","email","created_at as joinDate")
    ->get();
return $users;

Result:
[
  {
    "name": "joe",
    "email": "joe@gmail.com",
    "joinDate": "0000-00-00 00:00:00"
  },
  {
    "name": "mike",
    "email": "mike@gmail.com",
    "joinDate": "0000-00-00 00:00:00"
  }
]
```

## Joins

You can use `joins` by the Query Builder in the same way we do with a common SQL. The following code sample gets all posts with its author's name.

```
$posts = DB::table('posts')
                    ->join("users","users.id","=","posts.user_id")
                    ->select("users.name","posts.title")
                    ->get();

return $posts;


Result:
[
  {
    "name": "joe",
    "title": "My First Post"
  },
  {
    "name": "joe",
    "title": "My Second Post"
  },
  {
    "name": "mike",
    "title": "Hello World"
  }
]
```

To perform a left join, just use `->leftJoin()`.

## Unions

To join two SQL, use the function `->union()`, as follows:

```
$first =  DB::table('posts')
                    ->select("title")
                    ->where("active","=",true);

$second =  DB::table('posts')
                    ->select("title")
                    ->union($first)
                    ->where("user_id","=",1)
                    ->get();

return $second;

Result:
[
  {
    "title": "My First Post"
  },
  {
    "title": "My Second Post"
  },
  {
    "title": "Hello World"
  }
]
```

## Where

The `where` clause will be one of the most used to perform queries. To create a filter, use the function `->where()` as shown in the following examples:

```
$users = DB::table('users')
               ->where('votes', '>=', 100)
               ->get();

$users = DB::table('users')
               ->where('votes', '<>', 100)
               ->get();

$users = DB::table('users')
               ->where('name', 'like', 'T%')
               ->get();
```

In these examples, we have the use of `like` together with the `%` sign to truncate the filter, displaying all values that begin with the letter `T`.

Everytime multiple ordered `->where()` are used, it is established that the operator `AND` is assigned to each clause. To use the operator `OR`, we must use the function `->orWhere()`. And for a range of values we use the function `->whereBetween()`, as the following example.

```
$users = DB::table('users')
                    ->whereBetween('votes', [1, 100])->get();
```

The same goes for `whereNotBetween()`, which will exclude the range of values.

The statement `IN` of SQL is represented by `whereIn()`, as the following example. The same goes for function `whereNotIn()`.

```
$users = DB::table('users')
                    ->whereIn('id', [1, 2, 3])
                    ->get();
```

The `NOT NULL` SQL is represented by the function `whereNotNull()`, which will check if the field is not `null`. The same goes for `whereNull()`.

## Grouping Wheres

You can combine filters by adding an anonymous function in `->where()`. This function should have as first parameter a variable that represents the query itself. The following example illustrates this process.

```
$sql = DB::table('users')
            ->where('name', '=', 'John')
            ->orWhere(function ($query) {
                $query->where('votes', '>', 100)
                      ->where('title', '<>', 'Admin');
            })
            ->toSql();


return $sql;

Result:

select * from `users` where `name` = `John` or (`votes` > 100 and `t\
itle` <> `Admin`)
```

Note that when creating an anonymous function for the collation between the fields `votes` and `title`, the Query Builder added the brackets, for the statement to be correct.

## Order

To set the order of the query, you use the function `->orderBy()`, as in the following example.

```
$users = DB::table('users')
                ->orderBy('name', 'desc')
                ->get();
```

## GroupBy e Having

Use GroupBy and Having follow the same style of other of Query Builder functions, as the following example.

```
$users = DB::table('users')
                ->groupBy('account_id')
                ->having('account_id', '>', 100)
                ->get();
```

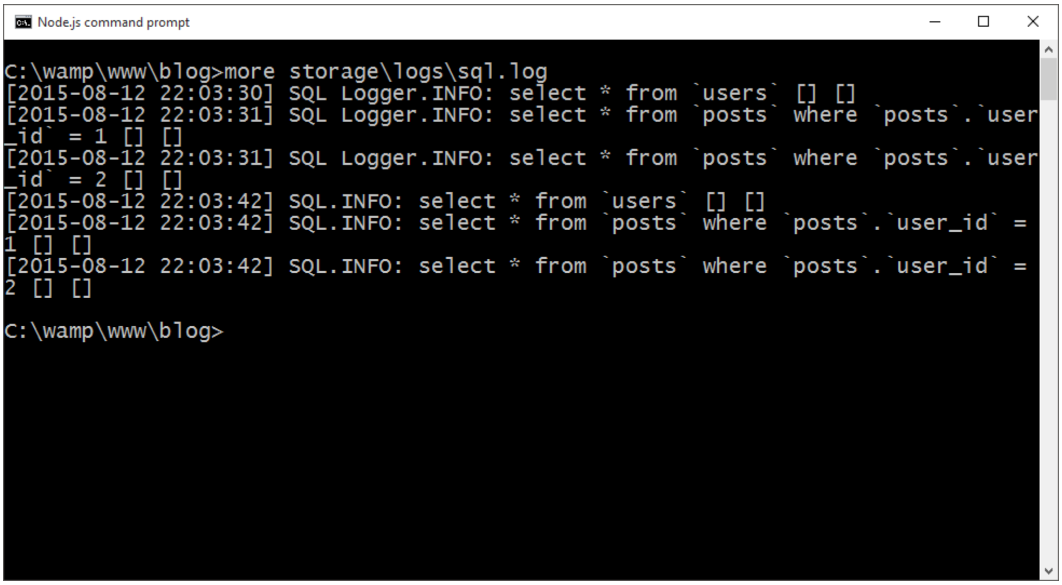
## Logging Eloquent's SQLs

With the following code, we can easily analyze all the Eloquent generated SQLs in ORM, which we'll cover next. Copy the code below and paste into the file `app\Http\routes.php`.

```
 1  <?
 2  //Display all SQL executed in Eloquent
 3  // in a storage/logs/sql.log file
 4  use Monolog\Logger;
 5  use Monolog\Handler\StreamHandler;
 6  \DB::listen(function($sql, $bindings, $time) {
 7  
 8      if (App::environment()=="local"){
 9          $xsql = explode("?", $sql);
10          $nsql = "";
11          for ($i=0; $i < count($xsql)-1; $i++) {
12              $nsql .= $xsql[$i] . $bindings[$i];
13          }
14          $view_log = new Logger("SQL");
15          $view_log->pushHandler(
16              new StreamHandler(storage_path().'/logs/sql.log')
17              );
18          $view_log->addInfo($nsql?:$sql);
19      }
20  });
```

On lines 4 and 5 we added the `Logger` and `StreamHandler` classes of the `Monolog` library that Laravel uses. At line 6, we added a *listener*, that will be executed whenever any SQL in Laravel is executed. With this *listener* we can capture the SQL to be executed. At line 8 check whether the application is running locally, to avoid generating log in production environment. Lines 9 to 13 edit the SQL for better reading. At line 14 we created a new `Logger` and at line 15 we define this `Logger` will be saved in the file `storage/logs/SQL.log`. In this way we will have a file with only the SQL executed by Laravel. Finally, at line 18, add the SQL to this log.

In later chapters, when testing the queries of Eloquent, you will see the log being generated in the file `storage/logs/SQL.log`, similar to the following image.

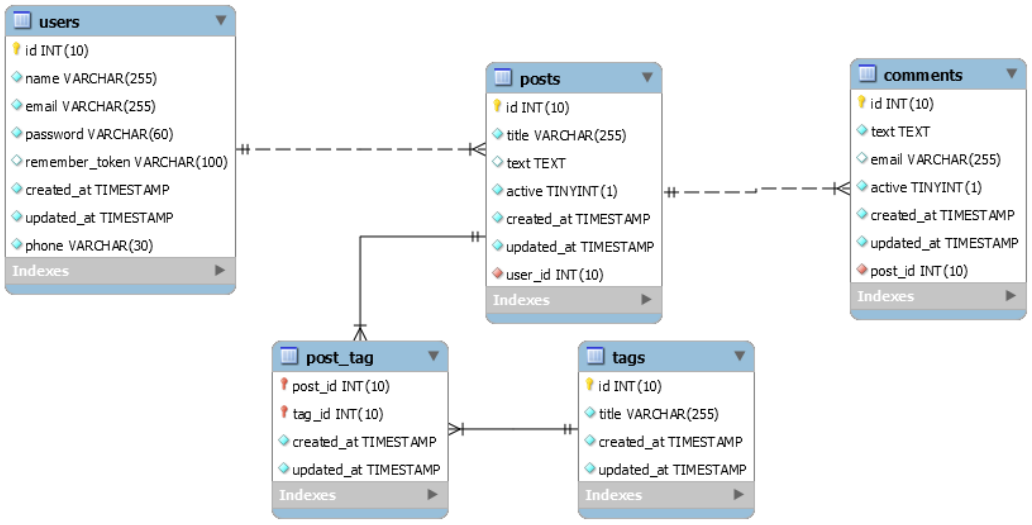


```
C:\wamp\www\blog>more storage\logs\sql.log
[2015-08-12 22:03:30] SQL Logger.INFO: select * from `users` [] []
[2015-08-12 22:03:31] SQL Logger.INFO: select * from `posts` where `posts`.`user
_id` = 1 [] []
[2015-08-12 22:03:31] SQL Logger.INFO: select * from `posts` where `posts`.`user
_id` = 2 [] []
[2015-08-12 22:03:42] SQL.INFO: select * from `users` [] []
[2015-08-12 22:03:42] SQL.INFO: select * from `posts` where `posts`.`user_id` =
1 [] []
[2015-08-12 22:03:42] SQL.INFO: select * from `posts` where `posts`.`user_id` =
2 [] []

C:\wamp\www\blog>
```

## Eloquent ORM

Eloquent is the object-relational mapping library from Laravel. With the implementation of a design pattern called *Active Record*, that matches the *Model* of an application, Eloquent makes it possible to carry out operations on the database without the need to write SQL. Instead of SQL, you use objects to persist data in the database.

The first step in Eloquent is to set the models of the application. At first, each table corresponds to a model, that is, the table `users` corresponds to the `User` model, that has already been created by Laravel. For example, with the following diagram, we need to create the following templates:



- Post
- Tag
- Comment

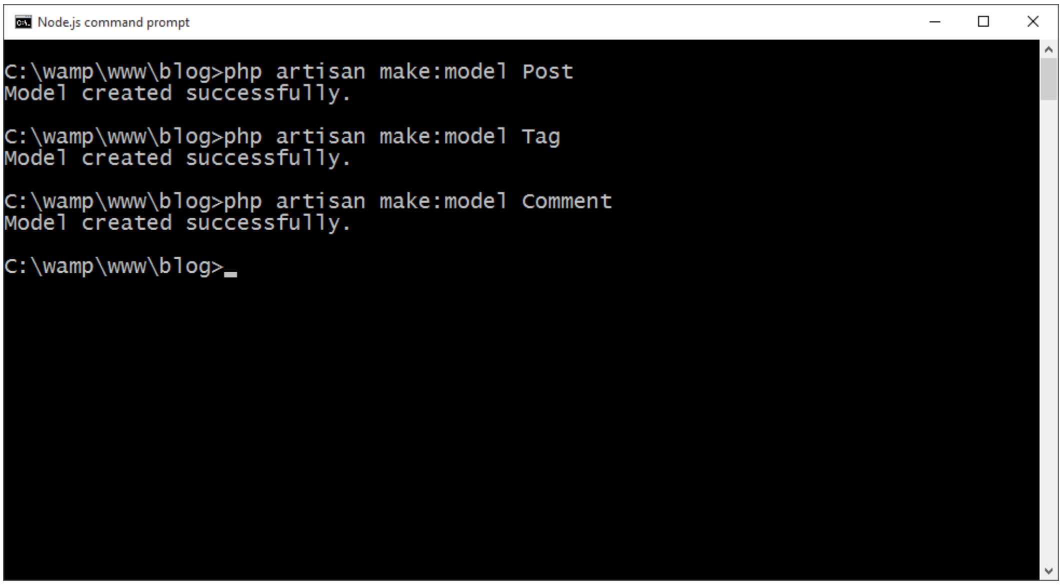
Note that the table post_tag won't have its model, because we will set up the `Post` model access to the `Tag` model later.

## Creating the model

To create the model, open the command line, navigate to the `blog` folder and type:

```
php artisan make:model User
php artisan make:model Tag
php artisan make:model Comment
```

The result of the above command is similar to the following image.



```
C:\wamp\www\blog>php artisan make:model Post
Model created successfully.

C:\wamp\www\blog>php artisan make:model Tag
Model created successfully.

C:\wamp\www\blog>php artisan make:model Comment
Model created successfully.

C:\wamp\www\blog>_
```

The model is created in `blog/app`, for example, the model `Post` is created in the file `blog/app/Post.php`, initially with the following code:

**/blog/app/Post.php**

```php
<?php

namespace App;

use Illuminate\Database\Eloquent\Model;

class Post extends Model
{
    //
}
```

## Agreements between tables and model

Note that the class `Post` is created, which extends directly from the class `Illuminate\Database\Eloquent\Model` and that it is, initially, empty. As we did in creating the tables and on migration, we are keeping the default model names in the singular, class names in plural, primary keys are "id" fields and foreign keys are the name of the class followed by the prefix "_id". All this is necessary for Eloquent to access the tables. If there is any difference in the name of the class or the primary key, you must report this change to the class itself. For example, if the table name of the model `Post` was `blog_post` and the name of the primary key was `postid`, `Post` should possess two extra properties `$table` and `$primaryKey`, as the following example:

**/blog/app/Post.php**

```php
<?php

namespace App;

use Illuminate\Database\Eloquent\Model;


class Post extends Model
{
    protected $table = 'blog_post';
    protected $primaryKey = 'postid';
}
```

## Use of the Timestamp

The timestamp fields `created_at` and `updates_at` will be filled in automatically by Eloquent. If you do not want to use them, create the following variable `public $timestamps = false;` in the class.

## Testing the User model

With this example we verify the use of Eloquent. Remember that the process to create several routines in Laravel follows basically the same pattern shown below.

## Routing

The file `app\Http\routes.php`, create an entry for the url `blog.com/users` to call the `getAll` method of the controller `App\Http\Controllers\UserController.php`.

**/blog/app/Http/routes.php**

```php
<?php

Route::get('/users', 'UserController@getAll');
```

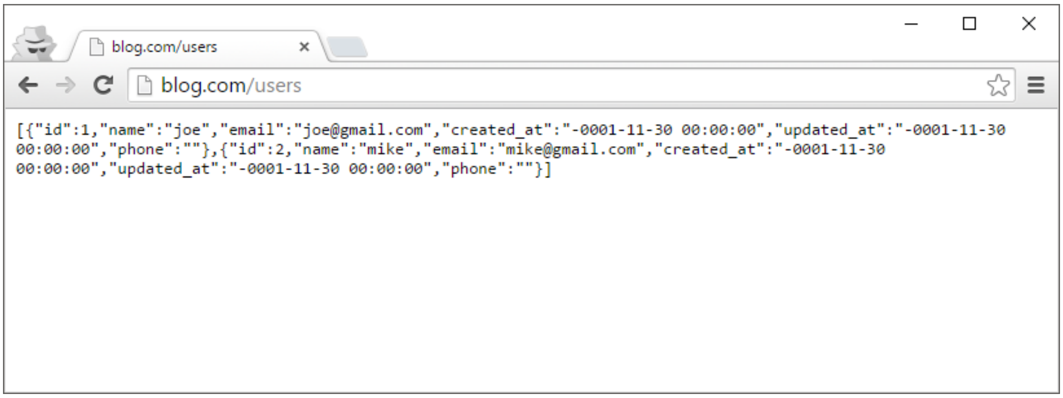
## Create the method on the controller

After setting up the routing, create the method in the controller, as shown in the following code.

**/blog/app/Http/Controllers/UserController.php**

```php
<?php

namespace App\Http\Controllers;

use App\Http\Controllers\Controller;
use App\User;

class UserController extends Controller
{

    public function getAll()
    {
        return User::all();
    }

}
```

The result for the above code is illustrated in the following image:



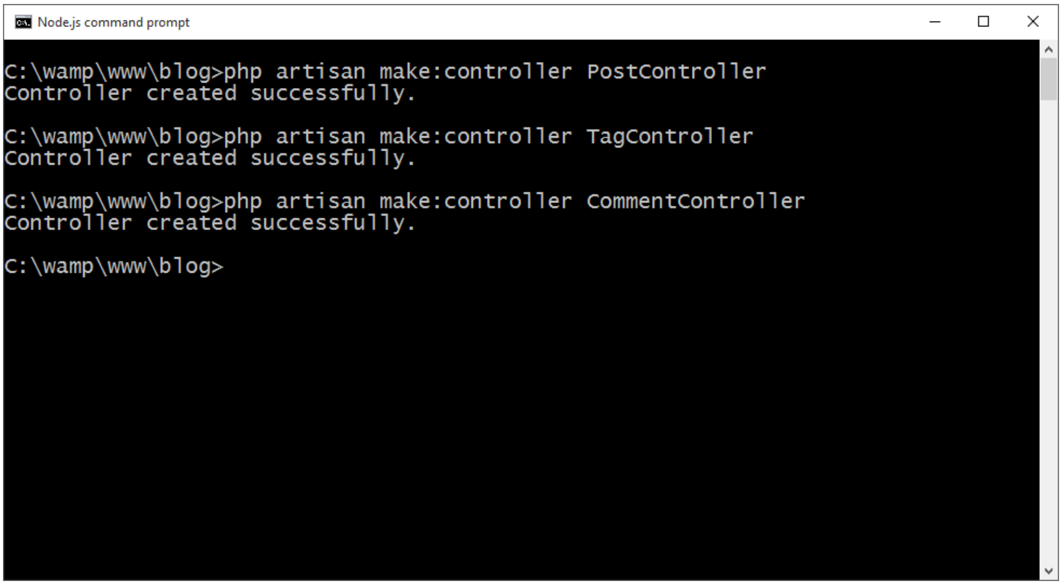
```
[{"id":1,"name":"joe","email":"joe@gmail.com","created_at":"-0001-11-30 00:00:00","updated_at":"-0001-11-30
00:00:00","phone":""},{"id":2,"name":"mike","email":"mike@gmail.com","created_at":"-0001-11-30
00:00:00","updated_at":"-0001-11-30 00:00:00","phone":""}]
```

## Understanding the UserController

The code of the UserController class brings us many new features. Initially, at line 3, we have the definition of the class `namespace`, which from version 5 of PHP became a best practice to use. At lines 5 and 6 we include the classes `Controller` and `User`, again a good practice (we will not use the `include` command).

At line 11 we created the `getAll` method that has only single line, which is just to call the `User` class followed by the static method `all`, with code `User::all()`. Note that we return the output of the `all()` method, in which Laravel will automatically parse to JSON, because its his default behavior when a method returns an * array * or an Eloquent object.

Now, create the other controllers for our blog: TagController, PostController and CommentController.



```
C:\wamp\www\blog>php artisan make:controller PostController
Controller created successfully.

C:\wamp\www\blog>php artisan make:controller TagController
Controller created successfully.

C:\wamp\www\blog>php artisan make:controller CommentController
Controller created successfully.

C:\wamp\www\blog>
```

## Relationships in Eloquent

After creating the model, initially without any information, we need to inform what are the relationships between the classes. This relationship is a mirror of the relationship between the tables. Rather than list the types of existing relationships, we go through our tables diagram to set up each of the existing relationships.

### Relationships between users and posts

There is a `one-to-many` relationship between the User and Post classes. It means that a `User` can have many `Posts`. To accomplish this, simply create the method `posts` in the `User` class, as follows:

**/blog/app/User.php**

```
<?php

namespace App;

use Illuminate\Auth\Authenticatable;
use Illuminate\Database\Eloquent\Model;
use Illuminate\Auth\Passwords\CanResetPassword;
use Illuminate\Contracts\Auth\Authenticatable as AuthenticatableCont\
ract;
use Illuminate\Contracts\Auth\CanResetPassword as CanResetPasswordCo\
ntract;

class User extends Model implements AuthenticatableContract, CanRese\
tPasswordContract
{
  /// ....initial code....

    public function posts(){
         return $this->hasMany('App\Post');
    }

}
```

The method `posts()` returns the instruction `$this->HasMany('App\Post')` and with we can state that a `User` may have many `posts`. You need to also set up the relationship between `Post` and `User`, i.e. a `Post` has only one `User`. To do this, add the following method in the class `app\Post`:

**/blog/app/Post.php**

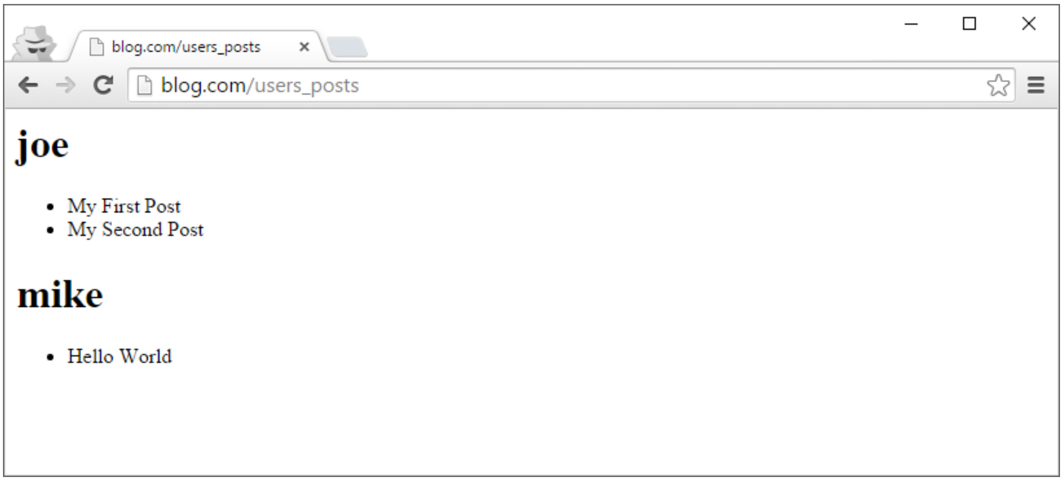
```php
<?php

namespace App;

use Illuminate\Database\Eloquent\Model;

class Post extends Model
{
    public function user(){
        return $this->belongsTo("App\User");
    }
}
```

In this way we concluded the relationship between the two classes. To better understand how this relationship will work, let's create a method in the `routes.php` illustrating its use.

**/blog/app/Http/routes.php**

```php
<?

use App\User;
use App\Post;
Route::get('/users_posts', function () {

    $users = User::all();

    foreach ($users as $user) {
        echo "<h1>{$user->name}</h1>";
        echo "<ul>";
        foreach ($user->posts as $post) {
            echo "<li>{$post->title}</li>";
        }
        echo "</ul>";
16        }
17
18  });
```

This method gets all `Users` at line 7, and loops through them. At line 10, it uses the property `$user->name` to return the name of the user, where `name` is the field of the table. With a special feature of PHP (called magic methods), it is possible to connect the columns in the table with the properties of the class. At line 12 we use the property `$user->posts`, where `posts` is precisely the statement `->hasMany()` of the model. With that, `posts` returns a list of posts from that user. At line 13, use `$post->title` to get the value of the column `title` in the table `posts`. The result of this code is shown below.



joe

- My First Post
- My Second Post

mike

- Hello World

## Relationship between Posts and Comments

We have a one-to-many relationship. The code of the two classes is displayed below.

**/blog/app/Comment.php**

```php
<?php

namespace App;

use Illuminate\Database\Eloquent\Model;

class Comment extends Model
{
    public function post(){
        return $this->belongsTo("App\Post");
    }

    public function scopeActive($query)
    {
        return $query->where('active', 1);
    }

}
```

**/blog/app/Post.php**

```php
<?php
namespace App;

use Illuminate\Database\Eloquent\Model;

class Post extends Model
{
    public function user(){
        return $this->belongsTo("App\User");
    }

    public function comments(){
        return $this->hasMany('App\Comment');
    }

}
```

## Relationship between Posts and Tags

The relationship between these two classes is many-to-many, i.e. a Post can have many Tags and a Tag can have many Posts. This relationship is defined in tables diagram with an additional `post_tag` table with a composite key between tables Post and Tag. The table `post_tag` will not be represented in the form of Eloquent class, it only serves to support the NxM relationship of the classes.

The following code configures this relationship between the classes.

**/blog/app/Post.php**

```
<?php
namespace App;

use Illuminate\Database\Eloquent\Model;

class Post extends Model
{
    public function user(){
        return $this->belongsTo("App\User");
    }

    public function comments(){
        return $this->hasMany('App\Comment');
    }

    public function tags()
    {
        return $this->belongsToMany('App\Tag');
    }
}
```

**/blog/app/Tag.php**

```php
<?php

namespace App;

use Illuminate\Database\Eloquent\Model;

class Tag extends Model
{
    public function posts()
    {
        return $this->belongsToMany('App\Post');
    }
}
```

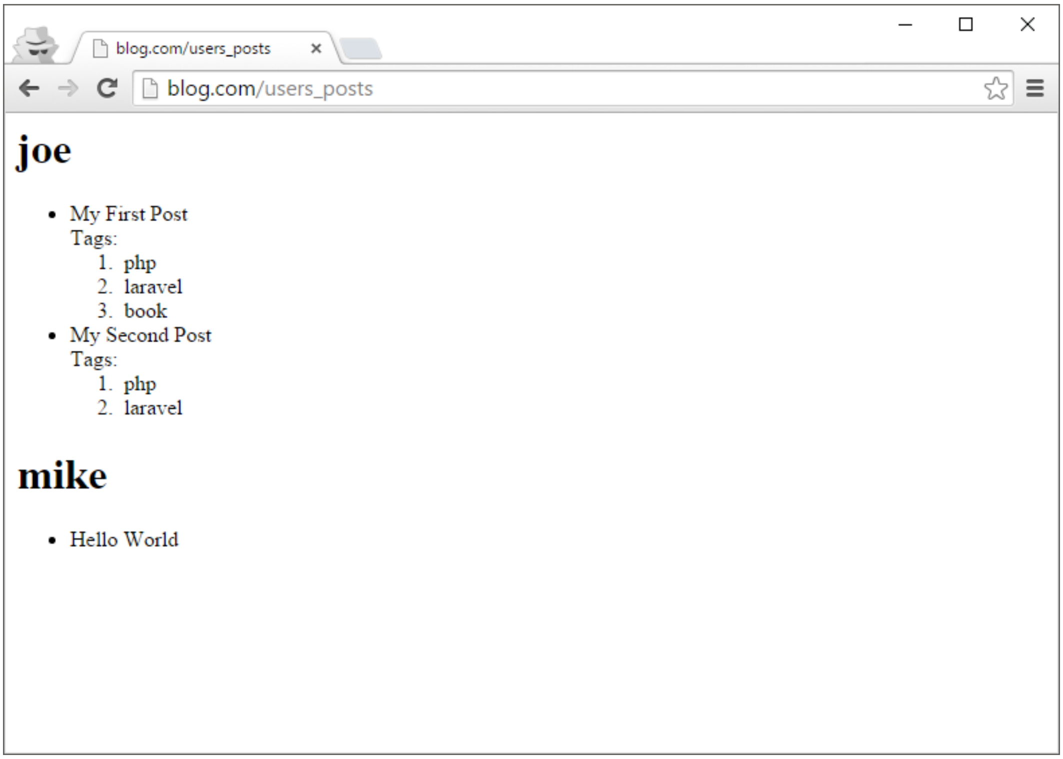
Note that this relationship between the two classes will work only if the tables are in the default set for classes in this default NxM table that references the two classes is called "post_tag" and has two keys, `post_id` and `tag_id`.

To test this relationship, we will modify the file `routes.php` with the following code:

**/blog/app/Http/routes.php**

```php
<?php
use App\User;
use App\Post;
Route::get('/users_posts', function () {

    $users = User::all();
    foreach ($users as $user) {
        echo "<h1>{$user->name}</h1>";
        echo "<ul>";
10          foreach ($user->posts as $post) {
11              echo "<li>{$post->title}</li>";
12  
13              if ( count($post->tags) > 0 )
14              {
15                  echo "Tags:<ol>";
16                  foreach ($post->tags as $tag) {
17                      echo "<li>$tag->title</li>";
18                  }
19                  echo "</ol>";
20              }
21          }
22          echo "</ul>";
23      }
24  });
```

At line 13, we added a check for `$post->tags->count()`, that will count how many tags a post has. If the `$post` own `tags`, we make a new `foreach` displaying them, as in the following image.



```
joe

 • My First Post
   Tags:
     1. php
     2. laravel
     3. book
 • My Second Post
   Tags:
     1. php
     2. laravel

mike

 • Hello World
```

## One-to-one relationship

We still don't have this situation, but if there is a need to create a one-to-one relationship, we must use the methods `hasOne` in a class and `belongsTo` on the other, as the following example (taken from Laravel documentation).

```php
<?php

namespace App;

use Illuminate\Database\Eloquent\Model;

class User extends Model
{
    /**
     * Get the phone record associated with the user.
     */
    public function phone()
    {
        return $this->hasOne('App\Phone');
    }
}
```

```php
<?php
namespace App;

use Illuminate\Database\Eloquent\Model;

class Phone extends Model
{
    /**
     * Get the user that owns the phone.
     */
    public function user()
    {
        return $this->belongsTo('App\User');
    }
}
```

## One-to-many relationship through (Has Many Through)

There is another form of special relationship in Eloquent which is the mapping "through" of other classes. As an example, suppose the need to see the comments of all the posts by a particular user. That is, given a `User`, I want to get all the comments that were made about the `posts` that he has. Instead of creating a bond of all posts and get all the comments of that post, we will create the property `user comments` that can be used as a relationship, calling the relationship `user->posts->comments`.

For simplicity, we have:

```
User
    id
    name

Post
    id
    user_id
    title

Comment
    id
    post_id
    text
```

To set up this relationship, we create the method `comments` in the `User` class, as follows:

**/blog/app/User.php**

```php
<?php

namespace App;

use Illuminate\Database\Eloquent\Model;

class User extends Model
{
    /// .....initial code.....

    public function comments(){
        return $this->hasManyThrough('App\Comment','App\Post');
    }

}
```

After this Setup, you can test it by accessing the `comments` of the `User` class.

## Analyzing the existence of records in a relationship

You can use the method `has` to verify the existence of records in relationships. In the following example, only Posts with comments will be returned.

```php
Post::has('comments')->get();
```

You can analyze the amount of records, such as in the following example, which only returns the Posts with more than three comments.

```php
Post::has('comments','>=',3)->get();
```

Another important feature is to obtain records of relationships via consultation, as in the following example that gets all posts that contain the word “nice” in their comments.

```
Post::whereHas(`comments`, function ($query) {
    $query->where(`text`, `like`, `nice%`);
})->get();
```

In this case, we use `whereHas` instead of `has`.

## Eager Loading vs Lazy Loading and the N+1 problem

If you reviewed the various examples of SQLs generated so far, you may have realized that Eloquent work in a way called "lazy", that is, it executes the SQLs according to the need. In the following code, we have an example of how lazy loading works.

```
User::find(1)->posts;
```

This code produces the following SQLs:

```
select * from `users` where `users`.`id` = 1
select * from `posts` where `posts`.`user_id` = 1
```

In other words, first it ran a SQL to get all the data from the table `users`, and then another SQL to get all the data in table `posts`. Here we have a problem, instead of using `join`, Eloquent performed two SQLs.

In this next example we have a better characterization of the problem "N + 1".

```
 $posts = Post::all();
    foreach ($posts as $post) {
        echo $post->user->name . ",";
    }
```

Analyzing the SQLs generated, we have:

```
select * from `posts`
select * from `users` where `users`.`id` = 1
select * from `users` where `users`.`id` = 1
select * from `users` where `users`.`id` = 2
```

As in the table we have 3 posts, Eloquent ran 3 distinct SQLs to get each user information, plus the original SQL, which means 4 SQLs for 3 records in the table. If there were 100 posts in the table, 101 SQLs would be executed and this is bad for the performance of the database.

Do not think, at this point, that Eloquent is working incorrectly. There is the "flip side" where getting all the data at once can slow down the SQL query. We need to know how the ORM works to get the best from it.

To solve the problem "N + 1," we should inform Eloquent, in that query, replace the lazy loading by the eager Loading, and this is accomplished with the `with` method, as the following example.

```
$posts = Post::with(`user`)->get();
 foreach ($posts as $post) {
     echo $post->user->name . ",";
 }
```

When we use the `with('user')`, the set of SQLs generated is:

```
select * from `posts`
select * from `users` where `users`.`id` in (1, 2)
```

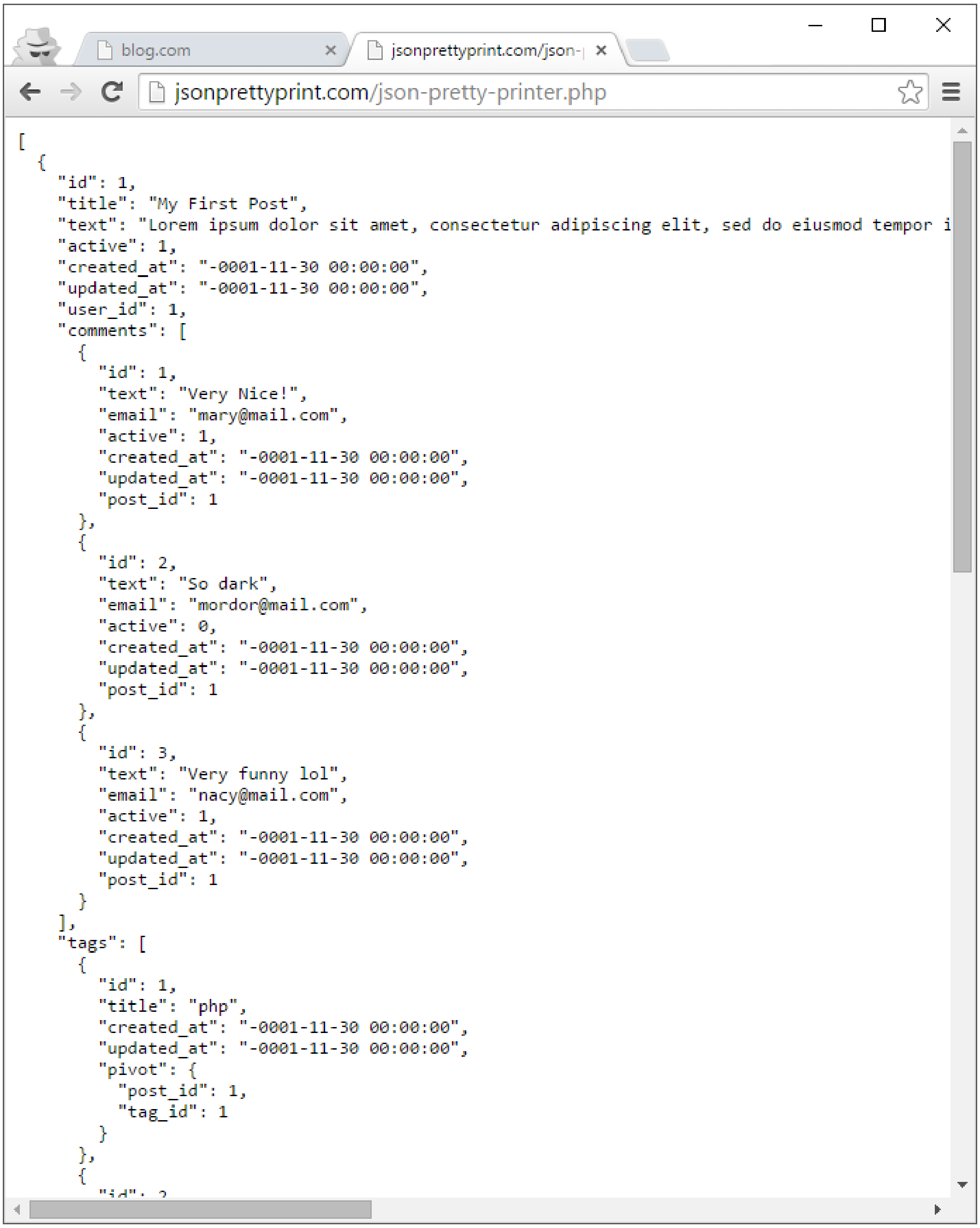
That means that only 2 SQLs were executed to achieve the same result, thus solving the N + 1 problem.

## Eager Loading and more advanced queries

The following example will return all posts with their comments and tags.

```
Post::with([`comments`,`tags`])->get();
```

The result for this code is as follows:



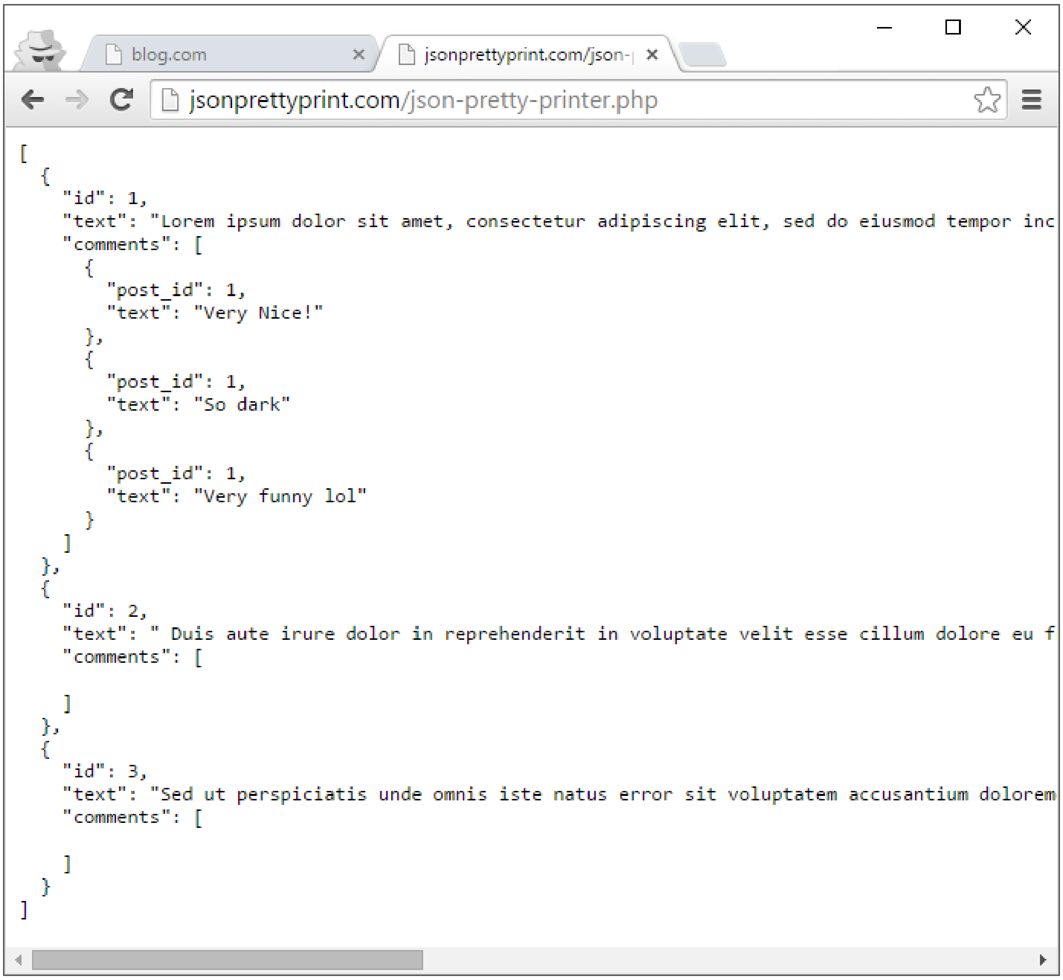
blog.com
jsonprettyprint.com/json-
jsonprettyprint.com/json-pretty-printer.php

```
[
  {
    "id": 1,
    "title": "My First Post",
    "text": "Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor i
    "active": 1,
    "created_at": "-0001-11-30 00:00:00",
    "updated_at": "-0001-11-30 00:00:00",
    "user_id": 1,
    "comments": [
      {
        "id": 1,
        "text": "Very Nice!",
        "email": "mary@mail.com",
        "active": 1,
        "created_at": "-0001-11-30 00:00:00",
        "updated_at": "-0001-11-30 00:00:00",
        "post_id": 1
      },
      {
        "id": 2,
        "text": "So dark",
        "email": "mordor@mail.com",
        "active": 0,
        "created_at": "-0001-11-30 00:00:00",
        "updated_at": "-0001-11-30 00:00:00",
        "post_id": 1
      },
      {
        "id": 3,
        "text": "Very funny lol",
        "email": "nacy@mail.com",
        "active": 1,
        "created_at": "-0001-11-30 00:00:00",
        "updated_at": "-0001-11-30 00:00:00",
        "post_id": 1
      }
    ],
    "tags": [
      {
        "id": 1,
        "title": "php",
        "created_at": "-0001-11-30 00:00:00",
        "updated_at": "-0001-11-30 00:00:00",
        "pivot": {
          "post_id": 1,
          "tag_id": 1
        }
      },
      {
        "id": 2
```

See that all the fields of each table were added. If you want to improve this result, you can create an anonymous function for each sub class, informing the fields that you want to return, as shown in the following code:

```
Post::with([`comments`=>function($query){
                                $query->select(`post_id`,`text`);
                     }])->select(`id`,`text`)->get();
```

The result for this query is displayed below.


blog.com
jsonprettyprint.com/json-
jsonprettyprint.com/json-pretty-printer.php

```
[
  {
    "id": 1,
    "text": "Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor inc
    "comments": [
      {
        "post_id": 1,
        "text": "Very Nice!"
      },
      {
        "post_id": 1,
        "text": "So dark"
      },
      {
        "post_id": 1,
        "text": "Very funny lol"
      }
    ]
  },
  {
    "id": 2,
    "text": " Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu f
    "comments": [

    ]
  },
  {
    "id": 3,
    "text": "Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium dolorem
    "comments": [

    ]
  }
]
```

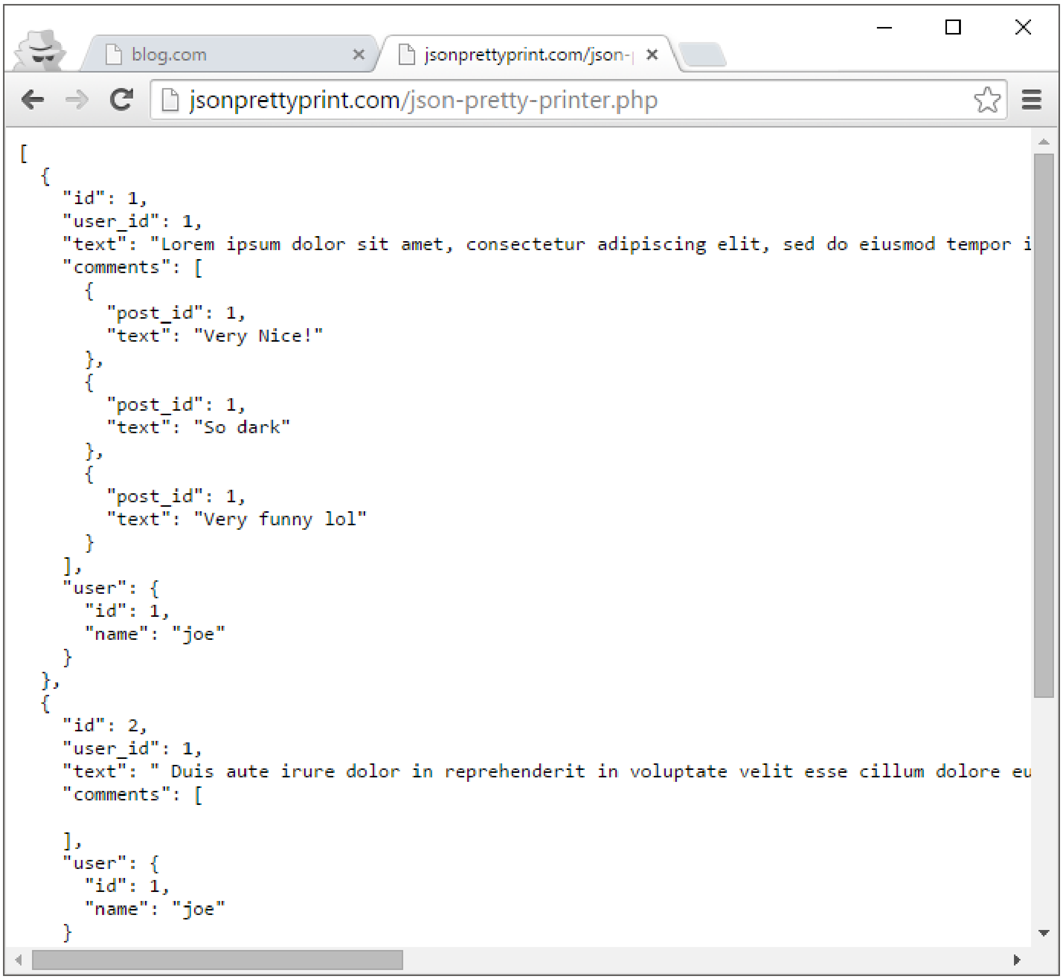
**Attention**

When selecting columns with `->select()` inform the ids of the main table and the foreign keys of related tables, so that Eloquent can perform the proper relationships.

Still on the issue of the ids, highlighted in the above, let's assume that we want to return all posts, followed by all the comments and name of the author of the post. Note that we are referencing now 3 tables, and the query is a little more complex.

```
Post::with([`comments`=>function($query){
                         $query->select(`post_id`,`text`);
                 },`user`=>function($query){
                          $query->select(`id`,`name`);
                 }])->select(`id`,`user_id`,`text`)->get();
```

The query above returns the following result.


blog.com
jsonprettyprint.com/json-
jsonprettyprint.com/json-pretty-printer.php

```
[
  {
    "id": 1,
    "user_id": 1,
    "text": "Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor i
    "comments": [
      {
        "post_id": 1,
        "text": "Very Nice!"
      },
      {
        "post_id": 1,
        "text": "So dark"
      },
      {
        "post_id": 1,
        "text": "Very funny lol"
      }
    ],
    "user": {
      "id": 1,
      "name": "joe"
    }
  },
  {
    "id": 2,
    "user_id": 1,
    "text": " Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu
    "comments": [

    ],
    "user": {
      "id": 1,
      "name": "joe"
    }
```

It is crucial to understand that you must inform the ids of the relationships between the tables. In other words, you need to inform the id of the `users` and, in addition, you must inform the field `user_id` from the main table.

## Inserting and updating records

To insert or update records by Eloquent, just use the `save()` method. The following example will create a new user and then update it.

```
    $newUser = new App\User();
    $newUser->name = "Paul";
    $newUser->email = "paul@gmail.com";
    $newUser->save();

    $newUserId = $newUser->id;

    $existingUser = App\User::find($newUserId);
    $existingUser->phone = "1111 2222";
    $existingUser->save();
```

The SQLs generated with the above code are:

```
    insert into `users` (`name`, `email`, `updated_at`, `created_at`\
) values (`Paul`, `paul@gmail.com`, `2015-08-13 15:12:16`, `2015-08-\
13 15:12:16`)
    select * from `users` where `users`.`id` = 3
    update `users` set `phone` = 1111 2222, `updated_at` = 2015-08-1\
3 15:12:16 where `id` = 3
```

You can insert a new record by passing an array of values using the method `create`. Using the method `create` you can enter a new record faster, but you have to be careful, because if this array comes from an Ajax call, it can be manipulated to add more fields that which we do not want to change. For example, suppose a field named "admin," in which can be manipulated by the Ajax request to be `true`, thus making the user an administrator of the system. To avoid this kind of problem, Eloquent requires to be informed in the definition of the model which are the fields that will be updated using the `create`. This configuration is done by setting the `fillable` property, as the following example.

**/blog/app/User.php**

```
<?php

namespace App;

use Illuminate\Database\Eloquent\Model;

class User extends Model
{

    /**
     * The attributes that are mass assignable.
     *
     * @var array
     */
    protected $fillable = ['name','email','phone'];

    /// .....code.....
}
```

After you configure the property `$fillable`, you can add a new record, as follows:

```
App\User::create([`name`=>`Zoe`,
                                        `email`=>`zoe@gmail.com`,
                                        `phone`=>`1111 1111`]
                                    );
```

## Removing records

There are several ways to remove a record from the table. The following examples show each of these ways.

```
<?php

  $flight = App\Flight::find(1);
    $flight->delete();

    App\Flight::destroy(1);

    App\Flight::destroy([1, 2, 3]);

    App\Flight::destroy(1, 2, 3);

    $deletedRows = App\Flight::where('active', 0)->delete();
```

## Using scopes

Eloquent ORM allows you to create “aliases” for pre defined queries. The name of this functionality is `scope`. For example, suppose that we want to create an alias for all comments that are active (active = 1). To do this, change the `App\Comment` class by adding the following code:

**/blog/app/Comment.php**

```
<?php

namespace App;

use Illuminate\Database\Eloquent\Model;

class Comment extends Model
{
    public function post(){
        return $this->belongsTo("App\Post");
    }

    public function scopeActive($query)
    {
        return $query->where('active', 1);
    }

}
```

The method to define the shortcut must begin with the word `scope`. In the example above we create the `scopeActive`. Then we can define the following query:

```
App\Comment::active()->get();
```

This query will return all the comments that are active (active = 1).

## Events

Laravel makes use of events in almost all the features of your framework. In Eloquent, almost all operations dispatches events that can be handled. For example, there is the event `saving` executed by before saving a record, and there is the `saved` event run after you save the record. All in all, we have these available events: creating, created, updating, updated, saving, saved, deleting, deleted, restoring, restored.

The events should be handled in the `boot` method of the `AppServiceProvider` class, as the following example:

```
<?php

namespace App\Providers;

use App\User;
use Illuminate\Support\ServiceProvider;

class AppServiceProvider extends ServiceProvider
{
    public function boot()
    {
        User::creating(function ($user) {
            if ( ! $user->isValid()) {
                return false;
            }
        });
    }

    public function register()
    {
        //
    }
}
```

In this code, we will create the method `isValid` in the User class, and if it returns false, the event `User:creating` returns false and the record will not be created on table `users`.

## Accessors & Mutators

You can create extra class's properties by treating them as if they were fields from the table. An `Accessor` is a way to create a field for reading, such as the definition of the age of a person, since we have only the date of birth, or your email but truncated, since we do not want to display the actual email to the user (in the case of a password verification).

Let us create a `User` class property called `chunk_email`. It will get the user's email, for example "realName@gmail.com" and return "r....@gmail.com." To create an `Accessor`, you must create a method with the prefix `get` and the suffix `Attribute`, then the method will be called "getChunkEmailAttribute", as seen in the following example:

**/blog/app/User.php**

```
<?php

namespace App;

class User extends Model implements AuthenticatableContract, CanRese\
tPasswordContract
{

    /// .... code ....

    public function getChunkEmailAttribute($value){
        $arrayEmail = explode("@", $this->email);
        if (count($arrayEmail)!=2) return $value;
        $chunkEmail1 = substr($arrayEmail[0],0,2);
        $chunkEmail2 = $arrayEmail[1];
        return $chunkEmail1 . "...@" . $chunkEmail2;
    }

}
```

After you create the `getChunkEmailAttribute` method, we can treat it as a property, and the following code:

```
echo App\User::find(1)->chunk_email;
```

Will return "j...@gmail.com", truncating the email "joe@gmail.com" from the first record of table users.

While an `Accessor` is used to obtain a custom value of a class as if it were a property, a `Mutator` is used to populate a property of a class. A good example of using a `Mutator` is on filling dates, which are usually in a different format than the client interface.

## Serializing data in JSON

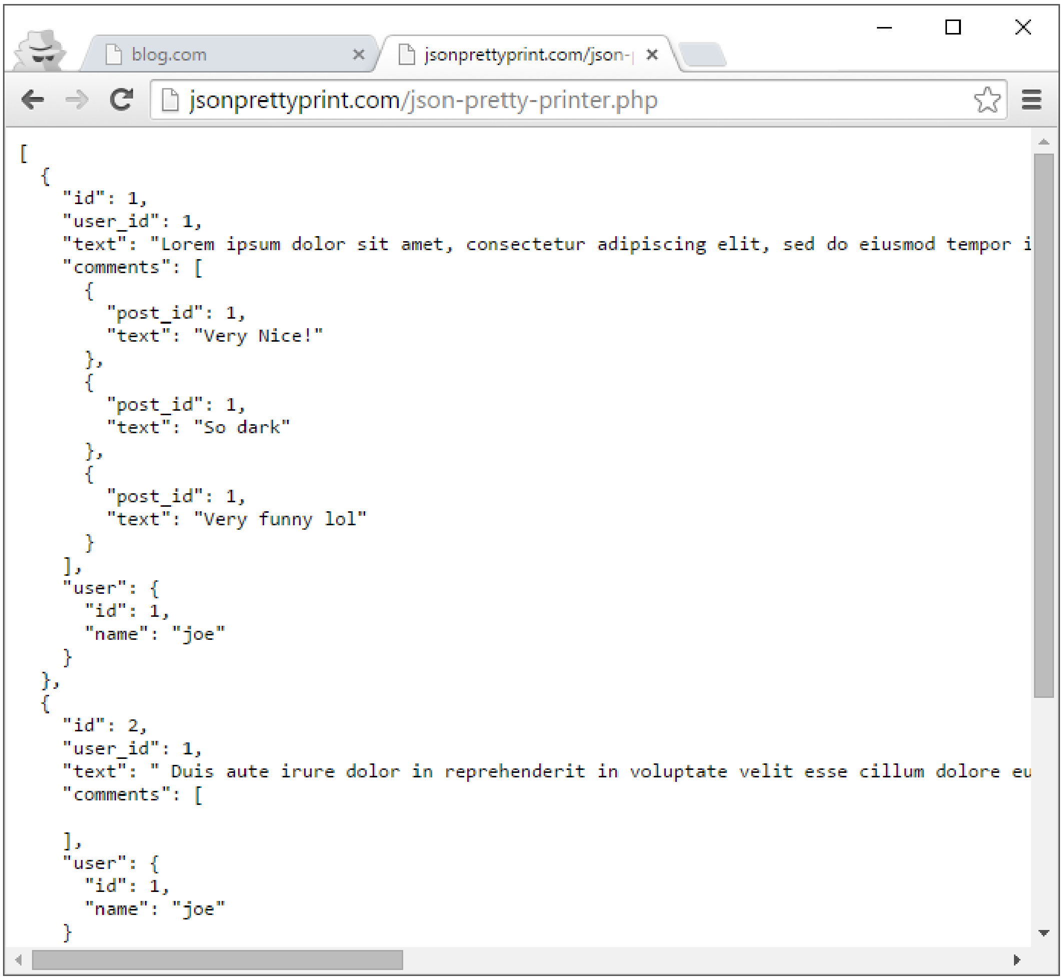
Our main task in Laravel is to create an API that will communicate with the AngularJS via JSON. To do this, both the data sent to Laravel as the data returned from Laravel to the AnglularJS will be in this format. Fortunately, Laravel is already set up for this feature and any Eloquent array or object that a *Controller* method return will be properly formatted to JSON.

The following example returns an Eloquent object of class User.

**/blog/app/Htp/routes.php**

```
<?php

    Route::get('/', function () {
    return App\User::find(1);
    });
```

In the browser, the result of the previous code is:


blog.com
jsonprettyprint.com/json-
jsonprettyprint.com/json-pretty-printer.php

```
[
  {
    "id": 1,
    "user_id": 1,
    "text": "Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor i
    "comments": [
      {
        "post_id": 1,
        "text": "Very Nice!"
      },
      {
        "post_id": 1,
        "text": "So dark"
      },
      {
        "post_id": 1,
        "text": "Very funny lol"
      }
    ],
    "user": {
      "id": 1,
      "name": "joe"
    }
  },
  {
    "id": 2,
    "user_id": 1,
    "text": " Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu
    "comments": [

    ],
    "user": {
      "id": 1,
      "name": "joe"
    }
```

## Removing fields from JSON serialization

For a field to not appear in Laravel automatic serialization, use the variable `$hidden` in the class, indicating that it should not be displayed. If you look at the class `App\User.php`, you will see that the fields `password` and `remember_token` are not displayed in the serialization, as specified in this variable.

## Adding Accessor serialization

When we create the Accessor `chunk_email` in the `User` class, it did not appeared in the serialization we did in the previous example. For it to appear, you must point it out with the `$appends` class, as follows:

```
protected $appends = [`chunk_email`];
```

## Adding relationships in Serialization

Use Eloquent relationships notation to display relationships in JSON format, especially the `with` method, as the following example.

**/blog/app/Http/routes.php**

```
<?php

Route::get('/', function () {
    return App\User::with('posts')->find(1);
});
```

## Part 3 - AngularJS and Bootstrap

# Chapter 6 - Introduction to AngularJS

After better understanding Laravel and some of its features, let's begin our approach to AngularJS. The AngularJS is a framework written in Javascript, which means we can forget for a while everything we have created on the server level, request, response, JSON etc. Let's focus first on understanding how AngularJS works and from this point, perform the integration between AngularJS and Laravel.

## Remember!

First let's learn AngularJS in a simple and clear way, and continue to the connection between AngularJS and Laravel. This chapter is ideal for those who have never studied AngularJS and for those who want to dig a little deeper. Do not feel pressured to integrate the two technologies now, we will see many examples on how to do it in the next chapters.

Let's create a simple file called `index.html` which contains the bare minimum for AngularJS to work. In this file we will be mixing both HTML code as Javascript, which is not good for a complex system like the one we will create, but for learning it is almost perfect.

The base file `index.html` is shown below:

```
<!doctype html>
<html ng-app>
  <head>
    <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.4\
.4/angular.min.js"></script>
  </head>
  <body>
    <div>
      <label>Name:</label>
      <input type="text" ng-model="yourName" placeholder="Enter a na\
me here">
      <hr>
      <h1>Hello {{yourName}}!</h1>
    </div>
  </body>
</html>
```

You must place this file in the root directory of your web server, which is `c:\wamp\www\` in Windows or `/home/<user>/www/` on Linux. Remember that when you place this file in the web directory, you can access it via `http://localhost`. If you wish, create a directory named "angularjs" and create each example into separate files by accessing them with the address http://localhost/angularjs/ (disable blog.com virtual hosts if necessary).

The file `index.html` has two particularities. First, the tag `<html>` has the definition `ng-app` that is telling AngularJS that all tags inside the `<html>` will be managed by AngularJS. This mark is called a *directive*. The prefix `ng-` comes from the phonetic sound of the word AngularJS itself, while the suffix `app` indicates that the document is an AngularJS application. And the header of the html document have the inclusion of AngularJS library in its latest version. In this chapter we will be including this file directly from the web (a CDN file), that means in order for AngularJS to work, you must be connected to the internet, or have the javascript file in cache.

Only with these two details it is possible to begin our study on AngularJS. But what is AngularJS? What does it do? The AngularJS main functionality is to add more control to the HTML document, as if it were an extension of it. This is a little different than `jQuery`, whose main feature is to manipulate the DOM. To better understand about AngularJS, let's review a few key points.

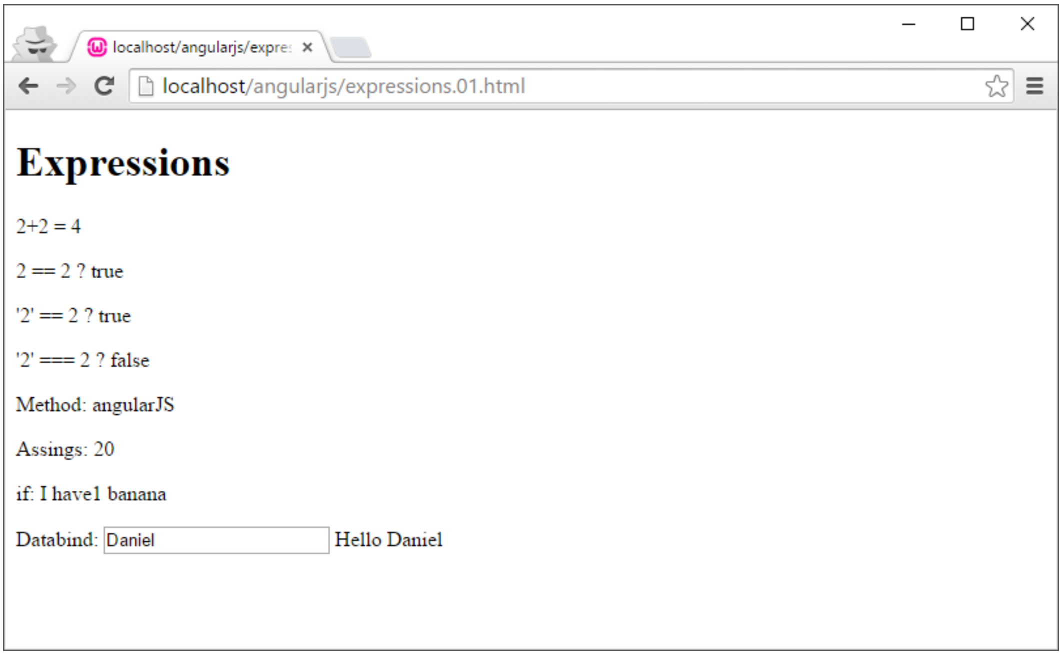
## Expressions

With AngularJS we have power to manipulate HTML documents, and even create new tags and define new functions in a Web application. To understand this, we need to initially master a concept called *expressions* or *expression*. In AngularJS, an expression is defined as a way to access parts of the HTML document, perform calculations, get data etc, in a simple and clear way.

An expression is defined in the form of two keys, `{{...}}`, where we can execute the following examples:

```
<!doctype html>
<html ng-app>
  <head>
    <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.4\
.4/angular.min.js"></script>
  </head>
  <body>
    <div>

        <h1> Expressions </h1>

        <p> 2+2 = {{ 2+ 2}} </p>

        <p> 2 == 2 ?  {{ 2 == 2 }} </p>

        <p> '2' == 2 ? {{ '2' == 2 }} </p>

        <p> '2' === 2 ? {{ '2' === 2 }} </p>

        <p> Method: {{ 'angular'+'js'.toUpperCase() }} </p>
        <p> Assigns:  {{ n = 10; n+n }} </p>

        <p> if:

            {{ banana=1 ; 'i have ' + banana +  (banana==1?' banana'\
:' bananas')}}

        </p>

        <p>
              Databind:
              <input type='text' ng-model="myName"/>
              Hello {{myName}}
        </p>

    </div>
  </body>
</html>
```

These examples of AngularJS expressions produce the following result:


localhost/angularjs/expre:
localhost/angularjs/expressions.01.html

Expressions

2+2 = 4

2 == 2 ? true

'2' == 2 ? true

'2' === 2 ? false

Method: angularJS

Assings: 20

if: I have1 banana

Databind: Daniel Hello Daniel

As we can see, several expressions were executed when we used `{{ ... }}`. This is just one of the features of AngularJS. In the last example, we use `ng-model` that defines a databind that we will see below.

## DataBind

One of the main advantages of AngularJS is its DataBind. This term is understood as a way of automatically bind a variable to another. Generally, the DataBind is used to bind a JavaScript variable (or an object) to some element of the HTML document. Before we introduce more examples about DataBinds, let's address another very interesting concept in AngularJS, which is the use of controllers.

## Controllers

A controller is, in most cases, a JavaScript file that contains functions that belong to part of the HTML document. There is no rule for the controller (for example having one controller for each HTML file) but rather a way to synthesize the business rules (javascript functions) in a separate place to the HTML document.

Below we have an example of how to use a controller, initially in the same html file so we can understand its operation.

```
 1  <!doctype html>
 2  <html ng-app="app">
 3      <head>
 4          <script src="https://ajax.googleapis.com/ajax/libs/angularjs\
 5  /1.4.4/angular.min.js"></script>
 6          <script>
 7              var app = angular.module('app', []);
 8
 9              app.controller('simpleController', function ($scope) {
10                  $scope.user = {name:"Daniel"}
11              });
12          </script>
13      </head>
14      <body ng-controller="simpleController">
15          Hello <input type="text" ng-model="user.name"/>
16          <hr/>
17          <h1>Hello {{user.name}}</h1>
18      </body>
19  </html>
```

Let's look at this example line by line. Initially, at line 2, we use the `ng-app='app'` directive. Notice that now we are stating a name to `ng-app`. This is because we can have several "apps" in the same html document, so it is essential to define a name for each of them. After informing the AngularJS library at line 4, we have the beginning of javascript code at line 6. At line 7, we have a new AngularJS method that is the `angular.module`. It defines a module of the HTML document, the same as application. Note that we define a module named `app` with the code: `var app = angular.module ('app', []);`. This `app` is the same as the `ng-app='app'` created at line 2. In short, the module called `app` will manage everything below the tag `<html>`.

For now, let's leave the second parameter `angular.module` blank. It will be reviewed later.

At line 9 we created a controller called `simpleController`. This controller has an anonymous function that represents all of the functionality of this controller. Note also that there is a parameter called `$scope` which is the module scope 'app'. With the `$scope` we can create a connection between the controller and the module.

At line 10 we create a variable named `user`. This variable is created along with the scope of your module, i.e. `$scope.user`. With this, we can tell AngularJS that the variable `user` is global to all the module 'app' of the html document. The user variable is created as an object, which means, `scope.user = {name:'Daniel'}` create the `user` object that has the `name` property, whose value is `Daniel`.

At line 14 we have a new policy, `ng-controller`. Note that we added the directive `ng-controller='simpleController'` to the `<body>`, which will tell AngularJS that the element `<body>` is being managed by the `simpleController` that was created at line 9.

At line 15 we have the creation of a text box with the `ng-model` directive, which offers the DataBind. When set to `ng-model='user.name'`, we are saying that this text box is connected directly to the `name` property of the `user` object that is created in the scope of `simpleController`.

At line 17 we have the expression `{{user.name}}` which again is a databind to property `name` of the `user` object in the `simpleController`.

**Understand this example!**

Understanding this example of `simpleController` is 50% of what you need to know about AngularJS.

## Methods in the controller

The controller is also used to handle business rules which may or may not change the models. In the following example, we use the controller to set a variable and a method to increment this variable by 1.

```
<!doctype html>
<html ng-app="app">
    <head>
        <script src="https://ajax.googleapis.com/ajax/libs/angularjs\
/1.4.4/angular.min.js"></script>
        <script>
            var app = angular.module('app', []);

            app.controller('countController', function ($scope) {

                $scope.counter = 0;

                $scope.addOne = function(){
                    $scope.counter++;
                }

            });
        </script>
    </head>
    <body ng-controller="countController">
        <a href="#" ng-click="addOne()">Add 1</a>
        <p>Counter value: {{counter}}</p>
    </body>
</html>
```

In this example, we create the method `addOne` in `countController`, and we call it on tag `<a>` of the HTML document. When we click on this link, the method will be called incrementing the variable, which will automatically be updated in the view. Note that there are three ways to display a controller variable, directly with the use of keys, with the directive `ng-bind` or with `ng-model` if it is a form field. The policy that calls the method `addOne` is the `ng-click`, performed when the user clicks the link.

As you can see, AngularJS is formed by some directives that we should know. To have a complete domain on AngularJS, beside understanding these two controllers examples, it is necessary to know a few more directives that we will see below.

## Loops

A loop in AngularJS is formed by the repetition of a template. A loop is always carried out with the property 'ng-repeat' and obeys to a variable which is typically an array of data.

The following example illustrates this process, using the tag `read` to display a list.

```
<!doctype html>
<html ng-app="app">
    <head>
        <title>Hello Counter</title>
        <script src="https://ajax.googleapis.com/ajax/libs/angularjs\
/1.4.4/angular.min.js"></script>
        <script type="text/javaScript">
            var app = angular.module('app', []);
            app.controller('loopController', function ($scope) {
                $scope.fruits = ['banana','apple','orange'];
            });
        </script>
    </head>
    <body ng-controller="loopController">
        <ul>
            <li ng-repeat="fruit in fruits">{{fruit}}</li>
        </ul>
    </body>
</html>
```

In this example, we create the Array `fruits` in the controller, and use it to repeat the tag `<li>` via the `ng-repeat`, which performs a kind of `foreach`, as in PHP. The term `fruits as fruit` to interact in each element of the array `fruits` relating to variable `fruit`.

## Forms

There are several characteristics that a form contains, such as validation, error messages, fields formatting, among others. In this case, we use AngularJS in different ways, and we use several parameters 'ng' to control the entire process.

The following example displays only some of these properties, so that you can understand how the process works, but during the work we will go through all the details needed to build a form.

```
<!doctype html>
<html ng-app>
<head>
    <title>Simple Form</title>
    <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.4\
.4/angular.min.js"></script>
</head>
<body>
    <form name="myForm">
        <span ng-show="myForm.$invalid">
            Found erros in the form!
        </span>
        <input type="text" ng-model="name" name="Name" value="Your N\
ame" required/>
        <button ng-disabled="myForm.$invalid"/>Save</button>
    </form>

</body>
</html>
```

In this form, we use some properties, such as 'ng-show' that will display whether or not the tag `<span>` containing the error message of the form and 'ng-disabled' that disables the form submission button.

The use of `myForm.$invalid` is a feature of AngularJS that defines whether a form is invalid or not. Since we used a text box with the `required` property, if the field is not filled in, the form will be invalid.

## Routes and Deep linking

The AngularJS has a feature called Deep Linking, which is to create routes in the URI of the HTML document to handle parts of the HTML code independently, and thus separate the layers of your application.

In the simplest case, suppose you have a list of data that is displayed in a table, and that when you click on an item in this list, you want to display a form with the data from that line.

In the HTML document created, there are two well-defined components by the application. The first is the table with the information, and the second, the form for editing the data.

> **Attention**
>
> The use of Deep Linking uses Ajax to load templates dynamically, so it is necessary that the whole example is tested on a web server.

If we organize this little application in archives, we have:

**index.html**
: The main application file, which contains the html code, 'ng-app', the inclusion of AngularJS, among other properties. We also have a new policy, `ng-view`, which indicates that all routing content should be rendered on it.

**app.js**
: Contains all the javascript code that defines the business rules of the application. Here we decided to create a separate javascript file from index.html file, since the javascript part is more extensive than the examples presented so far.

**list.html**
: Contains a table that lists the data.

**form.html**
: Contains the form for editing and creating a new record.

**index.html**

```
<!doctype html>
<html ng-app="app">
<head>
        <title>DeepLinking Example</title>
        <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.4.4/\
angular.js"></script>
        <script src="https://ajax.googleapis.com/ajax/libs/angularjs/1.4.4/\
angular-route.js"></script>
        <script src="app.js"></script>
</head>
<body>
        <h1>DeepLink Example</h1>
        <div ng-view></div>

</body>
</html>
```

Initially create the file `index.html`, which contains the call to the javascript files of the application. In addition to the javaScript files, we also use the property `ng-app`, that we learned to use in any application that uses this framework.

We also added a second javascript file, which is responsible for managing the route, called `angular-route.js`.

## Attention

If you look at the inclusion of the javascript file, you will notice that we have included the file `angular.js` and not `angular.min.js`.

The reason is to show that both files work, but the "min" file with the extension `.min.js` is incomprehensible for us to detect javascript errors.

In the other hand, the `angular.js` file is understandable for our reading and javascript errors that we made can be analyzed with more efficiency.

> In short, use the file `angular.min.js` only when your system is ready and in production. Otherwise, use the file `angular.js`

This module is created by defining a name for the `ng-app` this way: `ng-app='app'`. So, we are creating a module named `app` that must be defined by the application.

As we can see, the file `index.html` has no content, only the header and a `div` that has the policy `ng-view`. This property tells AngularJS that all the generated code should go within this tag.

This setting is done in the file `app.js`, whose initial part is described below.

**app.js**

```
var app = angular.module('app',['ngRoute']);

app.config(['$routeProvider',function($routeProvider){
        $routeProvider.
        when('/',{controller:'listController',
                        templateUrl:'list.html'}).
        when('/edit/:name',{controller:'editController',
                        templateUrl:'form.html'}).
        when('/new',{controller:'newController',
                        templateUrl:'form.html'}).
        otherwise({redirectTo:'/'});
}]);

app.run(['$rootScope',function($rootScope){
        $rootScope.fruits = ["banana","apple","orange"];
        console.log('app.run');
}]);
```

In this first part, we use the method `angular.module` to create a module, whose name is `app`. The second parameter is a reference to module `ngRoute`, which is used to create the routes (remember that it should be included, as seen in the index.html file).

After you create the module and assign it to the `app` variable, use the `config` method to set up the module, in this case we are configuring a feature called *Router*, that loads templates and controllers according to a URI, i.e. an address passed by the browser.

At line 5 we have the first configuration using the `when`, which tells the *Router* that, when accessing the root web address where the `index.html` file is, it must also load `listController` and the `list.html` template.

> Both the template and the controller will be loaded into the html element that contains the property **ng-view** from index.html.

At line 6, we added one more route, and now set that when the URI is `/edit/:name`, the controller `editController` and the `template` form.html will be loaded. The attribute `:name` is a variable that can be obtained in the controller.

Both line 6 and 7 use the same template `form.html` which contains a form for editing or inserting a record.

At line 8, we set the default route of URI, which is activated when no set route is found.

At line 11 we use the method `app.run` to set the variable `$scope` to the application, in a global context to the module. In this method we create the variable `fruits` that has a global context for the application.

Continuing in the app.js file, we have:

**app.js**

```
14 app.controller('listController',function ($scope) {
15         console.log('listController');
16 });
17 
18 app.controller('editController',
19         function ($scope,$location,$routeParams) {
20 
21         $scope.title = "Edit";
22          $scope.fruit  = $routeParams.name;
23
24          $scope.fruitIndex = $scope.fruits.indexOf($scope.fruit);
25
26          $scope.save = function(){
27                  $scope.fruits[$scope.fruitIndex]=$scope.fruit;
28                  $location.path('/');
29          }
30  });
31
32  app.controller('newController',
33
34          function ($scope,$location,$routeParams) {
35
36          $scope.title = "new";
37          $scope.fruit  = "";
38
39          $scope.save = function(){
40                  $scope.fruits.push($scope.fruit);
41                  $location.path('/');
42          }
43  });
```

We create three controllers for the application, and although `listController` is not necessary yet, it can be useful in the future.

At line 18 we have the controller `editController` that has three parameters:

- **scope** Is the scope of the application that can be used in the controller template created.
- **location** Used to perform redirects among the routes.
- **routeParams** The parameters passed by the URI (in this case the `:name`).

At line 19 we filled the variable `$scope.title` to change the title of the form. Note that the form is used to create a new record and to edit one.

At line 20 we take as a parameter the name of the fruit that was passed by the URI. This value is taken according to the parameter `:name` created by the route, at line 6.

At line 22 we get the index of the item to be edited. We use it to be able to edit the item in the `save` method created next.

At line 24 we have the `save` method that is used to save the record in the global array. In a real application, we would be using Ajax to persist the data to the server. At line 26 we redirect the application and with that, load another template.

At line 30, created the controller `newController`, which is similar to the `editController` and have the `save` method to insert a new record into the `fruits` array.

We will analyze the `list.html` file which is a template loaded directly by the module routing (app.js, line 5).

**list.html**

```
<h2>Fruits ({{fruits.length}})</h2>
<ul>
     <li ng-repeat="fruit in fruits">
        <a href="#/edit/{{fruit}}">{{fruit}}</a>
    </li>
</ul>
<a href="#/new">New</a>
```

The template does not need inform its controller, as this was done by the AngularJS module (app.js, line 5). As the variable `fruits` has a global scope, it can be used by the template and at line 1, displaying how many items there are in the array.

At line 3 we start the loop of the elements that belong to the `fruits` array and include in the loop a link to `#/edit/`. This is the way AngularJS routing works, starting with `#` and passing the URI. At line 5, we create another link to add a new record. Again we use the URI that will be used by the AngularJS routing.

The last file of this small example is the form that will edit or insert a new record.

**form.html**

```
<h2> {{title}} </h2>
<form name="myForm">
        <input type="text" ng-model="fruit" name="fruit" required>
        <button ng-click="save()" ng-disabled="myForm.$invalid">
        Save</button>
</form>
<a href="#/">Cancel</a>
```

At line 1 we use the `{{title}}` to insert a title that is created by the controller. The form has only one field whose **ng-model** is `fruit` that will be used by the controller (app.js, lines 25 and 36). In this form we also use **ng-disabled** so that the button is enabled only if there is some text typed in the text box.

The button `save` has the `ng-click` property, which will call the `save()` method of the controller.

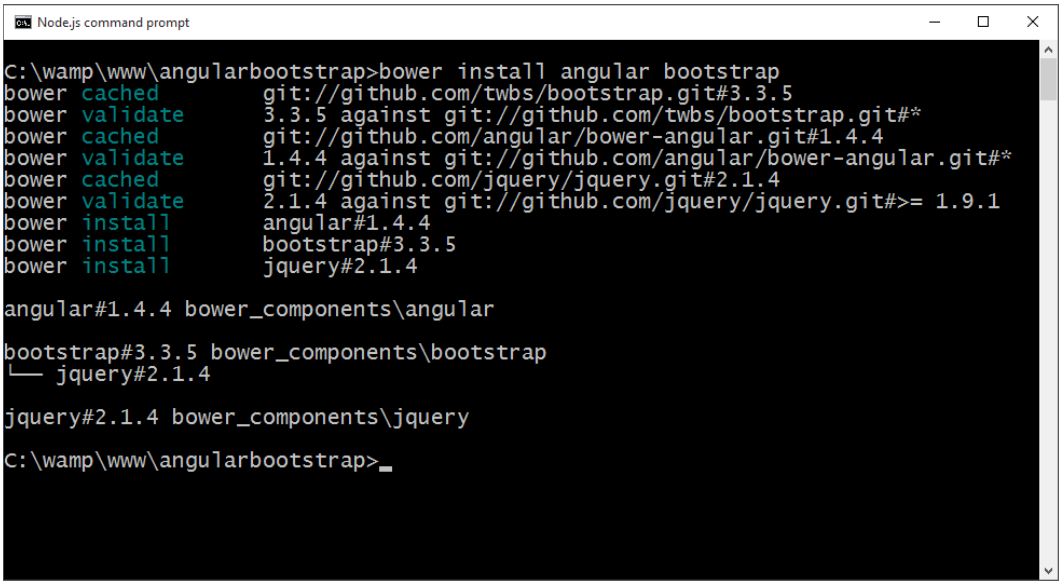
# Chapter 7 - Bootstrap

Bootstrap is the framework that defines how the application will be "drawn". It has a set of classes in Javascript and CSS capable of bringing new features to HTML. For example, if you want to create a properly formatted alert message, a popup window or an area within a form that can be hidden, we will do it with Bootstrap.

## Installing the Bootstrap

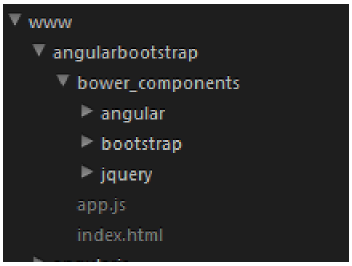
To begin with our examples, create the folder "angularbootstrap" in the web directory of your operating system, which is `c:\wamp\www` for Windows and `home/<user>/www` for Linux users. After creating the folder, add the AngularJS and Bootstrap by bower, as follows:

```
$ bower install angular bootstrap
```



```
C:\wamp\www\angularbootstrap>bower install angular bootstrap
bower cached        git://github.com/twbs/bootstrap.git#3.3.5
bower validate      3.3.5 against git://github.com/twbs/bootstrap.git#*
bower cached        git://github.com/angular/bower-angular.git#1.4.4
bower validate      1.4.4 against git://github.com/angular/bower-angular.git#*
bower cached        git://github.com/jquery/jquery.git#2.1.4
bower validate      2.1.4 against git://github.com/jquery/jquery.git#>= 1.9.1
bower install       angular#1.4.4
bower install       bootstrap#3.3.5
bower install       jquery#2.1.4

angular#1.4.4 bower_components\angular

bootstrap#3.3.5 bower_components\bootstrap
└── jquery#2.1.4

jquery#2.1.4 bower_components\jquery

C:\wamp\www\angularbootstrap>_
```

After this installation, we have the following structure:



Now we create the file `index.html` which contains the basic structure of an Angular application along with Bootstrap.

**index.html**

```
<!doctype html>
<html ng-app="app">
<head>
        <meta name="viewport" content="width=device-width, initial-scale=1">
        <link rel="stylesheet" href="bower_components/bootstrap/dist/css/bo\
otstrap.min.css">
</head>
<body>
        <div class="container">
                <h1>AngularJS base file</h1>

        </div>

<script src="bower_components/jquery/dist/jquery.min.js"></script>
<script src="bower_components/bootstrap/dist/js/bootstrap.min.js"></\
script>
<script src="bower_components/angular/angular.min.js"></script>
<script src="app.js"></script>
</body>
</html>
```

**app.js**

```
var app = angular.module('app');
```

This is the ideal structure for working with AngularJS + Bootstrap, where the JavaScript files must be added at the end of the page, in the order established: jQuery, Bootstrap, Angular, and App.

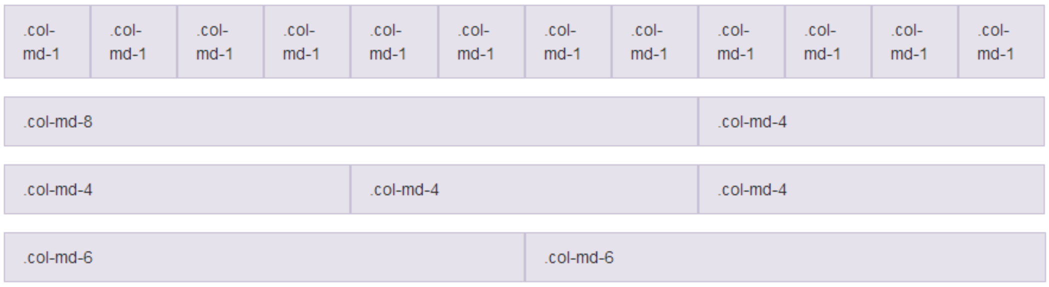
With this basic structure, we can address some particularities of Bootstrap. The following examples can be inserted below the `<h1>` of the index.html file.

## Grid System

Bootstrap works with a divs alignment called the `grid`, in which you can create horizontal blocks of content. The width of these blocks is not scaled by percentages or pixels, but rather in a system of 12 columns.

In this approach, a "line" can be separated into 12 blocks, or columns, and with Bootstrap you can set up these blocks to fit the size you desire.

The following image illustrates this process.



**Grid System**

The grid system is the basis for you to draw a screen that is compatible both with mobile devices as desktop. The use of the grid system is important because it will not be you who will define the sizes and margins of each block, but the framework, in accordance with the current width of the screen. This means that Bootstrap can even define what a block will be below another, even with horizontal configuration.

Lets make a simple example, creating 2 blocks of text to a web page. The first block has a size smaller than the second, as if the first had 30% of width and the second 70%.

```
<div class="row">
        <div class="col-lg-4">Column 1</div>
        <div class="col-lg-8">Column 2</div>
</div>
```

## Working with offsets

An offset is a blank space added to the left of the content block. For example, if you want to add content only in the second block of 12 available, you can use the following class: `with-md-offset-1` in this class, we use the md to set the standard for screen sizes medium, and the `-1` offset to shift the content block in block 1.

In the following example, we create a content block that omits the first two blocks, and the last two, leaving the text interface more centralized.

```
<div class="row">
        <div class="col-md-12" style="background-color:#aaa">
                            without Offset
                            </div>
        <div class="col-md-8 col-md-offset-2"
                                style="background-color:#ddd">
                                    with Offset
                            </div>
</div>
```

Note that we add some colors in the background, so that you can view the Offset area.

## Typography

We will see that Bootstrap alters the typography of HTML tags so that they can be used in creating your pages. Initially, the <body> tag receives a 14 pixels size, and other attributes. Paragraph <p> also receives a lower margin, plus a special class called `lead`, which highlights better a paragraph in relation to the others.

```
<p class="lead">
  Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do e\
iusmod
</p>
```

## Alignment

You can also align the text of a paragraph by using the classes `text-left`, `text-right` and `text-center`:

```
<p class="text-left">left align</p>
<p class="text-center">center align</p>
<p class="text-right">right align</p>
```

## Creating emphasis to text with colors

It is possible to give a certain highlight to texts using colors instead of the bold (`<b>`) and italic (`<i>`). Of course it is possible to change the color of a text with `<font color=''>`, but it should never be done.

In order to have a logical pattern of colors, which are applied not only to texts, but also to the buttons, links and message boxes, we should use a reference to 6 specific situations. They are mute, primary, success, info, warning, and danger.

Each one has a specific color that is standard within Bootstrap. Let's test the text highlighting:

```
<p class="text-muted">A "muted" text</p>
<p class="text-primary">Primary Text</p>
<p class="text-success">Text with a success message</p>
<p class="text-info">A info text message</p>
<p class="text-warning">Warning, something wrong text</p>
<p class="text-danger">Danger or error text</p>
```

## Abbreviation

The abbreviation is a new element in html 5 that uses the tag `<abbr>` in conjunction with the property `title`. See the following example:

```
<p>
        <abbr title="HyperText Markup Language">HTML</abbr>
        it's the best markup language in the world.
</p>
```

## Blockquotes

This tag is used for quoting a text with a little more emphasis. The tag used is `<blockquote>`, and Bootstrap added some extra classes to give more meaning to the blockquote. You can use `<small>` inside the block, including the tag `<cite>` that defines the name of the person cited in the block. You can also use class `.pull-right` to float the text to the right.

```
<blockquote >
  <p>Lorem ipsum dolor sit amet, consectetur adipiscing
    elit. Integer posuere erat a ante.</p>
  <small>Someone famous in
    <cite title="Source Title">Source Title</cite></small>
</blockquote>
```

## Lists

Html lists are created with the tags `<ul>`, `<ol>` and `<dl>`. Bootstrap adds some extra functionality so we can work better with these lists. Let's see each option below.

### Unstyled

The class `list-unstyled` removes the tag from the list that may be the point to the list with `<ul>` or the numbering of a list `<ol>`.

```
<ul class="list-unstyled">
  <li>...</li>
</ul>
```

### Side by side (inline)

If you want to group the items in a list, rather than one below the other, use the `list-inline` class, as follows:

```
<ul class="list-inline">
  <li>Lorem</li>
  <li>Ipsum</li>
  <li>dolor</li>
</ul>
```

### Lists with horizontal description

The tag `<dl>` creates lists with the use of `<dt>` and `<dd>`. Each list has an item that is the title (`<dt>`) and another that is the description (`<dd>`).

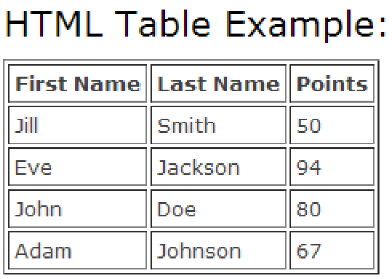
In the following example, we use the list in the original format, see:

```
<dl>
  <dt>...</dt>
  <dd>...</dd>
</dl>
```

And we use the list with horizontal format:

## Tables

Tables are the most common way to organize data in lists, especially if there are many fields to be displayed. The tables were implemented since the beginning of the HTML, via `<table>` and require a large amount of visual optimization in order to have a nice presentation.



HTML Table Example:

| First Name | Last Name | Points |
|---|---|---|
| Jill | Smith | 50 |
| Eve | Jackson | 94 |
| John | Doe | 80 |
| Adam | Johnson | 67 |

With Bootstrap, using tables becomes something simple and without any complex customization, simply define the class `table`, plus some extra properties.

> In all of our examples, we use also the tags `<thead>` to set the table header, and `<tbody>` to set the body of the table.

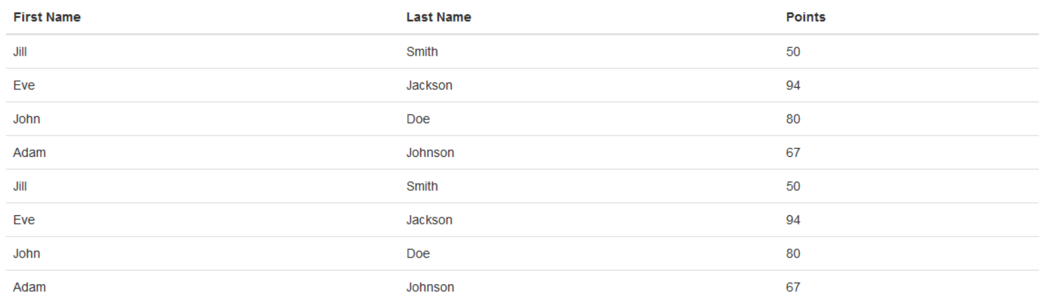
## Simple table

To create a table in Bootstrap, use the tag `<table>` and class `table`, in the following way:

```
<table class="table">
    ...
</table>
```

In the previous example, when you apply the class `table`, we have the following result:

```
<table class="table">
    <thead>
        <tr>
            <th>First Name</th>
            <th>Last Name</th>
            <th>Points</th>
        </tr>
    </thead>
    <tbody>
        <tr>
            <td>Jill</td>
            <td>Smith</td>
            <td>50</td>
        </tr>
        <tr>
            <td>Eve</td>
            <td>Jackson</td>
            <td>94</td>
        </tr>
        <tr>
            <td>John</td>
            <td>Doe</td>
            <td>80</td>
        </tr>
        <tr>
            <td>Adam</td>
            <td>Johnson</td>
            <td>67</td>
        </tr>
    </tbody>
</table>
```

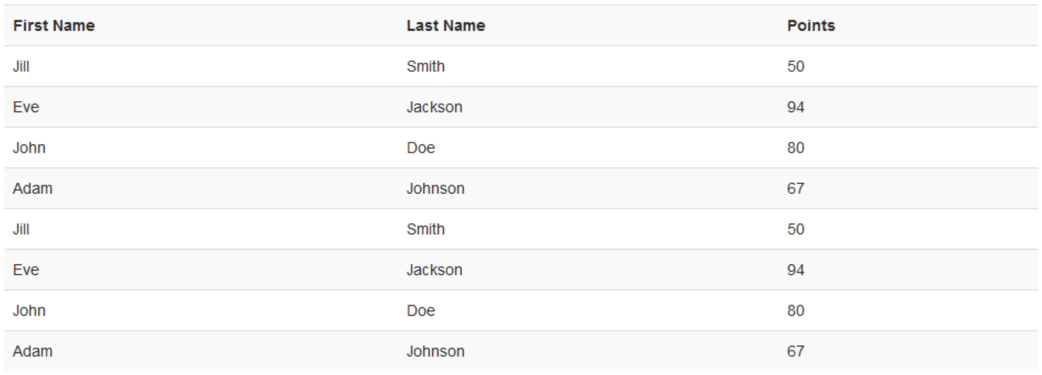


| First Name | Last Name | Points |
|---|---|---|
| Jill | Smith | 50 |
| Eve | Jackson | 94 |
| John | Doe | 80 |
| Adam | Johnson | 67 |
| Jill | Smith | 50 |
| Eve | Jackson | 94 |
| John | Doe | 80 |
| Adam | Johnson | 67 |

## Striped rows

An easy way to leave the table in zebra format, with one line with a white background and another one with a gray background, alternately, is using the class `table-striped`, as follows:

```
<table class="table table-striped">
    ...
</table>
```

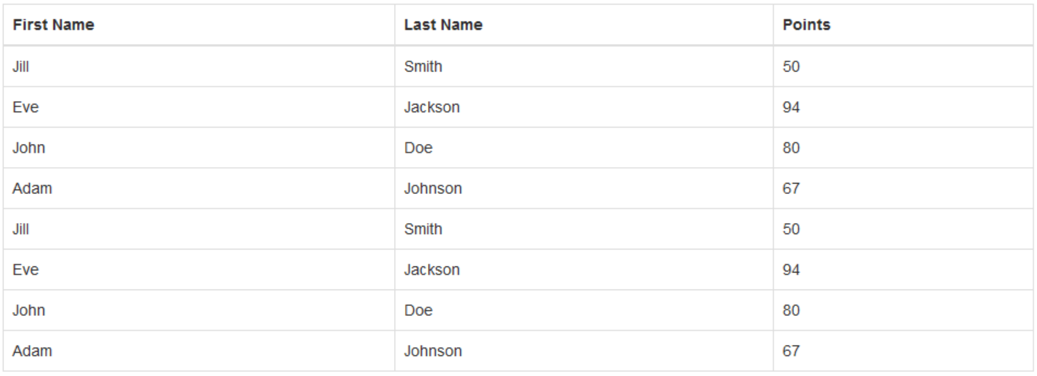


| First Name | Last Name | Points |
|---|---|---|
| Jill | Smith | 50 |
| Eve | Jackson | 94 |
| John | Doe | 80 |
| Adam | Johnson | 67 |
| Jill | Smith | 50 |
| Eve | Jackson | 94 |
| John | Doe | 80 |
| Adam | Johnson | 67 |

## Borders

Do not include borders using `border='1'`, use the class `table-bordered` so that Bootstrap can include the borders properly to the table.

```
<table class="table table-bordered">
    ...
</table>
```



| First Name | Last Name | Points |
|---|---|---|
| Jill | Smith | 50 |
| Eve | Jackson | 94 |
| John | Doe | 80 |
| Adam | Johnson | 67 |
| Jill | Smith | 50 |
| Eve | Jackson | 94 |
| John | Doe | 80 |
| Adam | Johnson | 67 |

## Highlighting rows

The hover effect is well known for us web developers. It changes a color or format when the mouse pointer is activated at that point. In the tables, you can add this effect for highlighting the row when the mouse hovers. To do this, use the class `table-hover`.

```
<table class="table table-hover">
    ...
</table>
```

## Smaller tables (condensed)

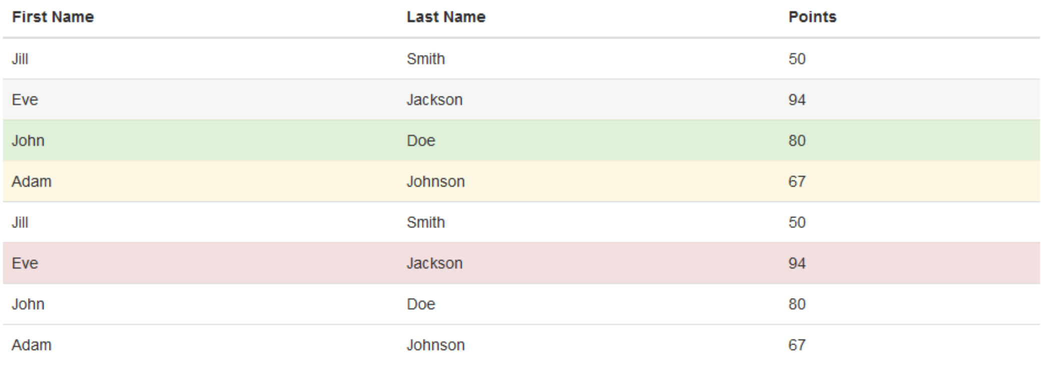
If the space between each cell (padding and margin) of the table are disturbing the layout, you can remove them with the class `table-condensed`, as the following example:

```
<table class="table table-condensed">
    ...
</table>
```

## Contextual lines

It is possible to add a context to a table row, with the `active, success, warning` or `danger` classes. The classes must be applied in the `<tr>` tag that defines a table row.

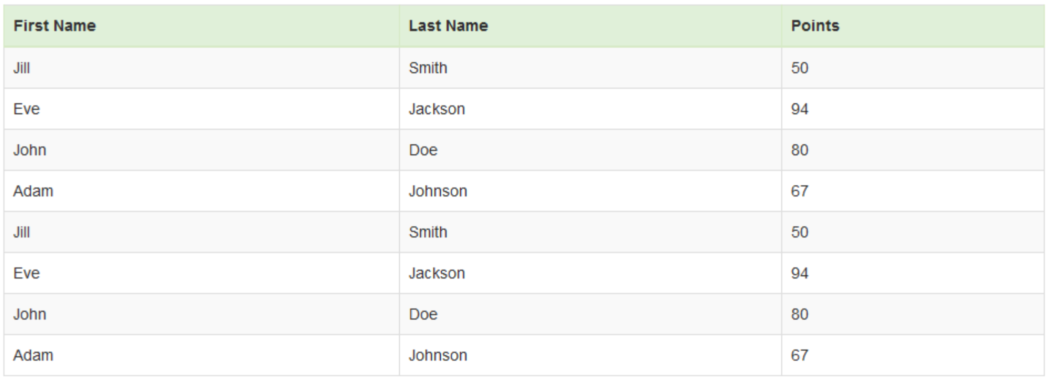
```
<table class="table">
    <tbody>
        <tr class="danger">...</tr>
    </tbody>
</table>
```



| First Name | Last Name | Points |
|---|---|---|
| Jill | Smith | 50 |
| Eve | Jackson | 94 |
| John | Doe | 80 |
| Adam | Johnson | 67 |
| Jill | Smith | 50 |
| Eve | Jackson | 94 |
| John | Doe | 80 |
| Adam | Johnson | 67 |

## Merging classes

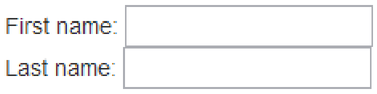
You can merge all classes available for table formatting, in order to obtain a better formatting. For example, you can use the classes `table-striped` and `table-bordered` together.



| First Name | Last Name | Points |
|---|---|---|
| Jill | Smith | 50 |
| Eve | Jackson | 94 |
| John | Doe | 80 |
| Adam | Johnson | 67 |
| Jill | Smith | 50 |
| Eve | Jackson | 94 |
| John | Doe | 80 |
| Adam | Johnson | 67 |

## Forms

The forms, whose tag line is `<form>`, constitute the primary means of data entry in web pages. As there are several ways to create a form, and can even merge various ways, let's see the the main features Bootstrap has.



| | |
|---|---|
| First name: | |
| Last name: | |

## Understand the form-group

The class `form-group` is used to delimit a single group of a form, which in most cases is defined as a field. To create a form with many fields, it is necessary to create a form with multiple elements with the class `form-group`. In the following example, we create a form with two elements, name and email, in which each is defined by a div with class `form-group`.

```
<form>
         <div class="form-group">
            <label for="name">Name</label>
            <input type="text" class="form-control" id="name">
        </div>
              <div class="form-group">
            <label for="email">Email</label>
            <input type="text" class="form-control" id="email">
        </div>
</form>
```

In this example, we can see that the width of each `input` field has been changed to 100%, and that the form is properly formatted to meet web standards. This formatting is obtained with the class `form-control` that is present in the tag `<input>`. Obviously, all html form control should have this class.

> The differences between a simple form and Bootstrap's are set up primarily with the creation of `<div>` with the class `form-group` and `<input>` with the class `form-control`.

## Inline form

An inline form is a form where the fields are side by side. For these fields, it is necessary to inform the width of each of them. In addition, even if the headers of each field does not appear, they should be informed for semantic purposes, and can be hidden with the class `sr-only`.

In the following example, we added only the class `form-inline` in the tag `<form>`.

```
<form class="form-inline">
         <div class="form-group">
            <label for="name">Name</label>
            <input type="text" class="form-control" id="name">
        </div>
              <div class="form-group">
            <label for="email">Email</label>
            <input type="text" class="form-control" id="email">
        </div>
</form>
```

We can refine the form and include the class `sr-only` to hide the labels, making them available only to the semantics of the page. We also use `placeholder` to set the field label in itself.

```
  <form class="form-inline">
       <div class="form-group">
        <label for="name" class="sr-only">Name</label>
        <input type="text" class="form-control" id="name"
            placeholder="Name">
    </div>
    <div class="form-group">
        <label for="email" class="sr-only">Email</label>
        <input type="text" class="form-control" id="email"
            placeholder="Email">
    </div>
</form>
```

## Horizontal forms

These are the most commonly types used for data entry. A horizontal form is defined by the class `form-horizontal` insite `<form>` tag and should define the size of each label of each field. The sizes are defined the same way as in Chapter 3, by the grids system.

In the following example, we a form with the of horizontal type:

```
1  <form class="form-horizontal">
2   <div class="form-group">
3      <label for="name" class="col-sm-2 control-label">name</label>
4      <div class="col-sm-5">
5          <input type="text" class="form-control" id="name"
6              placeholder="your name"/>
7      </div>
8  </div>
9  <div class="form-group">
10     <label for="email" class="col-sm-2 control-label">Email</label>
11     <div class="col-sm-5">
12         <input type="text" class="form-control" id="email"
13             placeholder="your email"/>
14     </div>
15 </div>
16 <div class="form-group">
17     <div class="col-sm-offset-2 col-sm-4">
18       <button type="submit" class="btn btn-default">Send</button>
19     </div>
20 </form>
```

This example contains important details about Bootstrap. Initially, at line 1, we create the `<form>` with the class `form-horizontal` and then the first `form-group`.

At line 3, we added the class `with-sm-2` on the grid system occupying 2 of the 12 spaces available. We also use the class `control-label` that will format the label according to the horizontal form.

At line 4 we included a `div` that has the `col-sm-5` class, which will be used to include the text box. At line 6 we insert the text box with the `input` tag. The same happens for the e-mail field at line 9.

An line 16 we create a `div` to insert the `submit` button of the form. At line 17 we use the class `col-sm-offset-2` that will generate an offset with 2 spaces in the div, aligning the button with the text box.

## Supported components

Bootstrap supports all common controls of a form, such as: text, password, datetime, datetime, date, month, week, time, number, email, url, search, tel, and color. Some of them have extra options, that we will see below.

## Checkbox and radio

Bootstrap offers an extra option to these controls in order to make each item in the horizontal, as shown in the following code:

```
<label class="checkbox-inline">
    <input type="checkbox" id="inlineCheckbox1" value="option1"> 1
</label>
<label class="checkbox-inline">
    <input type="checkbox" id="inlineCheckbox2" value="option2"> 2
</label>
<label class="checkbox-inline">
    <input type="checkbox" id="inlineCheckbox3" value="option3"> 3
</label>
```

## Static controls

You can add a static control, usually a label, whose only objective is to inform a field that has already been filled. This configuration is performed by the class `form-control-static`.

```
<div class="form-group">
    <label class="col-sm-2 control-label">Email</label>
    <div class="col-sm-10">
      <p class="form-control-static">email@example.com</p>
    </div>
  </div>
```

## Disabled fields

To disable a field, just add the `disabled` attribute to it, as the following example:

```
<input class="form-control" id="disabledInput" type="text"
    placeholder="Disabled input here..." disabled>
```

> You can disable a fieldset as well: `<fieldset disabled>`

## Validations

Bootstrap does not perform validation itself, but it offers ways to show field validation. The validation will be performed with the AngularJS.

```
<div class="form-group has-success">
  <label class="control-label" for="inputSuccess">
        Input with success</label>
  <input type="text" class="form-control" id="inputSuccess">
</div>
<div class="form-group has-warning">
  <label class="control-label" for="inputWarning">
        Input with warning</label>
  <input type="text" class="form-control" id="inputWarning">
```

```
</div>
<div class="form-group has-error">
  <label class="control-label" for="inputError">
        Input with error</label>
  <input type="text" class="form-control" id="inputError">
</div>
```

In this example, we use the classes `has-success`, `has-warning` and 'has-error' to define validations.

## Field Size

You can set several predefined sizes for the form fields. The most common sizes are defined in `input` tag itself, with the classes `input-lg`, for a larger field and `input-sm` for a smaller field.

The field width must be configured in the grid system, using, for example, `col-xs`, `col-sm`, among others, for example:

```
<div class="row">
  <div class="col-xs-2">
    <input type="text" class="form-control" placeholder=".col-xs-2">
  </div>
  <div class="col-xs-3">
    <input type="text" class="form-control" placeholder=".col-xs-3">
  </div>
  <div class="col-xs-4">
    <input type="text" class="form-control" placeholder=".col-xs-4">
  </div>
</div>
```

## Hint text

It is very common in forms to use a *help* text below the field as a way to explain something on the field in question. This text must be inserted into a tag `<span class` =help-block> soon after `<input>`, as the following example:

```
<div class="form-group">
    <label for="email" class="col-sm-2 control-label">Email</label>
    <div class="col-sm-5">
        <input type="text" class="form-control" id="email"
        placeholder="Digite o seu email"/>
        <span class="help-block">We need a valid email</span>
    </div>
</div>
```

## Buttons

Bootstrap can create buttons for different purposes, for example: `default`, `primary`, `success`, `info`, `warning`, `danger`. Each of these buttons are defined by their class, as follows:

```
<!-- Default Button -->
<button type="button" class="btn btn-default">Default</button>

<!-- Has a different color and is defined as a
button that identifies the main action of a set of buttons
 -->
<button type="button" class="btn btn-primary">Primary</button>

<!--button that indicates a successful action-->
<button type="button" class="btn btn-success">Success</button>

<!--button that indicates an info message-->
<button type="button" class="btn btn-info">Info</button>

<!--button that indicates warning, danger-->
<button type="button" class="btn btn-warning">Warning</button>

<!--button that indicates something potentially negative, or an erro\
r-->
<button type="button" class="btn btn-danger">Danger</button>
```

```
<!--this button takes the behavior of a link-->
<button type="button" class="btn btn-link">Link</button>
```

As we can see in the above code, the buttons need basically two classes. The first is the default `btn` which tells Bootstrap that that element is a button. The second is just the way the button is, and can indicate success or an error, for example.

## Size of the buttons

You can use the following classes to define the size of a button:

`btn-lg` : Large

`btn-sm` : Small

`btn-xs` : Extra Small

## Group buttons

If you want to add a set of buttons, you can use the class `btn-group`, as the following code:

```
<div class="btn-group">
  <button type="button" class="btn btn-default">Left</button>
  <button type="button" class="btn btn-default">Middle</button>
  <button type="button" class="btn btn-default">Right</button>
</div>
```

## Icons

There is a Bootstrap functionality that uses a library of ready icons, which are the Glyphicons. To use them, you must add the icon to the element class.

For example, if you want to add an icon with a plus sign, you can add it with the following code:

```
<span class="glyphicon glyphicon-search"></span>
```

The icons can be used with the button, as follows:

```
<button type="button" class="btn btn-default btn-lg">
  <span class="glyphicon glyphicon-star"></span> Star
</button>
```

## Dropdown buttons (menu)

To create a button with options, it should be a set of html tags and classes as shown in the following code:

```
<div class="btn-group">
  <button type="button"
    class="btn btn-default dropdown-toggle"
    data-toggle="dropdown">
    File <span class="caret"></span>
  </button>
  <ul class="dropdown-menu" role="menu">
    <li><a href="#">Open</a></li>
    <li><a href="#">Save</a></li>
    <li><a href="#">Save as</a></li>
    <li class="divider"></li>
    <li><a href="#">Close</a></li>
  </ul>
</div>
```

Initially we created a `div` that has the class `btn-group`, which will group the button with the text and the dropdown that opens the menu items. Note that after the word `file` we include an icon with the class `caret` which is a down arrow.

The dropdown menu is formed by the set of tags `<ul> <li>`, followed by the type `dropdown-menu`. What opens the menu with the click of the button is button `data-toggle='dropdown'` property.

## Differentiated inputs with group

One of the options that Bootstrap offers when creating fields is the creation of groups between an `input` and a class or button. The following examples illustrate this process, we use the `input-group` class to attach a text to a text box.

```
<div class="input-group">
  <span class="input-group-addon">@</span>
  <input type="text" class="form-control"
        placeholder="Username">
</div>
<div class="input-group">
  <input type="text" class="form-control">
  <span class="input-group-addon">.00</span>
</div>
<div class="input-group">
  <span class="input-group-addon">$</span>
  <input type="text" class="form-control">
  <span class="input-group-addon">.00</span>
</div>
```

If you want to add a button to an input group, do as follows:

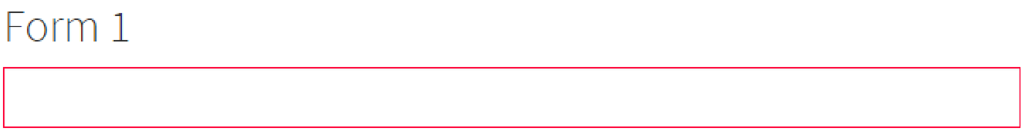
```
<div class="input-group">
  <input type="text" class="form-control">
  <span class="input-group-btn">
    <button class="btn btn-default" type="button">Go</button>
  </span>
</div>
```

## AngularJS, Bootstrap and validations

The AngularJS provides with the directive `ng-form` a set of methods for integrating the form to Bootstrap, especially for validations. To validate a form using AngularJS, you should use the variable `$valid` in the requested context (can be in a field, or the entire form).

In this first example, we create a field of type e-mail and use the expression `form1.email.$invalid` which will return true if the form is invalid. This value will be assigned to the class 'has-error' of Bootstrap by adding an effect of error to the e-mail field border.

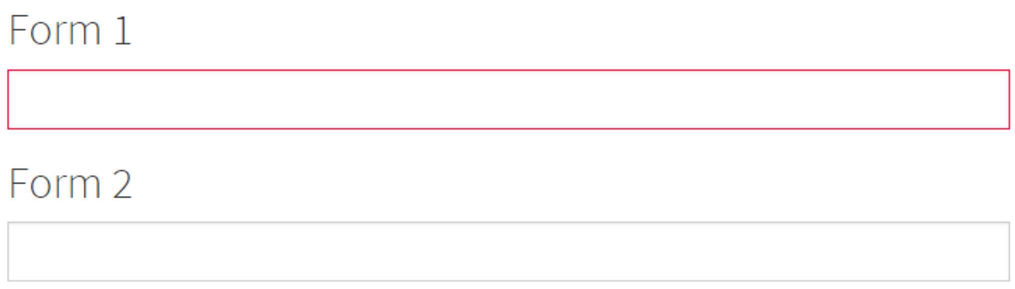
```
<h2>Form 1</h2>
<form name="form1">
    <div class="form-group"
        ng-class="{ 'has-error': form1.email.$invalid }" >
        <input type="email" class="form-control" name="email"
            ng-model="user.email" required />
    </div>
 </form>
```



The problem with this first example is that as soon as the user loads the page, the field is empty and the `required` email field invalidates the form, leaving it with the red border. We don't want that all required fields are in red when the form opens for the first time. For this exists in the AngularJS the $dirty expression, which indicates a new field without changed data. In the next example, `form2`, use this expression along with what we already have.

```
<h2>Form 2</h2>
<form name="form1">
    <div class="form-group"
        ng-class="{ 'has-error': form2.email.$invalid }" >
        <input type="email" class="form-control"
            name="email" ng-model="user.email" required />
    </div>
 </form>
```

The difference between the form1 and form2 is realized in the following image, when loading the page for the first time the email field of the form1 presents the error, while the form2 field waits for the input from the user.

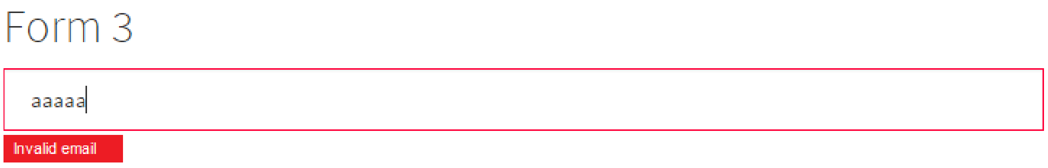


## Displaying custom error messages

You can, in addition to displaying a red border in the field, display a custom error message. This message only appears if the error happens. To do this, we use the same expressions with $invalid and $dirty, as in the following example.

```
<h2>Form 3</h2>
<form name="form3">
    <div class="form-group"
    ng-class="{ 'has-error': form3.email.$invalid &&
                                   form3.email.$dirty}" >
        <input type="email" class="form-control"
            name="email" ng-model="user.email" required />
         <span class="label label-danger"
            ng-show="form3.email.$dirty && form3.email.$invalid">
              <span ng-show="form3.email.$error.required">
                   Required</span>
              <span ng-show="form3.email.$error.email">
                   Email inválido</span>
        </span>
    </div>
 </form>
```

In this form, we have created an area where visibility is tested by the `ng-show`. We used `ng-show` only if the validations fail, displaying the message similar to the following image.


Form 3

aaaaa

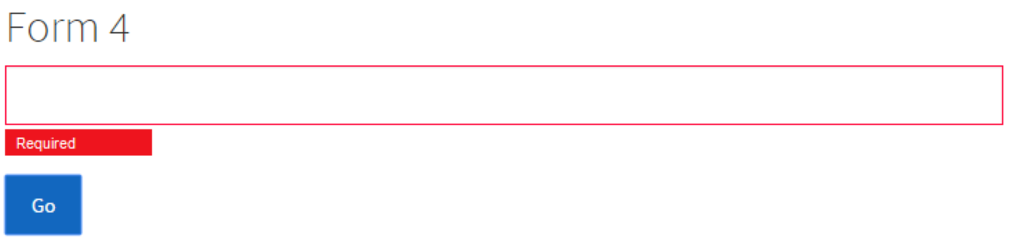
Invalid email

## Synchronizing errors and submit buttons

Most forms have a submit button that will process the form in a Post or in a AngularJS controller. It is interesting, in this case, to display an error message if the form is submitted. For this, we use the variable `$submitted` in conjunction with `$dirty` and `$invalid`, as in the following example.

```
<h2>Form 4</h2>
    <form name="form4" novalidate>
        <div class="form-group"
            ng-class="{ 'has-error': (form4.$submitted  ||
                form4.email.$dirty) && form4.email.$invalid}" >
            <input type="email" class="form-control"
                name="email" ng-model="user.email" required />
             <span class="label label-danger"
                ng-show="(form4.$submitted  ||
                        form4.email.$dirty)  && form4.email.$invalid\
">
                  <span ng-show="form4.email.$error.required">
                        Required</span>
                  <span ng-show="form4.email.$error.email">
                        Invalid Email</span>
            </span>
        </div>
        <button type="submit" class="btn btn-primary"
                                        ng-click="go()">Go</button>
     </form>
```

This example shows the use of `novalidate` in the `<form>` tag, which nullifies the browser validation in the fields, which is useful in this case. When you click the "Go" button, the response of the form to the user is similar to the following image.



## Extra themes

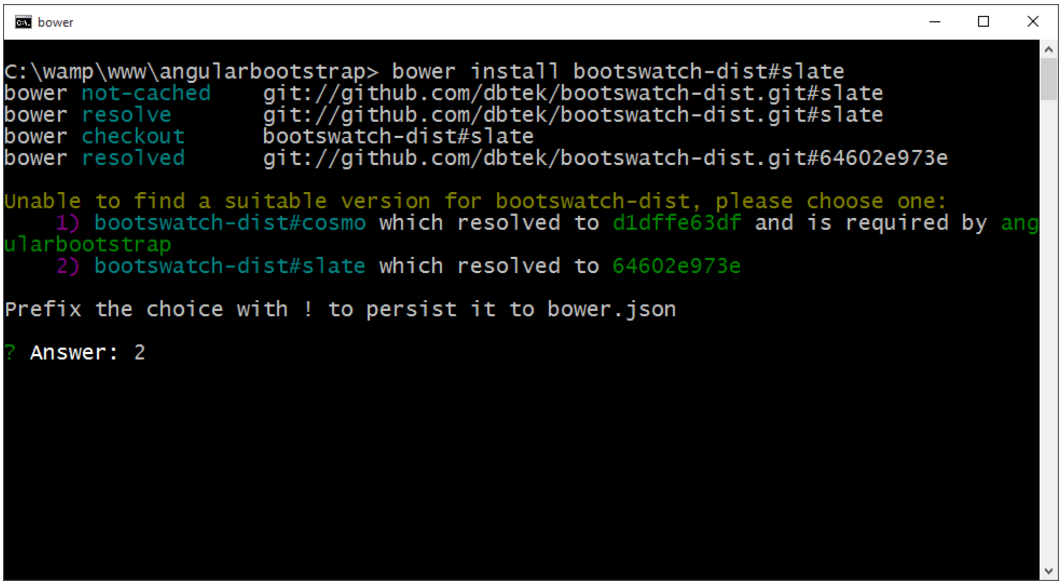
The site *Bootswatch.com* provides numerous themes for your web application with Bootstrap. For example, the theme * Cosmos * can be accessed via this link: https://bootswatch.com/cosmo/. To install a theme, use the Bower:

```
$ bower install bootswatch-dist#cosmo
```

After installation, the folder `/bower_components/bootswatch-dist` is created, and it contains the file `css/bootstrap.min.css` that must replace the original Bootstrap css, as the template below:

```
<!doctype html>
<html ng-app="app">
<head>
        <meta name="viewport" content="width=device-width, initial-scale=1">
        <!--<link rel="stylesheet" href="bower_components/bootstrap/dist/cs\
s/bootstrap.min.css">-->
                <link rel="stylesheet" href="bower_components/bootswatch-di\
st/css/bootstrap.min.css">
</head>
<body>
        <div class="container">
                <h1>AngularJS base file</h1>

        </div>

<script src="bower_components/jquery/dist/jquery.min.js"></script>
<script src="bower_components/bootstrap/dist/js/bootstrap.min.js"></\
script>
<script src="bower_components/angular/angular.min.js"></script>
<script src="app.js"></script>
</body>
</html>
```

To view other themes, just install the new theme by choosing it according to what the bower asks you, as in the following image:



```
C:\wamp\www\angularbootstrap> bower install bootswatch-dist#slate
bower not-cached    git://github.com/dbtek/bootswatch-dist.git#slate
bower resolve       git://github.com/dbtek/bootswatch-dist.git#slate
bower checkout      bootswatch-dist#slate
bower resolved      git://github.com/dbtek/bootswatch-dist.git#64602e973e

Unable to find a suitable version for bootswatch-dist, please choose one:
    1) bootswatch-dist#cosmo which resolved to d1dffe63df and is required by ang
ularbootstrap
    2) bootswatch-dist#slate which resolved to 64602e973e

Prefix the choice with ! to persist it to bower.json

? Answer: 2
```

# Chapter 8 - AngularJS and Ajax

In this chapter we will see how AngularJS communicates with the server via Ajax. We use Ajax for sending and receiving data. First, let's create a small example in the folder `angularbootstrap`, and after understanding its operation we can integrate AngularJS and Laravel.

Create the file `data.php` in the folder `angularbootstrap` with the following content:

```php
<?php

$user = new stdclass();
$user->name = "Joe";
$user->email = "joe@gmail.com";

echo json_encode($user);
```

This is a simple example of response in JSON from the server. We will use this example so that AngularJS can get this data.

## $http usage

AngularJS provides two different ways to work with these connections. The first, and simplest, is with the `$http` service, which can be injected into a controller. The second way is with the `$resource` service which is a RESTful abstraction, working as a data source. The use of `$http` should not be ignored, even with the `$resource` being more powerful. In simple applications, or when you want to get data in a quick way, `$http` should be used. At first, we will use the `$http` to connect in the `data.php` file and get the data of the variable `$user`, which is in JSON format.

Create the `user.html` file that is a copy of the file `angularbootstrap\index.html`. Instead of using the file `app.js`, we will create the file `user.js` that will contain the controller `UserController`, responsible for connecting to the server. The initial version of file `user.html` is shown below.

**user.html**

```
<!doctype html>
<html ng-app="app">
<head>
    <meta name="viewport" content="width=device-width, initial-scale\
=1">
    <link rel="stylesheet"
    href="bower_components/bootswatch-dist/css/bootstrap.min.css">
</head>
<body ng-controller="UserCtrl">
    <div class="container">
        <h1>User</h1>
    </div>

<script src="bower_components/jquery/dist/jquery.min.js">
</script>
<script src="bower_components/bootstrap/dist/js/bootstrap.min.js">
</script>
<script src="bower_components/angular/angular.min.js">
</script>
<script src="user.js"></script>
</body>
</html>
```

**user.js**

```
var app = angular.module('app',[]);

app.controller('UserCtrl',function($scope){

});
```

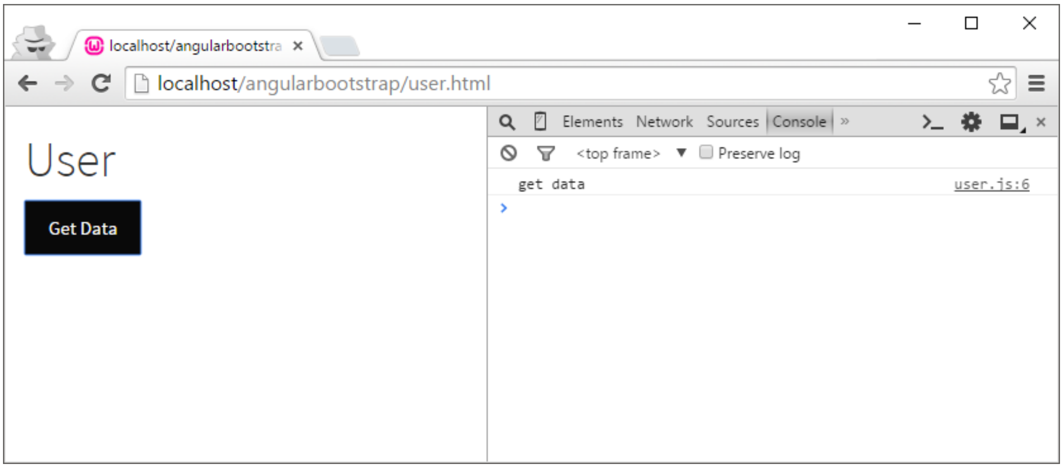
After creating the basic template `user.html`, let's add a button that will call the method `getData`.

```
<h1>User</h1>
<button class="btn btn-default" type="button" ng-click="getData()">G\
et Data</button>
```

Note that we use the `ng-click` to call the `getData()` method. Now we must create this method in the Controller, as follows:

```
var app = angular.module('app',[]);

app.controller('UserCtrl',function($scope){

        $scope.getData = function(){
                console.log("get data");
        }

});
```

When we create the method `getData`, we use the function `console.log` to display the message in the console of Chrome/Firefox, accessible via the F12 key, as shown in the following image.



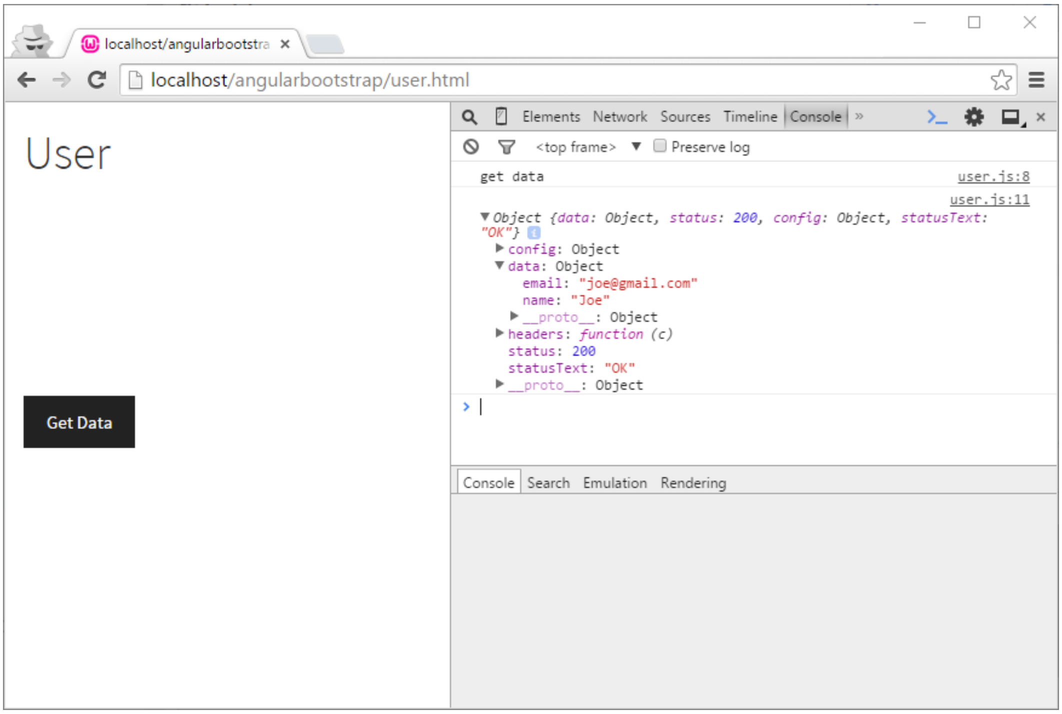
```
get data                                         user.js:6
```

Now, rather than display a message we will put a request to the server at the address “http://localhost/angularbootstrap/data.PHP” and display its response in the browser console.

> If `http://localhost/angularbootstrap/` isn't working, disable "blog.com" and "mysite.com" virtual host in the http.conf apache config file. To disable, comment each line with `#` and restart web server.

```
 1  var app = angular.module('app',[]);
 2  
 3  app.controller('UserCtrl',function($scope,$http){
 4  
 5          $scope.getData = function(){
 6                  console.log("get data");
 7  
 8                  $http.get("data.php").then(function(response){
 9                          console.log(response);
10                  })
11          }
12  });
```

The first change in the `user.js` file was the inclusion of the `$http` variable in the definition of the controller, at line 3. This is necessary for AngularJS to inject an instance of the `http` class in this variable. At line 8, we use `$http.get` to make a GET request to the server. The parameter passed is the URL to access, in this case `data.PHP`. After you create the GET method, use the `success` method that will be called when the server replies. Since we know that the `data.PHP` file prints a JSON message `{"name": "Joe", "email": "joe@gmail.com"}`, this message will be returned to AngularJS by the `response`, which is the first parameter of the anonymous function generated after using the `then`. At line 9 we print this variable in the browser console. The result can be seen in the following image:


localhost/angularbootstrap/user.html
Elements Network Sources Timeline Console
<top frame> Preserve log
User
Get Data
Console Search Emulation Rendering

```
get data                                                        user.js:8
                                                                user.js:11
▼Object {data: Object, status: 200, config: Object, statusText:
"OK"}
 ▶config: Object
 ▼data: Object
    email: "joe@gmail.com"
    name: "Joe"
  ▶__proto__: Object
 ▶headers: function (c)
  status: 200
  statusText: "OK"
 ▶__proto__: Object
```

See that the variable `response` is actually an object with some properties, one being the `data` property, which is the JSON returned by the server already converted to an object, with the properties `name` and `email`. To finish our example, we need to create the Databind between the variable `response` and the `user` object, in addition to using the `ng-model` in the view to display the values on the screen.

**user.html**

```
<!doctype html>
<html ng-app="app">
<head>
    <meta name="viewport" content="width=device-width, initial-scale\
=1">
    <link rel="stylesheet"
    href="bower_components/bootswatch-dist/css/bootstrap.min.css">
</head>
<body ng-controller="UserCtrl">
```

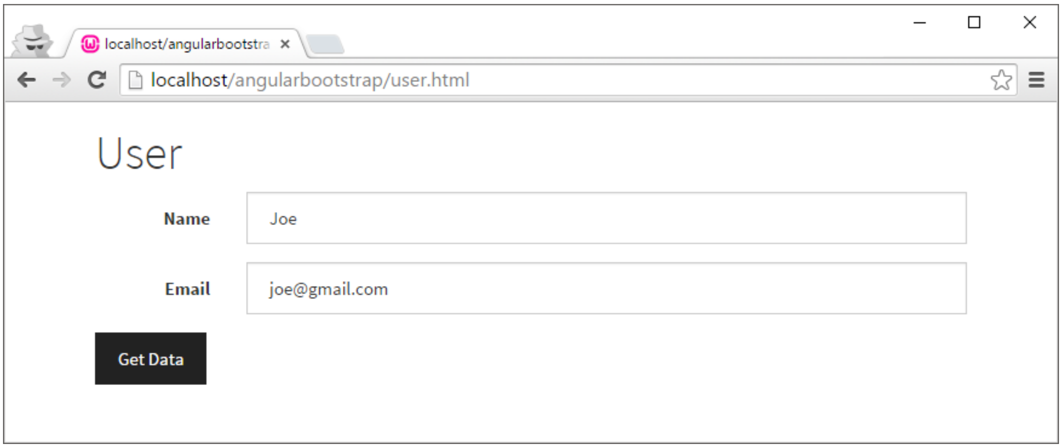
```
<div class="container">

<h1>User</h1>

<form class="form-horizontal">
    <div class="form-group">
        <label for="inputNameLabel"
            class="col-sm-2 control-label">Name</label>
        <div class="col-sm-10">
            <input ng-model="user.name"
            type="text" class="form-control"
            id="inputName" placeholder="Name">
        </div>
    </div>

    <div class="form-group">
        <label for="inputEmailLabel"
        class="col-sm-2 control-label">
            Email
        </label>
        <div class="col-sm-10">
            <input ng-model="user.email"
            type="email" class="form-control"
            id="inputEmail" placeholder="Email">
        </div>
    </div>

</form>
<button class="btn btn-default"
    type="button"
    ng-click="getData()">
    Get Data</button>
</div>
```

```
// ... code ....
```

**user.js**

```
var app = angular.module('app',[]);

app.controller('UserCtrl',function($scope,$http){

        $scope.user = {};

        $scope.getData = function(){
                console.log("get data");

                $http.get("data.php").then(function(response){
                        $scope.user = response.data;
                })
        }
});
```

The result of this code is similar to the following image.


localhost/angularbootstra
localhost/angularbootstrap/user.html
Get Data

User

Name: Joe

Email: joe@gmail.com

Just as the $http.get, there are others functions, as the following list:

- $http.get
- $http.head
- $http.post
- $http.put
- $http.delete
- $http.jsonp

For all of these methods, AngularJS automatically configures the header of the HTTP request. For example, in a POST request, the headers are populated as:

- Accept: application/json, text/plain, * / *
- X-Requested-With: XMLHttpRequest
- Content-Type: application/json

In addition to the headers, AngularJS also serializes the JSON object that is passed between requests. If an object is sent to the server, it is converted to JSON. If a *JSON string* returns from the server, it is converted to object using a JSON parser.

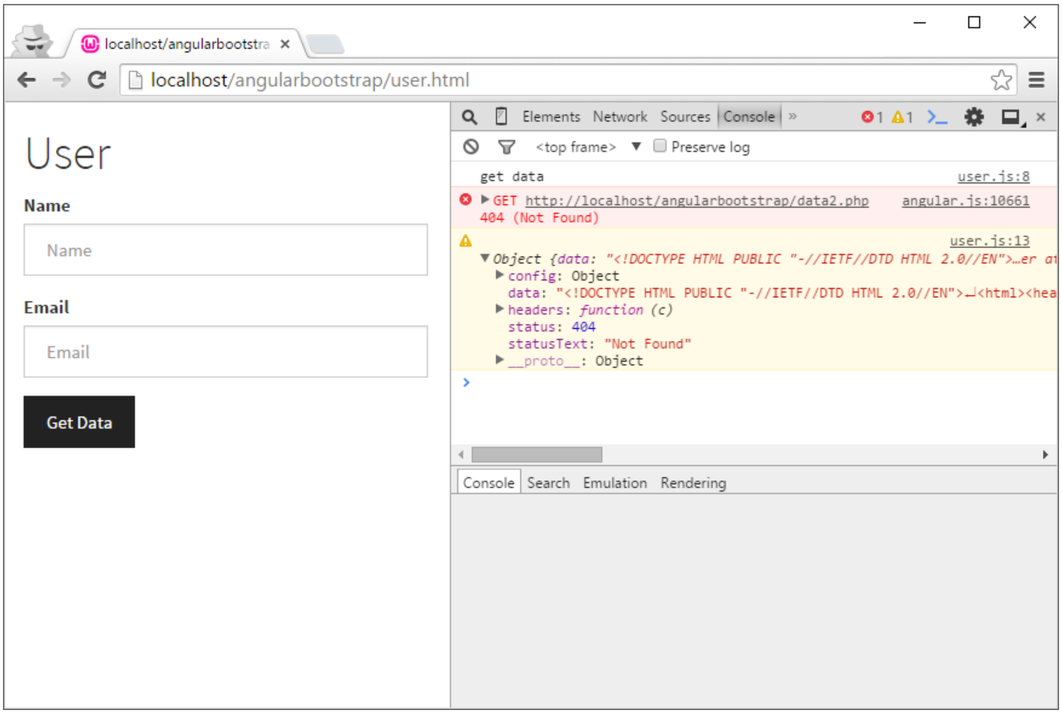
## Handling ajax errors

An Ajax request is not always successful, there may be errors in both the request and the PHP code that we should prevent. With the use of the `$http` we can create a second function after `then`, as in the following example.

**user.js**

```
var app = angular.module('app',[]);

app.controller('UserCtrl',function($scope,$http){

        $scope.user = {};

        $scope.getData = function(){
                console.log("get data");
                $http.get("data2.php").then(function(response){
                        console.log(response);
                },function(response){
                        console.warn(response);
                });
        }
});
```

Note that we changed the URL address to turn to `data2.PHP`. This will generate an error and the response object will have the status of the error response, which in this case is `404-not found`.



```
get data                                                           user.js:8
GET http://localhost/angularbootstrap/data2.php               angular.js:10661
404 (Not Found)
                                                                   user.js:13
▼Object {data: "<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">…er at
  ▶config: Object
   data: "<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">↵<html><hea
  ▶headers: function (c)
   status: 404
   statusText: "Not Found"
  ▶__proto__: Object
```

localhost/angularbootstra
localhost/angularbootstrap/user.html
User
Name
Email
Get Data
Elements Network Sources Console
<top frame>
Preserve log
Console Search Emulation Rendering

There are several ways of displaying this error message in the form, where the easiest way is to display a modal window with the error message. First let's create the modal window in the file `user.html`:

**user.html**

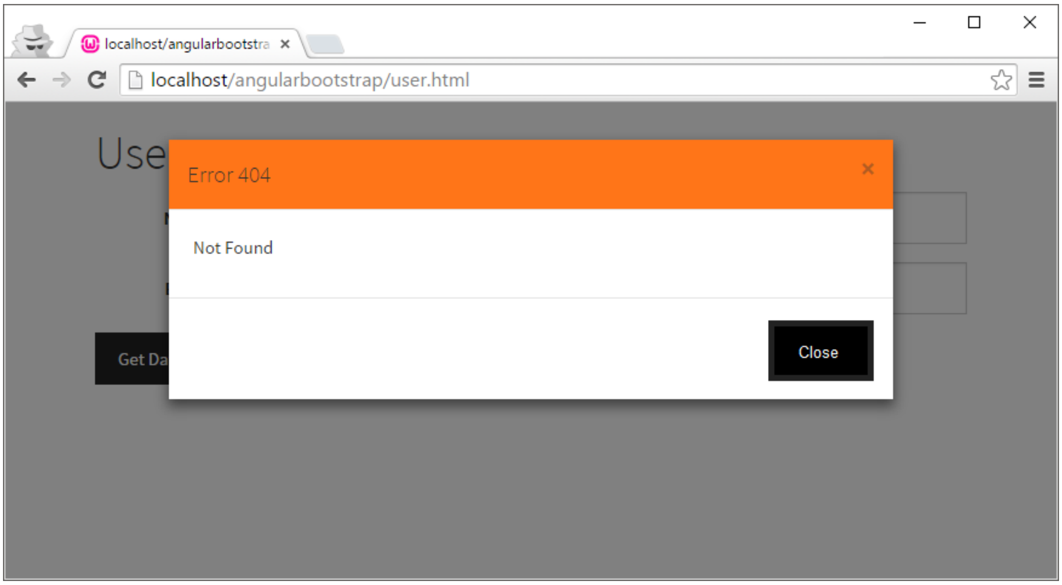
```
<h1>User</h1>

<div id="errorModal" class="modal fade">
  <div class="modal-dialog">
    <div class="modal-content">
      <div class="modal-header bg-warning">
        <button type="button" class="close"
            data-dismiss="modal" aria-label="Close">
            <span aria-hidden="true">&times;</span>
        </button>
        <h4 class="modal-title ">{{error.title}}</h4>
      </div>
      <div class="modal-body">
        <p>{{error.message}}</p>
      </div>
      <div class="modal-footer">
        <button type="button" class="btn btn-default"
          data-dismiss="modal">Close</button>
      </div>
    </div>
  </div>
</div>
```

A modal window is a `div` containing the class `modal`. Initially she does not appear on the form, only if it is called with a button or by javascript. After creating it, let's go back to the controller and create an error object, filling it when the error is triggered:

**user.js**

```
var app = angular.module('app',[]);

app.controller('UserCtrl',function($scope,$http){

        $scope.user = {};
        $scope.error = {};

        $scope.getData = function(){
                console.log("get data");

                $http.get("data2.php").then(function(response){
                        console.log(response);
                },function(response){

                        $scope.error.title = "Error " + response.status
                        $scope.error.message = response.statusText;
                        $('#errorModal').modal();

                        console.warn(response);
                });
        }
});
```

Now the `UserController` has a variable called `$scope.error`, which is used to fill in the title and the message of the error, if it occurs. In the error method of `$http.get` we use the method `$('#errorModal').modal();` to display the message, similar to the following image.


localhost/angularbootstra
localhost/angularbootstrap/user.html
Use
Get Da
Error 404
×
Close

Not Found

## Creating a global loading

This example was taken from: http://mandarindrummond.com/articles/angular-global-loading-indicator/index.html

Whenever there is an Ajax call, it is useful to display a feedback to the user indicating that the page is processing the request. Suppose that, in the `data.PHP` file, we have the following situation:

```
<?php

sleep(3);

$user = new stdclass();
$user->name = "Joe";
$user->email = "joe@gmail.com";

echo json_encode($user);
```

We delayed the PHP code for 3 seconds. To test the page in the browser, by clicking the `Get Data`, the page stays static for 3 seconds, and shortly after comes the answer with the two fields being filled. To minimize this situation, we can create an indicator that the page is running. To do this we need to initially use some AngularJS features. First, we use the object `httpProvider` to create a process called `interceptor`, which will intercede on Ajax request and change some elements of the page. This process is described in the following code:

```
app.config(function($httpProvider) {
    $httpProvider.interceptors.push(function($q, $rootScope) {
        return {
            'request': function(config) {
                $rootScope.$broadcast('loading-started');
                return config || $q.when(config);
            },
            'response': function(response) {
                $rootScope.$broadcast('loading-complete');
                return response || $q.when(response);
            }
        };
    });
});
```

In this code, when a request is made, there is a *broadcast* with the message `loading-started`. When the request returns from the server another message is broadcasted, with the message `loading-complete`. The next step is to create a component that will be the indicator of the page, and we do this by creating a new policy, in accordance with the following code:

```
app.directive("loadingIndicator", function() {
return {
    restrict : "A",
    template: "<div> <img src='loading.gif'/>Loading...</div>",
    link : function(scope, element, attrs) {
        element.css({"display" : "none"});
        scope.$on("loading-started", function(e) {
            element.css({"display" : ""});
        });
        scope.$on("loading-complete", function(e) {
            element.css({"display" : "none"});
        });
    }
};
```

});

This directive, called the `loadingIndicator` features a simple template, formed of a text and an image (loading.gif, you can get it at http://www.ajaxload.info/). In addition to the template, create two functions that are executed according to the broadcast. When the `loading-started` is dispatched, the component is shown, by changing the css attribute: `display:''`. When the `loading-complete` is dispatched, the loading is hidden via the `display: none`.

Now that we created the directive, just use it in code, inserting it anywhere in the form. The complete loading code is displayed below:

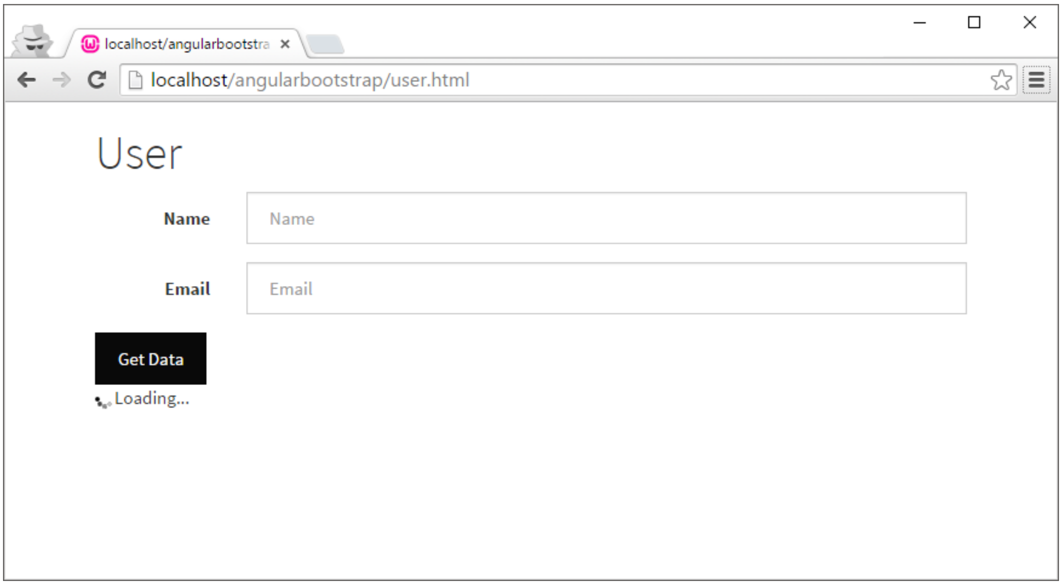
**user.js**

```
var app = angular.module('app',[]);

app.config(function($httpProvider) {
    $httpProvider.interceptors.push(function($q, $rootScope) {
        return {
            'request': function(config) {
                $rootScope.$broadcast('loading-started');
                return config || $q.when(config);
            },
            'response': function(response) {
                $rootScope.$broadcast('loading-complete');
                return response || $q.when(response);
            }
        };
    });
});

app.directive("loadingIndicator", function() {
return {
    restrict : "A",
    template: "<div id='loading'>
        <img src='loading.gif'/>Loading...</div>",
    link : function(scope, element, attrs) {
        element.css({"display" : "none"});
        scope.$on("loading-started", function(e) {
            element.css({"display" : ""});
        });
        scope.$on("loading-complete", function(e) {
            element.css({"display" : "none"});
        });
    }
};
});

app.controller('UserCtrl',function($scope,$http){

$scope.user = {};
$scope.error = {};

$scope.getData = function(){
        console.log("get data");

        $http.get("data.php").then(function(response){
                $scope.user = response.data;
        },function(response){

                $scope.error.title = "Error " + response.status
                $scope.error.message = response.statusText;
                $('#errorModal').modal();

                console.warn(response);
        });
}
});
```

**user.html**

```
...

<button class="btn btn-default" type="button"
    ng-click="getData()">Get Data</button>
<div loading-indicator></div>

....
```

The result is seen in the following image.


localhost/angularbootstra
localhost/angularbootstrap/user.html
User
Name
Email
Get Data
Loading...

## Disabling the button while sending data

It is a good programming practice to disable the “Get Data” button immediately after the user clicks on it, until the server responds to the request. We can handle this with the `ng-disabled` policy, as follows:

**user.html**

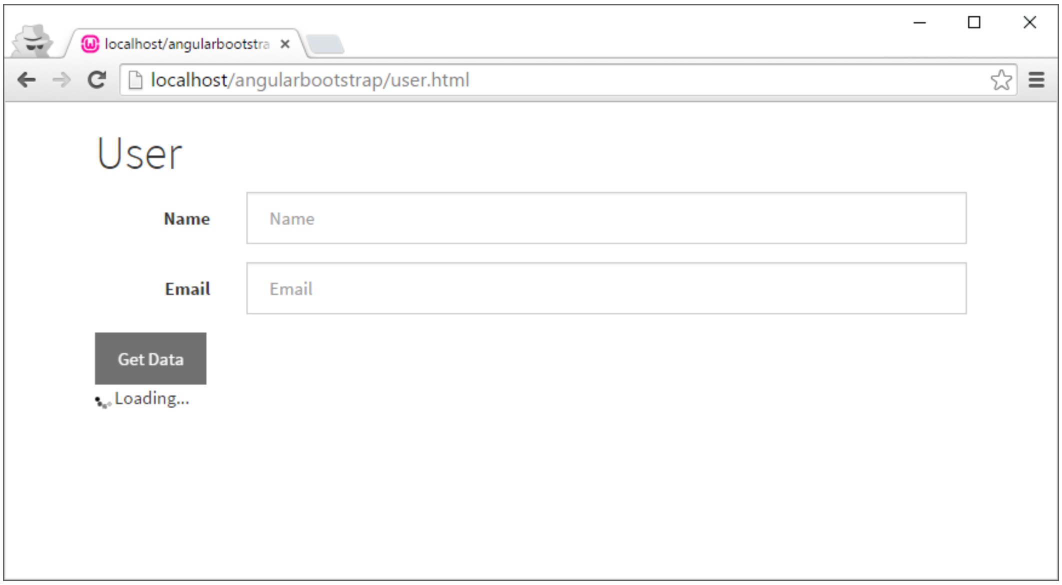
```
<button class="btn btn-default"
            type="button" ng-click="getData()"
            ng-disabled="btnGetDataDisabled">
            Get Data
        </button>
        <div id="loading" loading-indicator></div>
```

In the html file, referring to the `ng-disabled='btnGetDataDisabled'`, where `bt-nGetDataDisabled` is a variable created in the controller and manipulated in the Ajax request:

**user.js**

```
app.controller('UserCtrl',function($scope,$http){

$scope.user = {};
$scope.error = {};
$scope.btnGetDataDisabled = false;

$scope.getData = function(){
        console.log("get data");
        $scope.btnGetDataDisabled = true;
        $http.get("data.php").then(function(response){
                $scope.user = response.data;
                $scope.btnGetDataDisabled = false;
        },function(response){

                $scope.error.title = "Error " + response.status
                $scope.error.message = response.statusText;
                $('#errorModal').modal();
                $scope.btnGetDataDisabled = false;
                console.warn(response);
        });
}
});
```

With that, the “Get Data” button is disabled in the process of request to the server, along with the loading, similar to the following image.


localhost/angularbootstra
localhost/angularbootstrap/user.html
User
Name
Email
Get Data
Loading...

## $resource usage

We learned how to perform Ajax calls with the `$http` and if needed, we can abstract even more the way AngularJS accesses the server. The `$resource` works as an "instance" of the server, thus it will be possible to simulate the access to server as if it was instantiated.

Imagine that we have a method called saveUser on the controller, we would use the `$resource` as follows:

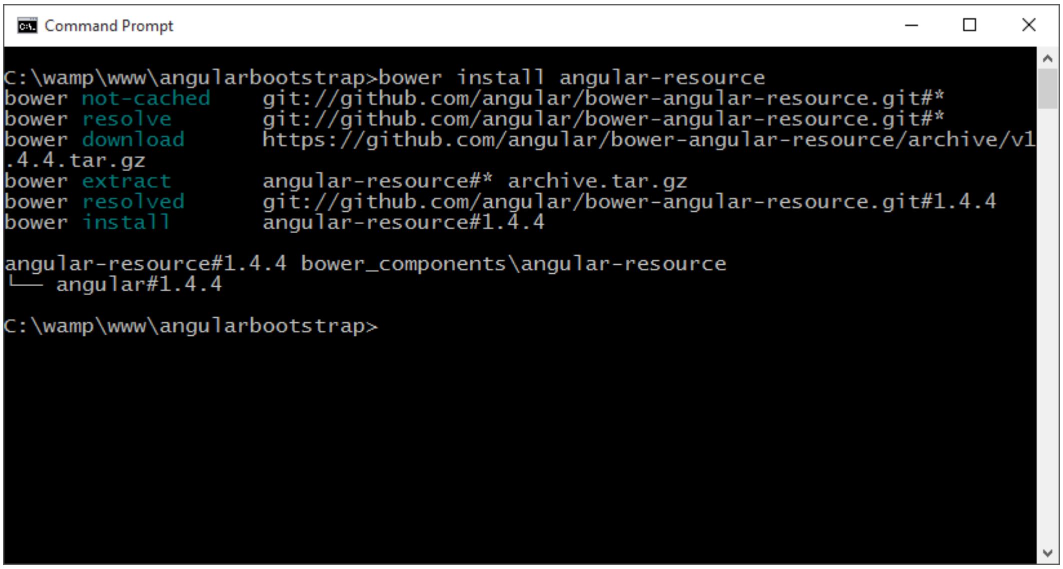
```
$scope.saveUser = function(){
u = new User();
u.name="joe";
u.email="joe@gmail.com";
u.save();
```

By using the 'u.save()' method the $resource itself will perform the Ajax request. In the case of the 'save()', will send a POST to the "/users" url.

That means that the `$resource` establishes a Restful communication standard between the application and the server. Instead of using the `$http.post`, we do only a `variable.save()` so that the request is made.

To use this library you need to add the `angular-resource.js` file in the HTML document. That is, besides the default library "angular.min.js" we must also include `angular-resource.min.js` library. First, we must install the library with Bower, as follows:

```
$ bower install angular-resource
```



Command Prompt

```
C:\wamp\www\angularbootstrap>bower install angular-resource
bower not-cached    git://github.com/angular/bower-angular-resource.git#*
bower resolve       git://github.com/angular/bower-angular-resource.git#*
bower download      https://github.com/angular/bower-angular-resource/archive/v1
.4.4.tar.gz
bower extract       angular-resource#* archive.tar.gz
bower resolved      git://github.com/angular/bower-angular-resource.git#1.4.4
bower install       angular-resource#1.4.4

angular-resource#1.4.4 bower_components\angular-resource
└── angular#1.4.4

C:\wamp\www\angularbootstrap>
```

And after installing the library, we need to reference it in the html file:

**user.html**

```
... code ...

<body ng-controller="UserCtrl">

... code ...

<script src="bower_components/jquery/dist/jquery.min.js">
</script>
<script src="bower_components/bootstrap/dist/js/bootstrap.min.js">
</script>
<script src="bower_components/angular/angular.min.js">
</script>
<script src="bower_components/angular-resource/angular-resource.min.\
js">
</script>
<script src="user.js"></script>
</body>
</html>
```

After installation of the library, we can import the library in the creation of the module:

**user.js**

```
var app = angular.module('app',['ngResource']);

..........
```

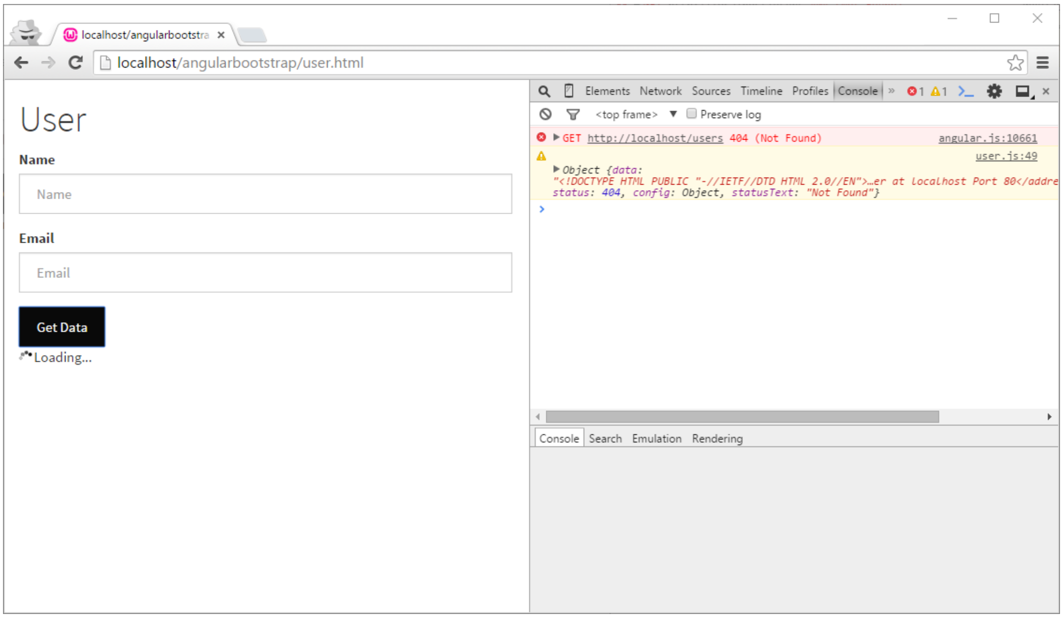
We will now create a new controller, with the use of `$resource`. First, we implement the `getData` method.

**user.js**

```
var app = angular.module('app',['ngResource']);

// ... code ...

app.controller('UserCtrl',
        function($scope,$http,$resource){

$scope.user = {};
$scope.error = {};
$scope.btnGetDataDisabled = false;

var userResource = $resource("/users/:id");

$scope.getData = function(){
        $scope.btnGetDataDisabled = true;
        userResource.get({},function(response){
            console.log(response);
        },function(response){
            $scope.btnGetDataDisabled = false;
            console.warn(response);
        });
}

});
```

In this new implementation, we are creating the controller using the $resource, via `function ($scope, $http, $resource)`. Then we instantiate the variable `userResource` with `$resource('/users/:id')` stating the URL for access to the server, followed by the parameter that sets the key of the table.

When the user clicks the "Get Data" button, we execute the method `userResource.get` that will do a GET request to the server, as in the following image:


localhost/angularbootstra
localhost/angularbootstrap/user.html
User
Name
Email
Get Data
Loading...
Elements Network Sources Timeline Profiles Console
<top frame>
Preserve log
Console Search Emulation Rendering

```
GET http://localhost/users 404 (Not Found)                    angular.js:10661
                                                                    user.js:49
Object {data:
"<!DOCTYPE HTML PUBLIC "-//IETF//DTD HTML 2.0//EN">…er at localhost Port 80</addre
status: 404, config: Object, statusText: "Not Found"}
```

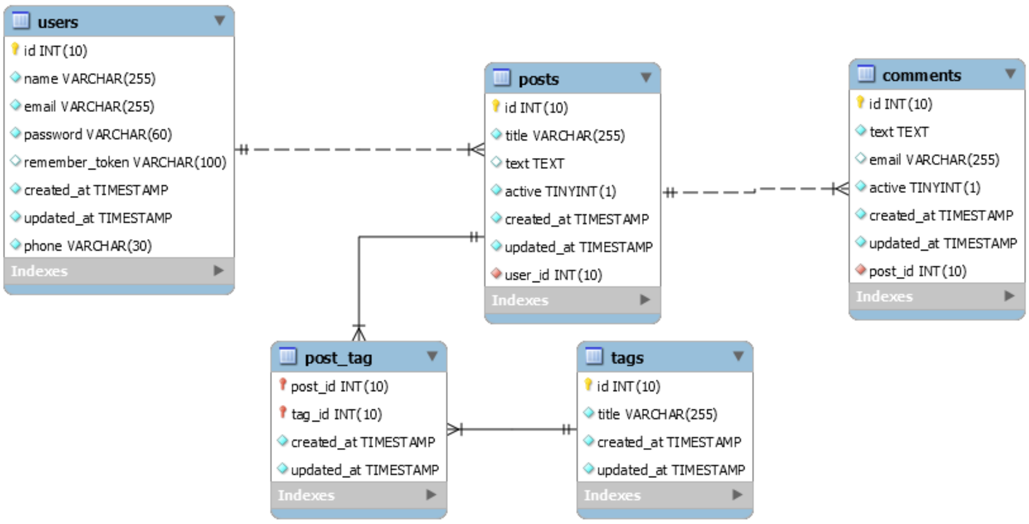
As you can see, the GET request to the address "/users" results in an error, since our test server is not optimized for this (we created only a file called data.PHP). The use of $resource will be implemented correctly when we integrate AngularJS and Laravel.

# Part 4 - Laravel and AngularJS

# Chapter 9 - Connecting Laravel and AngularJS

## Introduction

In this chapter we will go back to the example created in Chapter 4, when we created the blog.com, and integrate it to AngularJS. To recap, we created Laravel project using the artisan, `laravel new blog` and then a whole structure of tables and classes to create a simple blog. The tables are as follows:



We also created the model and controller classes:

- App\User.php and App\Http\Controllers\UserController.php
- App\Post.php and App\Http\Controllers\PostController.php
- App\Tag.php and App\Http\Controllers\Tag.php
- App\Comment.php and App\Http\Controllers\Comment.php

## Workflow

The flow to create the system basically consists of:

1. Defining the features that the customer will need;
2. Setting the URL of the features in the routes.php, as well as the connection type and parameters;
3. Creating the method in the controller, accessing the model and persisting the data;
4. Testing the browser access (if it is a POST method, use Postman);
5. Creating the HTML page that includes all the features that the customer needs;
6. Defining a controller of AngularJS, along with your $resource/$http;
7. Configuring the $resource/$html with the features required;
8. Creating the html/javascript code that uses the functionality.

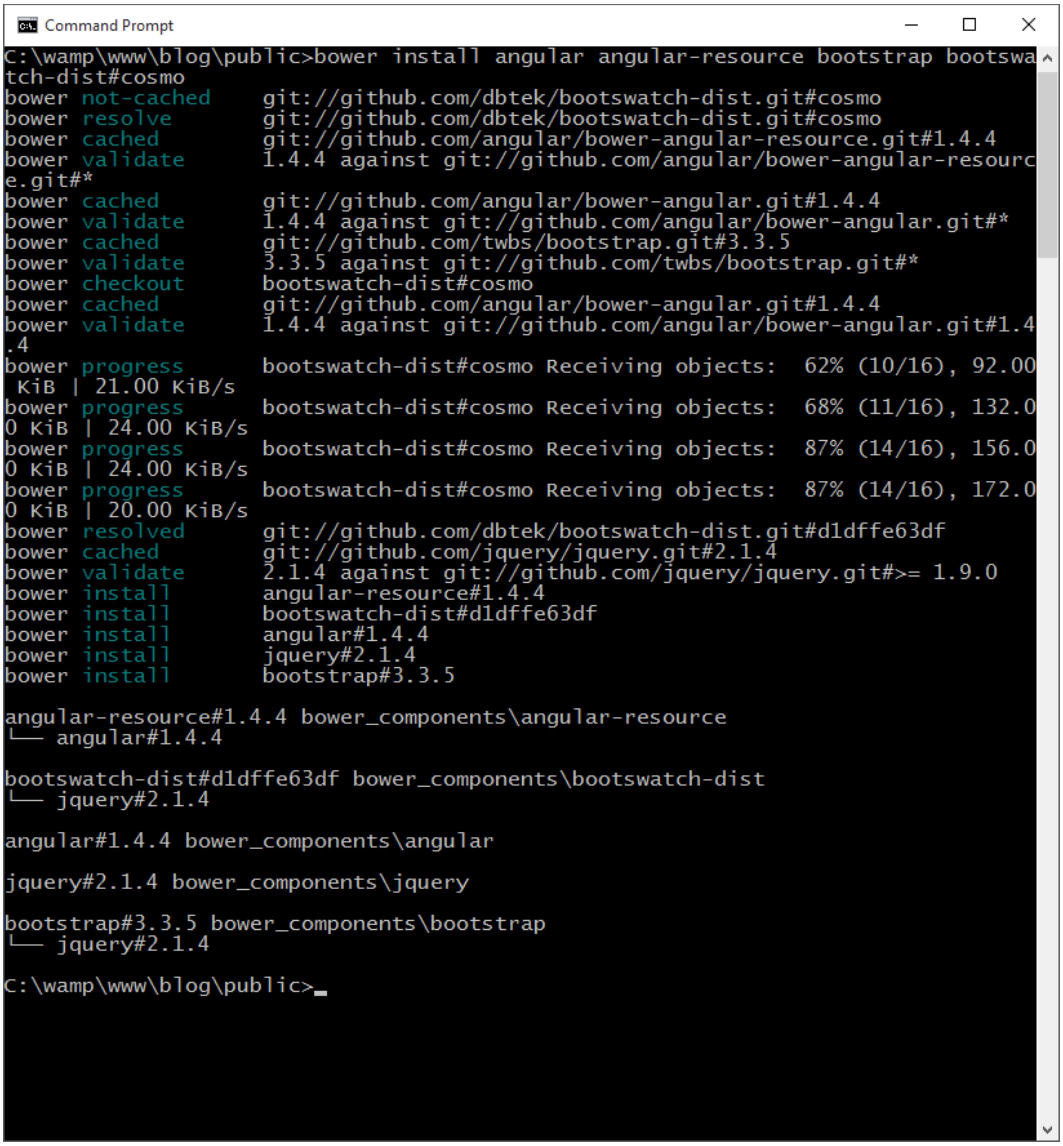
## Installing AngularJS on Laravel

Laravel exposes its user interface in the public folder. In this folder, we have the `index.html` file that configures all that Laravel needs (we call him entrypoint) from the application. To add AngularJS in it, we have to initially perform the installation of libraries with Bower.

Make sure you are in the directory `blog/public` and run the following command:

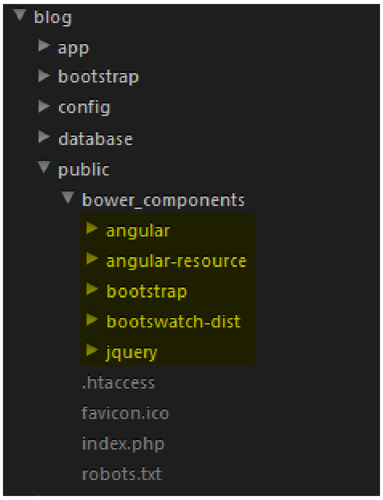
```
$blog\public> bower install angular angular-resource angular-route
          bootstrap bootswatch-dist#cosmo
```

The above command produces the following output:


Command Prompt

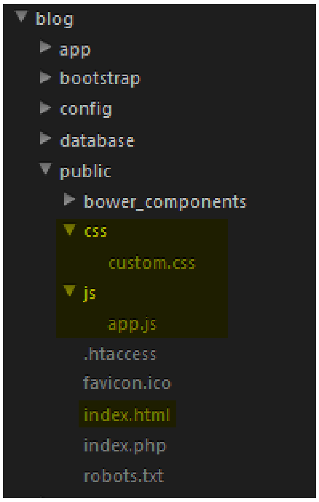
```
C:\wamp\www\blog\public>bower install angular angular-resource bootstrap bootswa
tch-dist#cosmo
bower not-cached    git://github.com/dbtek/bootswatch-dist.git#cosmo
bower resolve       git://github.com/dbtek/bootswatch-dist.git#cosmo
bower cached        git://github.com/angular/bower-angular-resource.git#1.4.4
bower validate      1.4.4 against git://github.com/angular/bower-angular-resourc
e.git#*
bower cached        git://github.com/angular/bower-angular.git#1.4.4
bower validate      1.4.4 against git://github.com/angular/bower-angular.git#*
bower cached        git://github.com/twbs/bootstrap.git#3.3.5
bower validate      3.3.5 against git://github.com/twbs/bootstrap.git#*
bower checkout      bootswatch-dist#cosmo
bower cached        git://github.com/angular/bower-angular.git#1.4.4
bower validate      1.4.4 against git://github.com/angular/bower-angular.git#1.4
.4
bower progress      bootswatch-dist#cosmo Receiving objects:  62% (10/16), 92.00
 KiB | 21.00 KiB/s
bower progress      bootswatch-dist#cosmo Receiving objects:  68% (11/16), 132.0
0 KiB | 24.00 KiB/s
bower progress      bootswatch-dist#cosmo Receiving objects:  87% (14/16), 156.0
0 KiB | 24.00 KiB/s
bower progress      bootswatch-dist#cosmo Receiving objects:  87% (14/16), 172.0
0 KiB | 20.00 KiB/s
bower resolved      git://github.com/dbtek/bootswatch-dist.git#d1dffe63df
bower cached        git://github.com/jquery/jquery.git#2.1.4
bower validate      2.1.4 against git://github.com/jquery/jquery.git#>= 1.9.0
bower install       angular-resource#1.4.4
bower install       bootswatch-dist#d1dffe63df
bower install       angular#1.4.4
bower install       jquery#2.1.4
bower install       bootstrap#3.3.5

angular-resource#1.4.4 bower_components\angular-resource
└── angular#1.4.4

bootswatch-dist#d1dffe63df bower_components\bootswatch-dist
└── jquery#2.1.4

angular#1.4.4 bower_components\angular

jquery#2.1.4 bower_components\jquery

bootstrap#3.3.5 bower_components\bootstrap
└── jquery#2.1.4

C:\wamp\www\blog\public>_
```

The above command produces the following output:



```
▼ blog
  ▶ app
  ▶ bootstrap
  ▶ config
  ▶ database
  ▼ public
    ▼ bower_components
      ▶ angular
      ▶ angular-resource
      ▶ bootstrap
      ▶ bootswatch-dist
      ▶ jquery
      .htaccess
      favicon.ico
      index.php
      robots.txt
```

Now we need to create the `index.html` file that will be the main page of the blog. In addition to this, we will also create the directory `js` to put the javascript files of the application and the "css" folder for the style and customization files.



```
▼ blog
  ▶ app
  ▶ bootstrap
  ▶ config
  ▶ database
  ▼ public
    ▶ bower_components
    ▼ css
        custom.css
    ▼ js
        app.js
      .htaccess
      favicon.ico
      index.html
      index.php
      robots.txt
```

Finally edit the `index.html` file that loads AngularJS and Bootstrap libraries.

**blog/public/index.html**

```
<!doctype html>
<html ng-app="app">
<head>
    <meta name="viewport" content="width=device-width,
                                                                            \
                    initial-scale=1">
    <link rel="stylesheet"
href="bower_components/bootswatch-dist/css/bootstrap.min.css">
    <link rel="stylesheet" href="css/custom.css">
    <title> My Blog </title>
</head>
<body>
    <div class="container">

    My Blog

    </div>
<script src="bower_components/jquery/dist/jquery.min.js">
</script>
<script src="bower_components/bootstrap/dist/js/bootstrap.min.js">
</script>
<script src="bower_components/angular/angular.min.js">
</script>
<script src="bower_components/angular-route/angular-route.min.js">
</script>
<script src="bower_components/angular-resource/angular-resource.min.\
js">
</script>
<script src="js/app.js"></script>
</body>
</html>
```

**blog/public/js/app.js**

```
app = new angular.module('app',[]);
```

To test the `index.html` file in your browser, we need to adjust the `routes.php`.

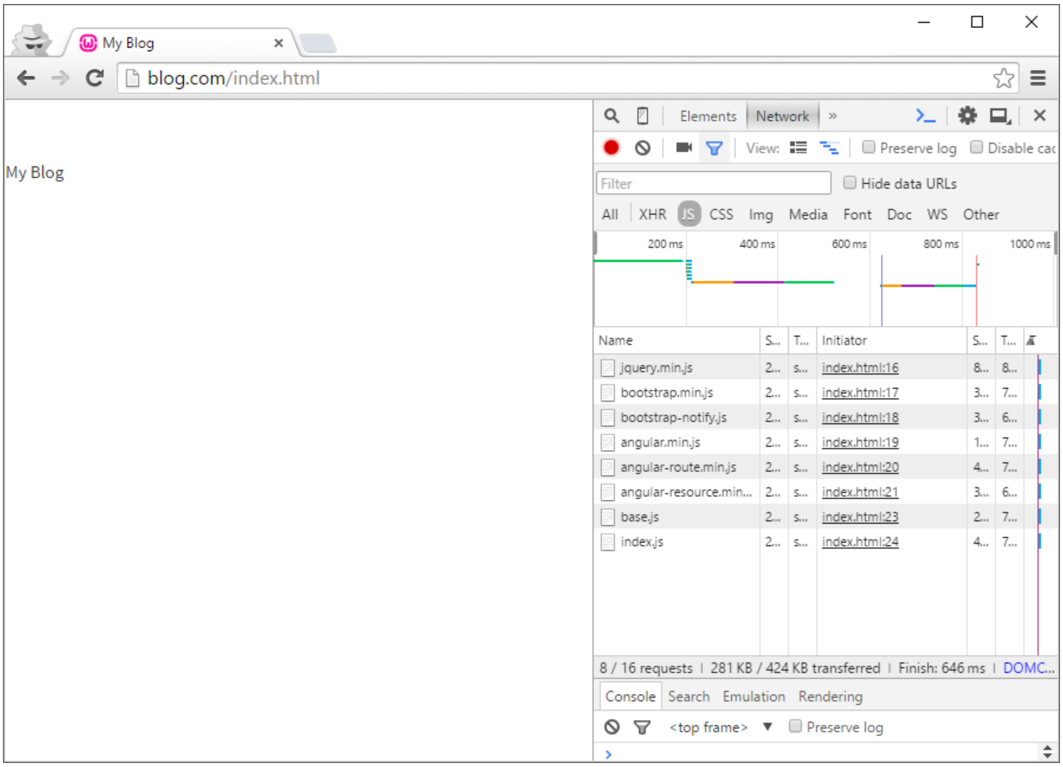
## Reconfiguring the routes.php

Several tests were made in the file `blog/app/Http/routes.php`, it should contain many codes that are no longer needed. Delete or comment all of your content so that we can create a new entry, which sets up that, when the user access “blog.com” Laravel will redirect to “blog.com/index.html”.

**blog/app/Http/routes.php**

```
<?php
Route::get('/', function () {
        return Redirect::to('/index.html');
});


Route::get('routes', function() {
     \Artisan::call('route:list');
     return "<pre>".\Artisan::output();
});
```

In addition to the main entrance `blog.com/`, we also set up `blog.com/routes` to provide a list of routes that are configured for the application. After editing the routes, visit `blog.com` in your browser:



| Name | S... | T... | Initiator | S... | T... |
|---|---|---|---|---|---|
| jquery.min.js | 2... | s... | index.html:16 | 8... | 8... |
| bootstrap.min.js | 2... | s... | index.html:17 | 3... | 7... |
| bootstrap-notify.js | 2... | s... | index.html:18 | 3... | 6... |
| angular.min.js | 2... | s... | index.html:19 | 1... | 7... |
| angular-route.min.js | 2... | s... | index.html:20 | 4... | 7... |
| angular-resource.min... | 2... | s... | index.html:21 | 3... | 6... |
| base.js | 2... | s... | index.html:23 | 2... | 7... |
| index.js | 2... | s... | index.html:24 | 4... | 7... |

8 / 16 requests | 281 KB / 424 KB transferred | Finish: 646 ms | DOMC...

When using the inspect tool from Google Chrome/Firefox (F12), we can see that the `index.html` file is loaded with AngularJS and Bootstrap libraries.

## Site header

Let's reuse the Bootstrap standard template (http://getbootstrap.com/examples/starter-template/) and begin the construction of the header of the blog. The header will contain some links like the main page, the users page, comments and tags.

**blog/public/index.html**

```
.....

<body>

    <nav class="navbar navbar-inverse navbar-fixed-top">
          <div class="container">
            <div class="navbar-header">
              <button type="button" class="navbar-toggle collapsed"
              data-toggle="collapse" data-target="#navbar"
               aria-expanded="false" aria-controls="navbar">
                <span class="sr-only">Toggle navigation</span>
                <span class="icon-bar"></span>
                <span class="icon-bar"></span>
                <span class="icon-bar"></span>
              </button>
              <a class="navbar-brand" href="#">blog.com</a>
            </div>
            <div id="navbar" class="collapse navbar-collapse">
               <ul class="nav navbar-nav">
                <li class="active"><a href="/">Home</a></li>
                <li><a href="#/users">users</a></li>
                <li><a href="#/comments">Comments</a></li>
                <li><a href="#/tags">Tags</a></li>
              </ul>
               <div class="navbar-right ">
            <ul class="nav navbar-nav">
               <li><a href="#/login">Login</a></li>
            </ul>
              </div>
            </div>
          </div>
        </nav>

        <div class="container">
```

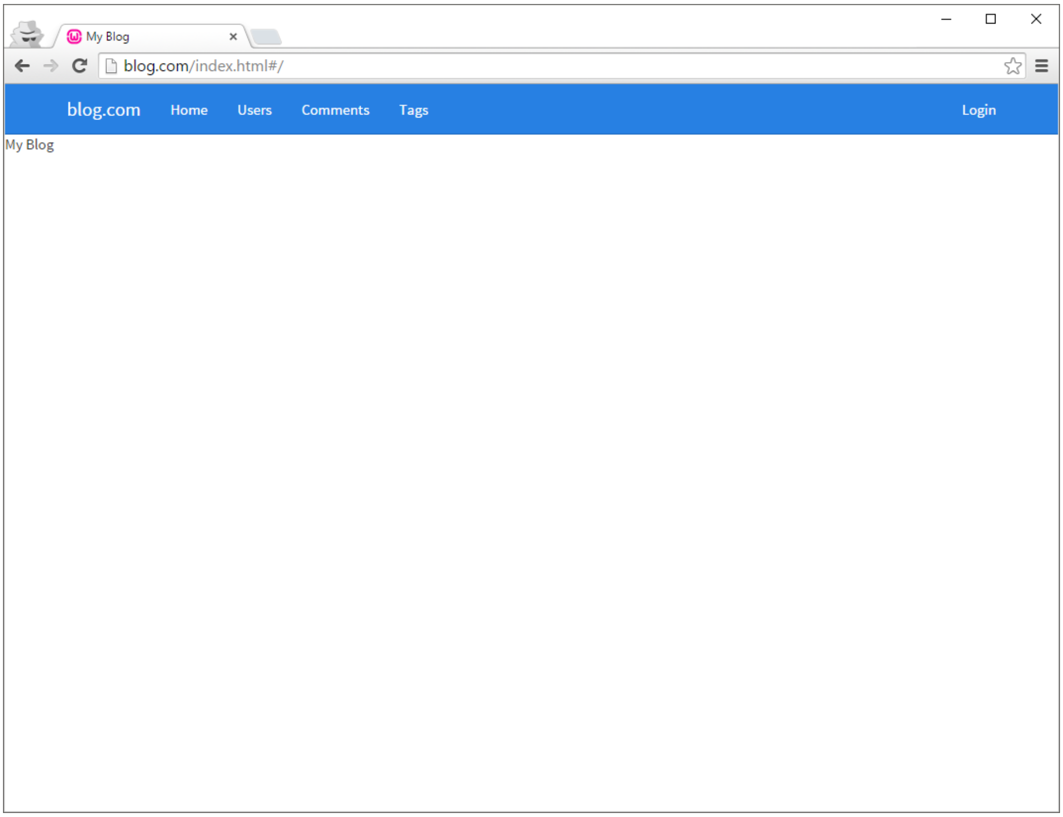
```
            My Blog
        </div>

 ....
```

As the header is defined with a `<div>`, whose class is `navbar`, it has an "overflow" behavior over the content of the page, making our original text "My Blog" to be behind the menu. To fix this problem, edit the `custom.css` file so that the top margin of the site is greater than the height of the menu, in this case, 50 pixels is enough.

**blog/public/css/custom.css**

```
body{
        margin-top: 50px;
}
```

So far we have the following design:



My Blog

The central part of the Blog, we are going to split it into 2 blocks, in a proportion of 70% and 30%, IE 8 and 4 blocks, as shown in the following code:

**blog/public/index.html**

```
// header....

<div class="container">
  <div class="row">
    <div class="col-sm-8">Content</div>
    <div class="col-sm-4">Menu</div>
  </div>
</div>
```

In the content blocks we will insert the posts of the blog, in chronological order, and in the menu blocks, insert the tags used in the website and the latest comments.

## Using DeepLink on the blog

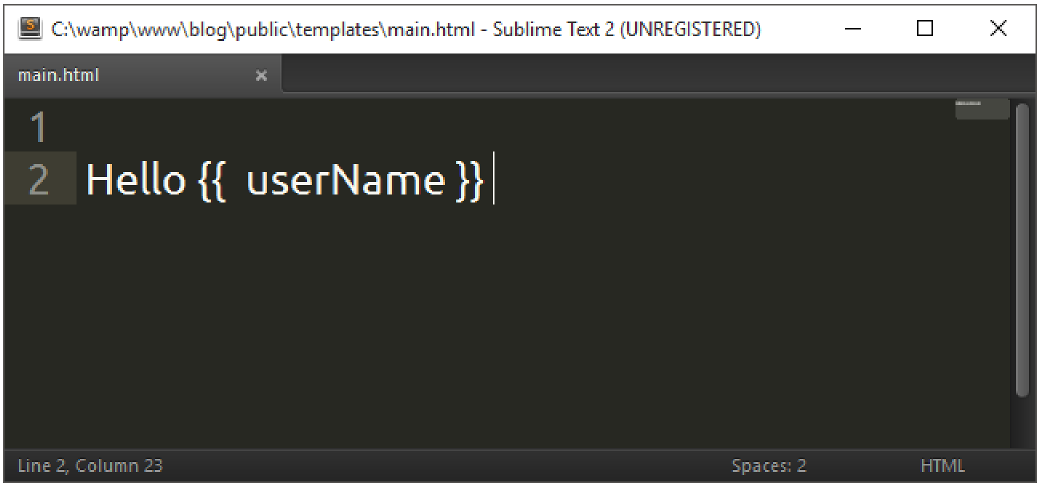
We will use AngularJS's Deeplink feature to load parts of the blog. Initially, we must set up that we will use the content blocks for this content. For that we use the `ng-view` directive:

On the`app.js` file we set up the routing as follows:

**blog/public/js/app.js**

```
app = new angular.module('app',['ngRoute']);

app.config(['$routeProvider',function($routeProvider){
  $routeProvider.
    when('/',{controller:'mainController',
            templateUrl:'templates/main.html'}).
    when('/users',{controller:'userController',
            templateUrl:'templates/user.html'}).
    when('/comments',{controller:'commentController',
            templateUrl:'templates/comment.html'}).
    when('/tags',{controller:'tagController',
            templateUrl:'templates/tag.html'}).
     when('/login',{controller:'loginController',
            templateUrl:'templates/login.html'}).
    otherwise({redirectTo:'/'});
}]);

app.controller('mainController',function ($scope) {
  $scope.userName="daniel";
});
```

We create in this configuration the routes for the top menu links, in addition to the `mainController`. Each route has a controller and a template file, which we will creat gradually. The first one is the `main.html` for route `/`, which must be created in `blog/public/template/main.html`, initially with a simple text.


C:\wamp\www\blog\public\templates\main.html - Sublime Text 2 (UNREGISTERED)
main.html
Line 2, Column 23
Spaces: 2
HTML

```
Hello {{ userName }}
```

Note that in the `main.html` file we can use AngularJS, and he is already getting a variable `username` from the controller.

## Getting posts

Initially it is necessary to display the latest posts on the main page of the blog. For this, we will use the workflow that we created earlier in this chapter to perform all the steps.

The client needs the last 3 posts created in chronological order (can be by post id), in addition to the related tags to that post and the amount of comments. Let's not initially display the comments for each post.

The URI for this request will be "/posts/last/3" which will call the method `getLast` passing the parameter 3, meaning the amount of posts to be returned. The number 3 is the default, so if there is a call to the server with the url "/posts/last", 3 posts will be returned.

Add the following route in the `routes.php` file:

**blog/app/Http/routes.php**

```php
<?php

// ... code ...

Route::get('/posts/last/{n?}', 'PostController@last');
```

Now we will use the Laravel Query Builder to obtain this information, which will be on the `last` method of `PostController` class:

**blog/app/Http/Controllers/PostController.php**

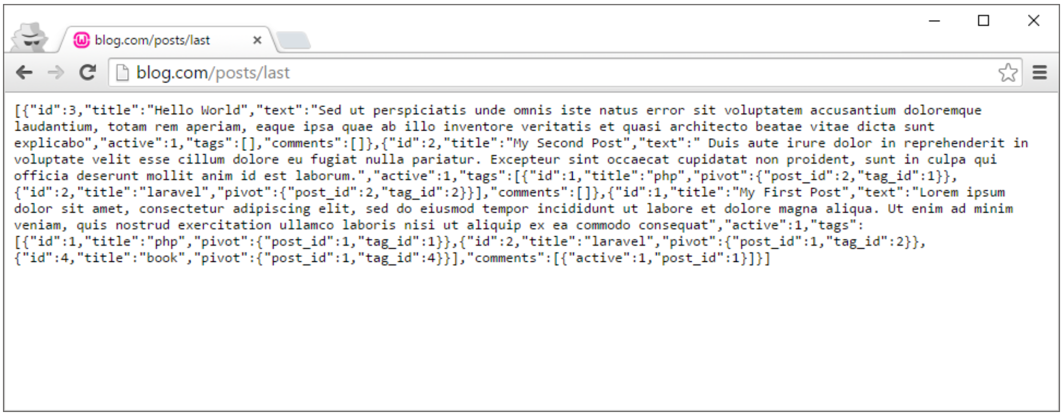
```php
<?php

namespace App\Http\Controllers;

use Illuminate\Http\Request;

use App\Http\Requests;
use App\Http\Controllers\Controller;
use App\Post;

class PostController extends Controller
{
    // ...code...

    public function last($n=3){

        return Post::select('id','title', 'text','active')
            ->with(['tags'=>function($q){
                $q->select('id','title');
            }])
            ->with(['comments'=>function($q){
                $q->active()->select('active','post_id');
            }])
24              ->orderBy('id', 'desc')
25              ->take($n)
26              ->get();
27      }
28  }
```

Let’s look at this query line. The `last` method has a `$n` parameter (line 21), which is the amount of posts that should be returned in the query. If no amount is reported, the value 3 is assumed. At line 23 we returned an instance of Post, followed by various parameters. Note that at line 9, we included the file `App\Post` with the command `use` and therefore we can use the `Post` directly at line 23. The first method `Post::select` make the selection of which fields should be returned by the query. At line 24 we used `->with` to add a relationship to this query. It is necessary to include the tags from that post, since we use `->with([tags ...` , and at line 25, we defined that only the fields `id` and `title` of tag table will be returned.

At line 27 we have the same case of the selection of tags, but with the comments. We are selecting the active field and we need to select the field `post_id`, so that Laravel can make the relationship between N to one of the object, as explained above in Chapter 5. Another detail at line 28 is the use of `->active()` which was configured in `App\Comment.php`, which is a `scope`, detailed in Chapter 5.

At line 30 we have the use of the `->order(`id `,` desc`)` that will sort the query by id, in reverse order. At line 31 we have the `->take($n)` which will obtain as many records as the value of `$n`.

As the method returns this entire query, Laravel will take care of transforming it in JSON format, which can be seen according to the following image.



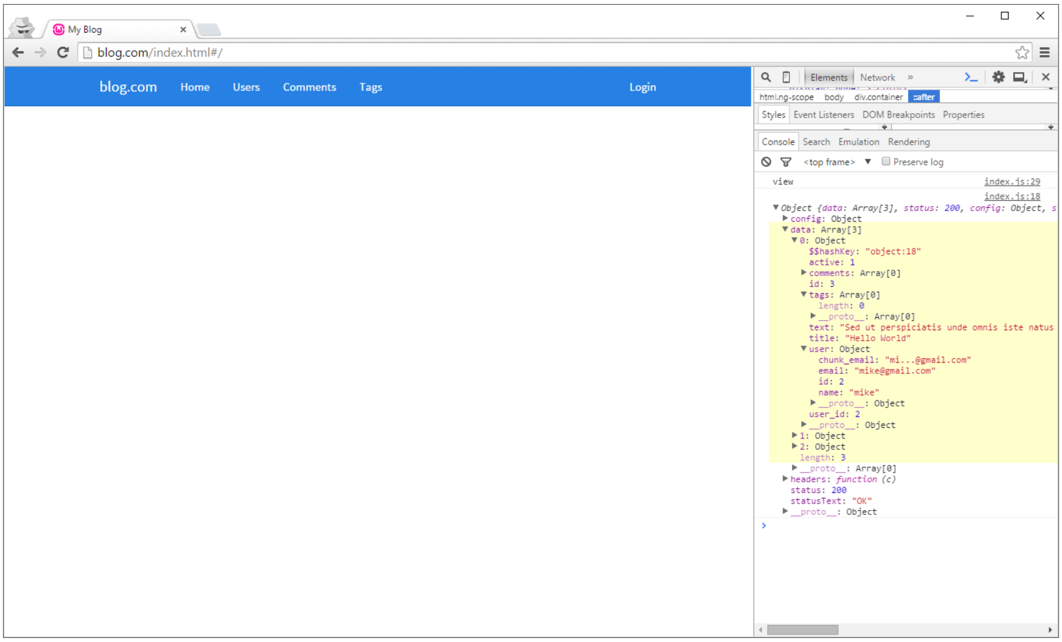
```
[{"id":3,"title":"Hello World","text":"Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque
laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt
explicabo","active":1,"tags":[],"comments":[]},{"id":2,"title":"My Second Post","text":" Duis aute irure dolor in reprehenderit in
voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui
officia deserunt mollit anim id est laborum.","active":1,"tags":[{"id":1,"title":"php","pivot":{"post_id":2,"tag_id":1}},
{"id":2,"title":"laravel","pivot":{"post_id":2,"tag_id":2}}],"comments":[]},{"id":1,"title":"My First Post","text":"Lorem ipsum
dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim
veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat","active":1,"tags":
[{"id":1,"title":"php","pivot":{"post_id":1,"tag_id":1}},{"id":2,"title":"laravel","pivot":{"post_id":1,"tag_id":2}},
{"id":4,"title":"book","pivot":{"post_id":1,"tag_id":4}}],"comments":[{"active":1,"post_id":1}]}]
```

The part of the query server is ready, now we need to program on the client to obtain this information. For that, we use `$http` in the `MainController` of the application, initially with the following code:

**blog/public/js/app.js**

```
// ...code...

app.controller('mainController',function ($scope,$http) {

    $scope.$on('$viewContentLoaded', function(){
        $http.get("/posts/last/3").then(function(response){
            console.log(response);
        },function(response){
            console.warn(response);
        });
    });

});
```

In this code, we use `scope.$on('$viewContentLoaded', function () {` that will run the anonymous function as soon as the view is loaded. In this function, we use `$http` to perform a GET call to the server, where the Ajax query will be performed and the response will be contained in the first parameter of method `then`. At the moment we are only displaying the HTTP query response in the browser console, which is similar to the following image.



```
view                                                   index.js:29
                                                       index.js:18
▼Object {data: Array[3], status: 200, config: Object, s
  ▶config: Object
  ▼data: Array[3]
    ▼0: Object
       $$hashKey: "object:18"
       active: 1
      ▶comments: Array[0]
       id: 3
      ▼tags: Array[0]
         length: 0
        ▶__proto__: Array[0]
       text: "Sed ut perspiciatis unde omnis iste natus
       title: "Hello World"
      ▼user: Object
         chunk_email: "mi...@gmail.com"
         email: "mike@gmail.com"
         id: 2
         name: "mike"
        ▶__proto__: Object
       user_id: 2
      ▶__proto__: Object
    ▶1: Object
    ▶2: Object
     length: 3
    ▶__proto__: Array[0]
  ▶headers: function (c)
   status: 200
   statusText: "OK"
  ▶__proto__: Object
>
```

With the servers `response, we can add it to a variable, e.g.` posts‘:

**blog/public/js/app.js**

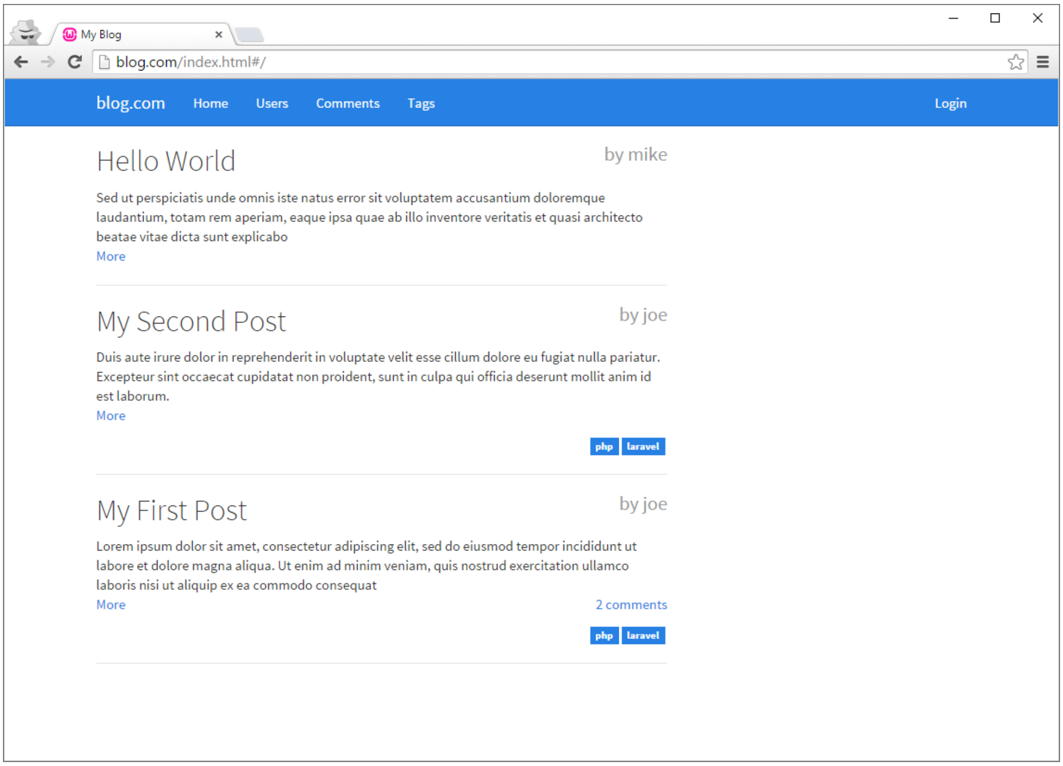
```
app.controller('mainController',function ($scope,$http) {

    $scope.posts = [];

    $scope.$on('$viewContentLoaded', function(){
        $http.get("/posts/last/3").then(function(response){
            console.log(response);
            $scope.posts = response.data;
        },function(response){
            console.warn(response);
        });
    });
});
```

In this code, we create the variable `$scope.posts`, which is populated when the server request returns. After making this reference, we will program the file `template/main.html` to display the posts to the user.

**blog/public/template/main.html**

```
<div ng-repeat="post in posts">
    <h2>{{post.title}}</h2>
    <p>
        {{post.text}}
        <br/><a href="#/post/{{post.id}}">More</a>
        <p class="text-right">
            <span ng-repeat="tag in post.tags"
                class="label label-primary tag">{{tag.title}}</span>
        </p>
        <hr/>
    </p>
</div>
```

In this code, we use the `ng-repeat` to create a loop and, for each iteration, display a post on the screen. In each iteration of the loop, the variable `post` is set and we can reference it for its properties, such as the title and the content of the post. You can also perform a new loop to display the tags of each post. The result of this template is similar to the following image.



Hello World by mike

Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo

More

My Second Post by joe

Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

More

php laravel

My First Post by joe

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat

More 2 comments

php laravel

## Inserting the amount of comments

The comments of each post are returned by the Ajax call, then to display the quantity, just change the template by entering the information on the comments, as the following code:

**blog/public/template/main.html**

```
<div ng-repeat="post in posts">
    <h2>{{post.title}}</h2>
    <p>
        {{post.text}}
        <br/>
        <a href="#/post/{{post.id}}">More</a>

        <span ng-init="lengthComments = post.comments.length">
        <a ng-show="lengthComments>0" class="pull-right"
            href="#/post/{{post.id}}">
{{lengthComments}}
comment{{ lengthComments != 1 ? 's' : ''}} </a>
        </span>

        <p class="text-right">
            <span ng-repeat="tag in post.tags"
            class="label label-primary tag">{{tag.title}}</span>
        </p>
        <hr/>
    </p>
</div>
```

In this new implementation, we use the `ng-init` to get the number of comments for that post and, if it is greater than 0, we display the amount. To display or not the information we use the `ng-show` and to distinguish whether the word "comment" has the "s" at the end use the ternary operator.

## Insert the Post author

After you create the blog home page, containing the last three posts, we are going to insert the information from the author of the Post, which was not informed until now, so we can have a chance to review the concepts learned so far. First we need to edit the method `PostsController@last` inserting the author of the post, as follows:

**blog/app/Http/Controllers/PostController.php**

```
<?php

namespace App\Http\Controllers;

use Illuminate\Http\Request;

use App\Http\Requests;
use App\Http\Controllers\Controller;
use App\Post;

class PostController extends Controller
{
    // ...code...

   public function last($n=3){

        return Post::select('id','title', 'text','active','user_id')
            ->with(['tags'=>function($q){
                    $q->select('id','title');
                }])
            ->with(['comments'=>function($q){
                    $q->active()->select('active','post_id');
                }])
            ->with(['user'=>function($q){
                    $q->select('id','name','email');
                }])
            ->orderBy('id', 'desc')
            ->take($n)
            ->get();
    }
}
```

We included the `user_is` field in the post `select`. This is required so that the Query

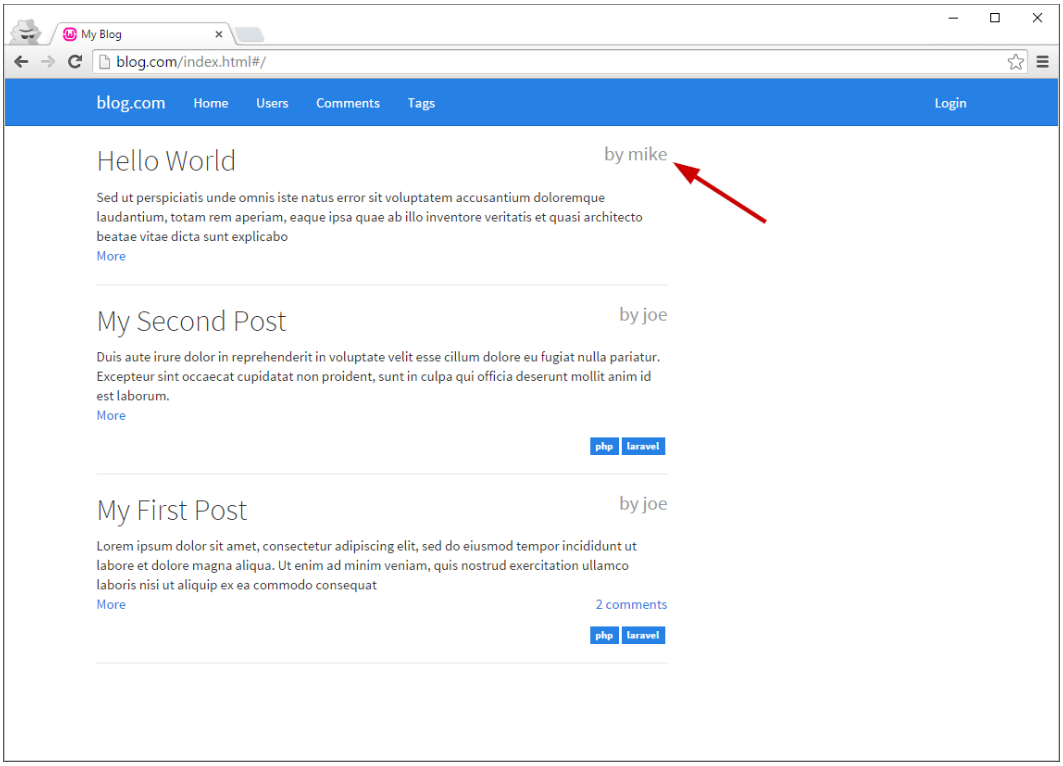
Builder can connect the User to the Post. After the inclusion of the comments of the Post, use the `with` to include the User, with the fields `id, name` and `email`.

After this modification, the field `post.user.name` will be available on the client's JSON, which we can insert into the template, as follows:

**blog/public/template/main.html**

```
<div ng-repeat="post in posts">
    <h2>{{post.title}}
        <small class="pull-right">
            by {{post.user.name}}
        </small></h2>
    <p>
        {{post.text}}

        <br/>
        <a href="#/post/{{post.id}}">More</a>

        <span ng-init="lengthComments = post.comments.length">
        <a ng-show="lengthComments>0" class="pull-right"
            href="#/post/{{post.id}}">
            {{lengthComments}}
            comment{{ lengthComments != 1 ? 's' : ''}} </a>
        </span>

        <p class="text-right">
            <span ng-repeat="tag in post.tags"
            class="label label-primary tag">{{tag.title}}</span>
        </p>
        <hr/>
    </p>
</div>
```

Note that we add the `{{post.user.name}}` next to the title of the post, resulting in the following image:



Hello World by mike

Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo

More

My Second Post by joe

Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

More

php laravel

My First Post by joe

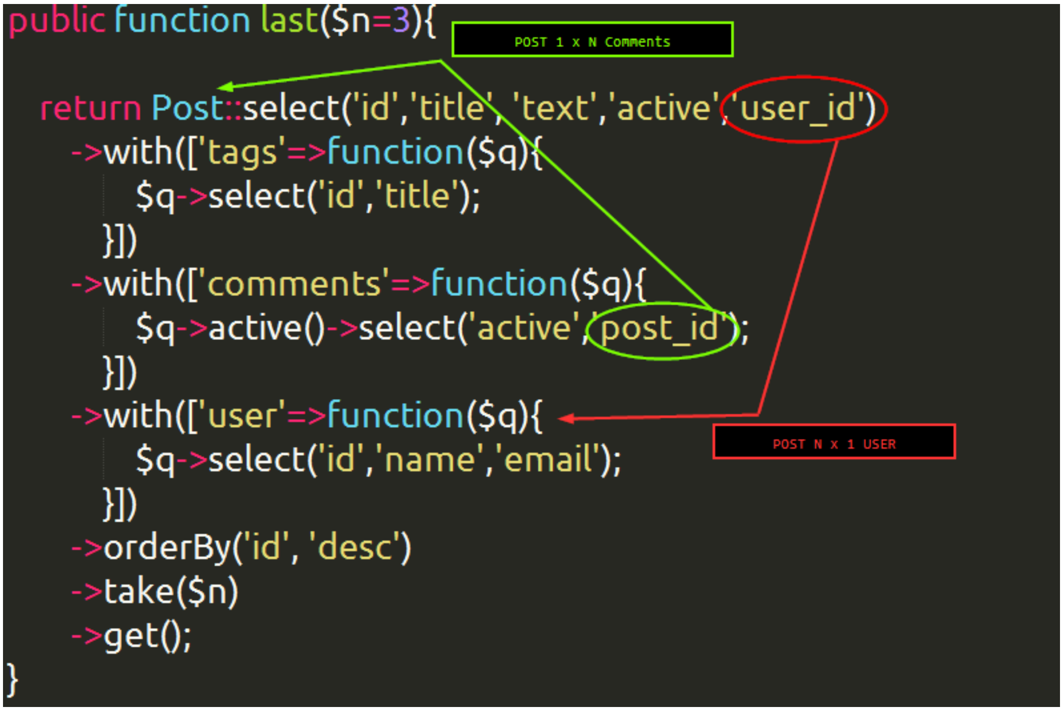
Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat

More 2 comments

php laravel

## Reviewing the Query Builder

It is very important to realize that in the Query of the `PostsController@last` method we must always indicate the key fields that make the relationship between the tables. For example, on 1xN relationship between Post and Comment, we should bring the field `post_id` in `with('comment')`. Similarly, the relationship between User and Post Nx1, should bring `user_id` in the select of Post. Forget these fields is one of the most common error causes in relationships of the Query Builder. The following image will help you to understand the process:



```
public function last($n=3){

  return Post::select('id','title', 'text','active','user_id')
    ->with(['tags'=>function($q){
        $q->select('id','title');
    }])
    ->with(['comments'=>function($q){
        $q->active()->select('active','post_id');
    }])
    ->with(['user'=>function($q){
        $q->select('id','name','email');
    }])
    ->orderBy('id', 'desc')
    ->take($n)
    ->get();
}
```

## Filling the side menu

The side menu of the Web site will contain two information about the Blog. The first are all the tags used on the blog, and the second, the last three comments. See that there are two distinct informations that should be in their respective controllers, for example: `TagController@getAll()` and `CommentController@last()`.

**blog/app/Http/Controllers/CommentController.php**

```
<?php

namespace App\Http\Controllers;

use Illuminate\Http\Request;

use App\Http\Requests;
use App\Http\Controllers\Controller;
use App\Comment;

class CommentController extends Controller
{

    // ... code ...

    public function last($n=3){
        return Comment::select('id','text','post_id')
            ->active()
            ->orderBy('id', 'desc')
            ->with(['post'=>function($q){
                $q->select('id','title');
            }])
            ->take($n)
            ->get();
    }
}
```

**blog/app/Http/Controllers/TagController.php**

```
<?php

namespace App\Http\Controllers;

use Illuminate\Http\Request;

use App\Http\Requests;
use App\Http\Controllers\Controller;
use App\Tag;

class TagController extends Controller
{

    // ... code ...

    public function getAll(){
        return Tag::select('id','title')->get();
    }
}
```

Even if they are different, we can group information in one single Ajax call, that we can organize into a new controller, called `BlogController`. This controller will have methods for the site itself, and not the system tables. To create the controller, use the artisan:

```
blog$  php artisan make:controller BlogController
```

In this controller, we create the method `getMenuInfo`, which will bring together the information from the tags and comments.

**blog/app/Http/Controllers/BlogController.php**

```php
<?php

namespace App\Http\Controllers;

use Illuminate\Http\Request;

use App\Http\Requests;
use App\Http\Controllers\Controller;

class BlogController extends Controller
{
    public function getMenuInfo(){
        $tagController = new TagController();
        $commentController = new CommentController();
        return array(
            $tagController->getAll(),
            $commentController->last()
            );
    }
}
```

After you create the method in `BlogController`, we can add it in the `routes.php` file, as follows:

**blog/app/Http/routes.php**

```php
<?php

Route::get('/', function () {
        return Redirect::to('/index.html');
});

Route::get('/posts/last/{n?}', 'PostController@last');
Route::get('/menuinfo', 'BlogController@getMenuInfo');
```

```
// ... code ....
```

And test in your browser with the address `http://blog.com/menuinfo`.

Finishing the server part and Laravel, let's display the customer information in that column right next to the posts. This column is set by the html code: `<div class="col-sm-4">Menu</div>` where we will change to:

**blog/public/index.html**

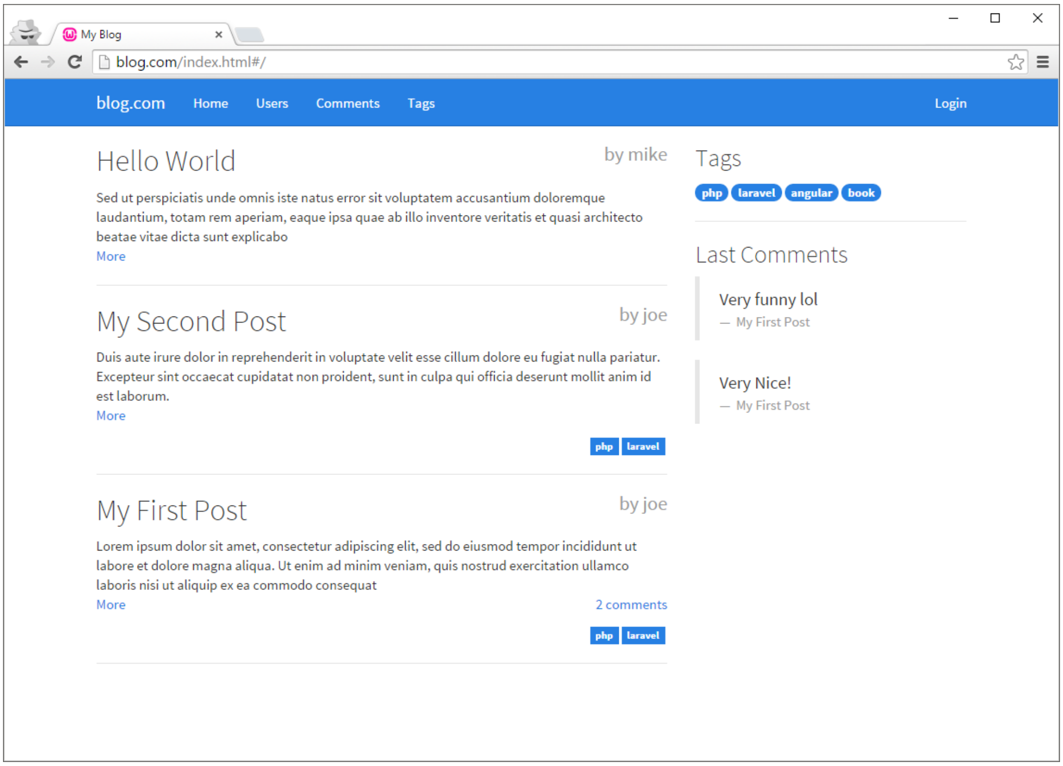
```
    /// ... code ....

<div class="container">
    <div class="row">
        <div class="col-sm-8" ng-view></div>
        <div class="col-sm-4" ng-controller="menuController">
            <h3>Tags</h3>
            <span ng-repeat="tag in tags" class="badge tag">
                {{tag.title}}
            </span>
            <hr/>
            <h3>Lasts comments</h3>
            <blockquote ng-repeat="comment in comments">
                {{comment.text}}
                <small> {{comment.post.title}} </small>
            </blockquote>
        </div>
    </div>
</div>

  // ... code ...
```

Note that we created a new AngularJS controller, called "MenuController". This controller connects to the server and populates the variables `$scope.tags` and `$scope.comments` as the following code:

**blog/public/js/app.js**

```
app = new angular.module('app',['ngRoute']);

app.config(['$routeProvider',function($routeProvider){
   // ... code ...
}]);

app.controller('mainController',function ($scope,$http) {
     // ... code ...
});

app.controller('menuController',function ($scope,$http) {
    $scope.tags = [];
    $scope.comments = [];
    console.log('view');
    $http.get("/menuinfo").then(function(response){
        console.log(response);
        $scope.tags = response.data[0];
        $scope.comments = response.data[1];
    },function(response){
        console.warn(response);
    });
});
```

After creating the `MenuController`, we have the following interface for the site:



Hello World by mike

Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo

More

My Second Post by joe

Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

More

php laravel

My First Post by joe

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat

More 2 comments

php laravel

Tags

php laravel angular book

Last Comments

Very funny lol
— My First Post

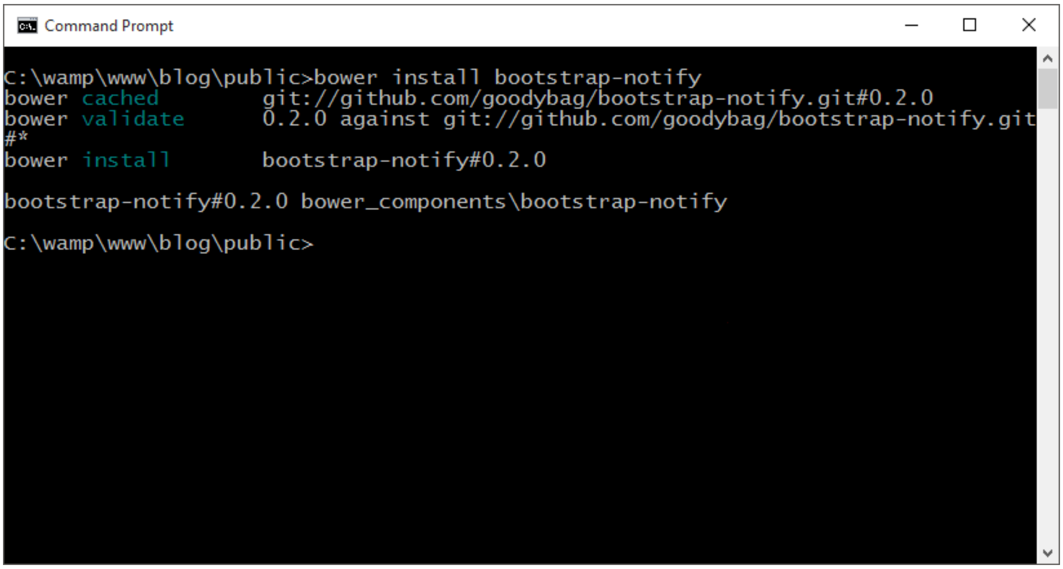
Very Nice!
— My First Post

## Handle errors

We haven't programmed what happens if any errors happen in the application. There may be several types of errors, and the ones that we must display to the user are relative to the connection to the server, especially errors caused by exceptions.

Before detailing this process, let's add a library called "bootstrap-notify", installed by bower. Open the terminal, go to the folder "blog/public" and run the following command:

```
blog/public $ bower install bootstrap-notify
```



```
C:\wamp\www\blog\public>bower install bootstrap-notify
bower cached        git://github.com/goodybag/bootstrap-notify.git#0.2.0
bower validate      0.2.0 against git://github.com/goodybag/bootstrap-notify.git
#*
bower install       bootstrap-notify#0.2.0

bootstrap-notify#0.2.0 bower_components\bootstrap-notify

C:\wamp\www\blog\public>
```

After installing the library, we need to add the necessary files to use the bootstrap-notify. It is done on the `blog/public/index.html` file as the following code:

**blog/public/index.html**

```
<!doctype html>
<html ng-app="app">
<head>
    <meta name="viewport" content="width=device-width, initial-scale\
=1">
    <link rel="stylesheet"
         href="bower_components/bootswatch-dist/css/bootstrap.min.cs\
s">
    <link rel="stylesheet"
        href="bower_components/bootstrap-notify/css/bootstrap-notify\
.css">
    <link rel="stylesheet" href="css/custom.css">
    <title> My Blog </title>
</head>
<body>
```

```
   // ... code ...

    <div class='notifications bottom-right'></div>

<script
src="bower_components/jquery/dist/jquery.min.js">
</script>
<script
src="bower_components/bootstrap/dist/js/bootstrap.min.js">
</script>
<script
src="bower_components/bootstrap-notify/js/bootstrap-notify.js">
</script>
<script
src="bower_components/angular/angular.min.js">
</script>
<script
src="bower_components/angular-route/angular-route.min.js">
</script>
<script
src="bower_components/angular-resource/angular-resource.min.js">
</script>

<script src="js/app.js"></script>

</body>
</html>
```

See that we added `bootstrap-notify.css` and javascript `bootstrap-notify.js` to the `index.html` file. We alse created a div, which is where the message is instantiated. This div also reports where the notification message appears, in this case `bottom-right`.

The notification library is ready, now we need to use it. To do this, we will create two functions in `app.js` file. One of them will display a normal notification message, while the other displays an error message.

**blog/public/js/app.js**

```
app = new angular.module('app',['ngRoute']);


function notifyOk(message){
       $('.bottom-right').notify({
        message: { text: message}
    }).show();
}
function notifyError(error){
    message = "";
    if (error.data!=null)
        if (error.data.message!=null)
            message += error.data.message;

   if (message=="")
            if (error.statusText!=null)
                message = "Error: " + error.statusText;

        if (message=="")
            if (typeof error == "string")
                message = error;


        $('.bottom-right').notify({
            message: { text: message},
            type: 'danger',
        }).show();

         $('#loading').css('display','none');

    }

// ... code
```

These two functions are used throughout the site, the first being used to display a message either as "User saved successfully", and the second used in case of errors. In this second function, `notifyError`, we use the property `error.data.message` as a message, if it is filled. This property is an exception error message from PHP.

If there is any error in AngularJS request to Laravel, the second function of the method `then` will be called. Until now, we were using `console.warn` and, with the method `notifyError` ready, we can use the following code:

**blog/public/js/app.js**

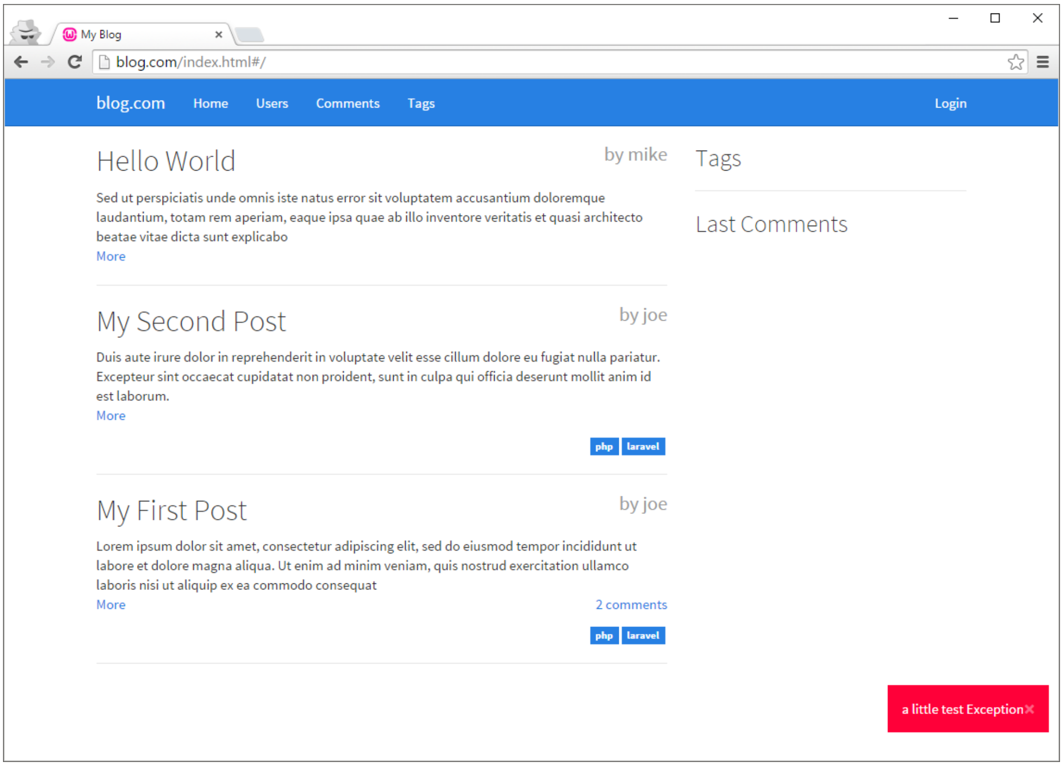
```
app = new angular.module('app',['ngRoute']);

app.config(['$routeProvider',function($routeProvider){
//...
}]);

//Notifications
function notifyOk(message){
//...
}
function notifyError(error){
//...
}

app.controller('mainController',function ($scope,$http) {
    $scope.posts = [];
    $scope.$on('$viewContentLoaded', function(){
        $http.get("/posts/last/3").then(function(response){
            $scope.posts = response.data;
        },function(response){
            notifyError(response)
        });
    });
});

app.controller('menuController',function ($scope,$http) {
    $scope.tags = [];
    $scope.comments = [];
    console.log('view');
    $http.get("/menuinfo").then(function(response){
        //console.log(response);
        $scope.tags = response.data[0];
        $scope.comments = response.data[1];
    },function(response){
        notifyError(response.statusText);
    });
});
```

Now, instead of `console.warn(response)` we are using `notifyError`. To perform a test, let's add an exception in the method `BlogController@getMenuInfo`:

**blog/app/Http/Controllers/BlogController.php**

```
<?php

namespace App\Http\Controllers;

use Illuminate\Http\Request;

use App\Http\Requests;
use App\Http\Controllers\Controller;

class BlogController extends Controller
{
    public function getMenuInfo(){
    $tagController = new TagController();
        $commentController = new CommentController();
        return array(
            $tagController->getAll(),
            $commentController->last()
            );
    }
}
```

When realoading the page the error will be displayed:



Hello World by mike

Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo

My Second Post by joe

Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.

My First Post by joe

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat

**Attention!**

Whenever throuwing an exception in PHP, use ** \Exception ** Don‘t forget the back slash!

## Creating a loading global

Let’s use the concepts learned in the previous section to create a global loading feedback, indicating that some Ajax content is running. Initially we need to create the `app.js` file interceptors that will capture when an Ajax event is being running. Then, we need to create the `loadingIndicator`, and insert it on the main page of the site.

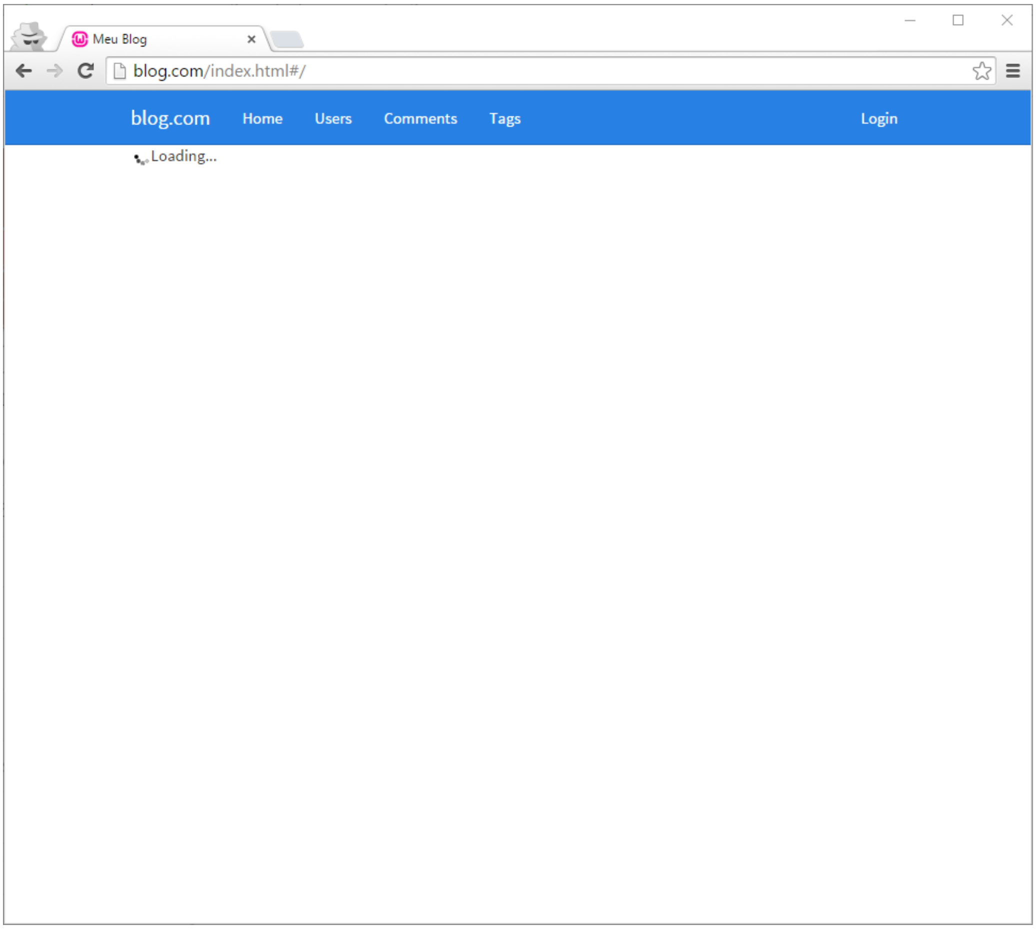
**blog/public/js/app.js**

```
app = new angular.module('app',['ngRoute']);

app.config(function($httpProvider) {
    $httpProvider.interceptors.push(
        function($q, $rootScope) {
            return {
                'request': function(config) {
                    $rootScope.$broadcast('loading-started');
                    return config || $q.when(config);
                },
                'response': function(response) {
                    $rootScope.$broadcast('loading-complete');
                    return response || $q.when(response);
                }
            };
        });
});

app.directive("loadingIndicator", function() {
    return {
    restrict : "A",
    template: "<div id='loading'>
        <img src='images/loading.gif'/>Loading...</div>",
    link : function(scope, element, attrs) {
        element.css({"display" : "none"});
        scope.$on("loading-started", function(e) {
            element.css({"display" : ""});
        });
        scope.$on("loading-complete", function(e) {
            element.css({"display" : "none"});
        });
    }
    };
});


// ... code ...
```

We changed the main page of the site creating a div with the directive `loadingIndicator`, as in the following example.

```
// ... code ...
<div class="container">
    <div id="loading" loading-indicator></div>
    <div class="row">
        <div class="col-sm-8" ng-view></div>
        <div class="col-sm-4" ng-controller="menuController">
// ... code ...
```

The result of the loading feedback is shown in the following image.



## User page

The user page is the second item in the top menu of the site. On this page, we will display the sites `users and their respective posts. First, create the entry in the` routes.php‘:

```
Route::get(`/users/posts`, `UserController@getAllPosts`);
```

After you set up the `routes.php`, you must create the method `getAllPosts` on class `App\User.php`, containing the following code:

**blog/app/Http/Controllers/UserController.php**

```
<?php

namespace App\Http\Controllers;

use App\Http\Controllers\Controller;
use App\User;

class UserController extends Controller
{

    public function getAllPosts()
    {
        return User::select('id','name','email')
            ->with(['posts'=>function($q){
                $q->select('id','title','user_id')->active();
            }])
            ->get();
    }

}
```

Note that, when we get the Posts of the User class, we use `->active()` to get only the active posts (field of the *active* table). If this information is not already in the model Post, located at `app\Post.php`, add it as follows:

**blog/app/Post.php**

```
<?php
namespace App;

use Illuminate\Database\Eloquent\Model;

class Post extends Model
{
    public function user(){
        return $this->belongsTo("App\User");
    }

    public function comments(){
       return $this->hasMany('App\Comment');
   }

   public function tags()
    {
        return $this->belongsToMany('App\Tag');
    }

    public function scopeActive($query)
    {
        return $query->where('active', 1);
    }

}
```

After you set up the server to get the information about users, we need to set up the client, creating the template `templates/user.html` and the `userController` under the *routeProvider* configuration file `blog/public/js/app.js`.

**blog/public/js/app.js**

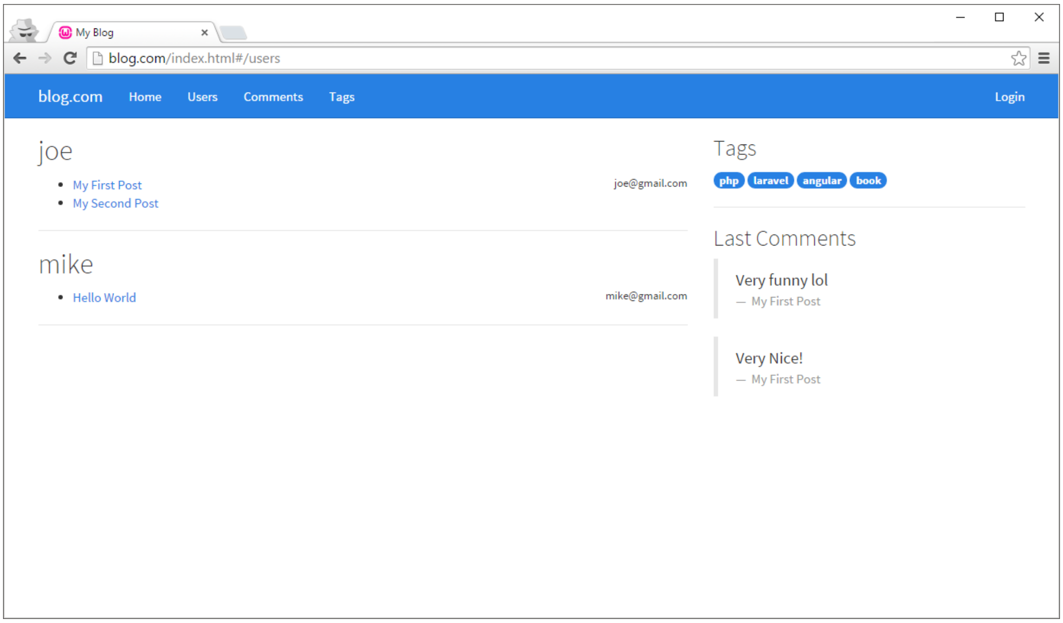
```
    // ... code ...

app.controller('userController',function ($scope,$http) {
    $scope.users = [];
    $scope.$on('$viewContentLoaded', function(){
        $http.get("/users/posts").then(function(response){
            $scope.users = response.data;
        },function(response){
            notifyError(response)
        });
    });
});
```

The template is set up as follows:

**blog/public/template/user.html**

```
<div ng-repeat="user in users">
    <h2>{{user.name}}</h2>
    <small class="pull-right">{{user.email}}</small>
    <ul>
            <li ng-repeat="post in user.posts">
                <a href='#/post/{{post.id}}'>
                    {{post.title}}
                </a></li>
    </ul>
    <hr/>
</div>
```

After you set up the template, click the "users" link in the top menu, and get the users screen similar to the following image.



joe

- My First Post
- My Second Post

joe@gmail.com

mike

- Hello World

mike@gmail.com

Tags

php laravel angular book

Last Comments

Very funny lol
— My First Post

Very Nice!
— My First Post

## Comment screen

The comments screen can display all the blog comments, followed by which Post the comment belongs to and its author. It is necessary to modify four files to create this functionality:

**blog/app/Http/routes.php**

```
<?php

 /// ... code ...

Route::get('/comments', 'CommentController@getAll');
```

**blog/app/Http/Controllers/CommentController.php**

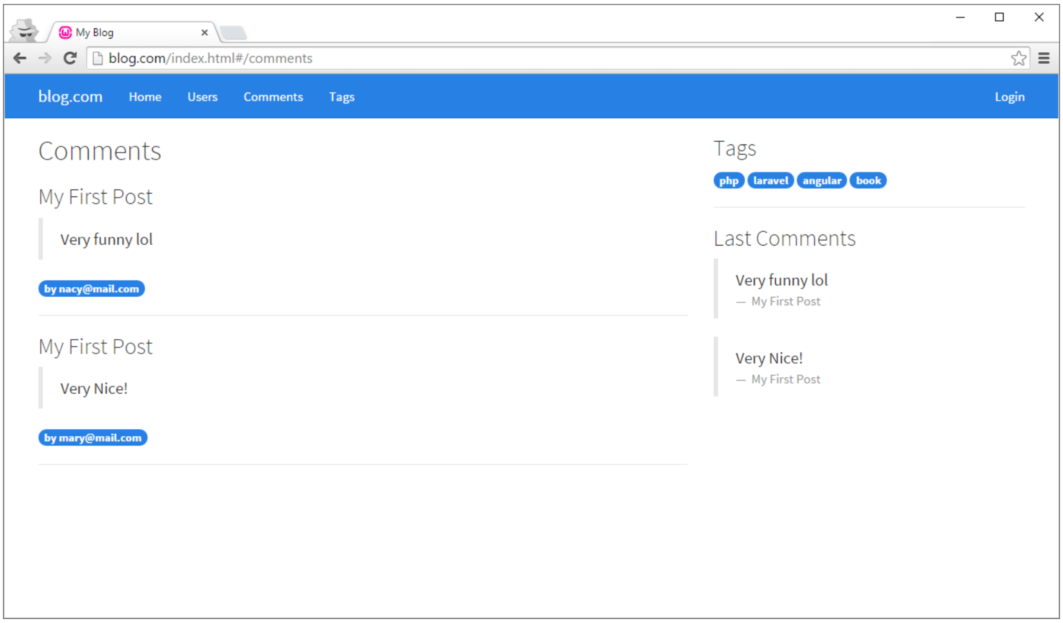
```php
<?php

namespace App\Http\Controllers;

use Illuminate\Http\Request;

use App\Http\Requests;
use App\Http\Controllers\Controller;
use App\Comment;

class CommentController extends Controller
{

    // ... code ...

    public function last($n=3){
        return Comment::select('id','text','post_id')
            ->active()
            ->orderBy('id', 'desc')
            ->with(['post'=>function($q){
                $q->select('id','title');
            }])
            ->take($n)
            ->get();
    }
}
```

**blog/public/js/app.js**

```
// ... code ...

app.controller('commentController',function ($scope,$http) {
    $scope.comments = [];
    $scope.$on('$viewContentLoaded', function(){
        $http.get("/comments").then(function(response){
            $scope.comments = response.data;
        },function(response){
            notifyError(response)
        });
    });
});
```

**blog/public/template/comment.html**

```
<h2>Comments</h2>
<div ng-repeat="comment in comments">
    <h3>{{comment.post.title}}</h3>
    <blockquote>{{comment.text}}</blockquote>
    <small class="badge">by {{comment.email}}</small>
    <hr/>
</div>
```



Comments

My First Post

Very funny lol

by nacy@mail.com

My First Post

Very Nice!

by mary@mail.com

Tags

php laravel angular book

Last Comments

Very funny lol
— My First Post

Very Nice!
— My First Post

## Tag screen

The tags can display all the tags of the blog, followed by the posts that used it. It is necessary to modify four files to create this functionality:

**blog/app/Http/routes.php**

```
<?php

    /// ... code ...

Route::get('/tags/posts', 'TagController@getAllWithPosts');
```

**blog/app/Http/Controllers/TagController.php**

```
<?php

namespace App\Http\Controllers;

use Illuminate\Http\Request;

use App\Http\Requests;
use App\Http\Controllers\Controller;
use App\Tag;

class TagController extends Controller
{

    /// ... code ...

    public function getAllwithPosts(){
        return Tag::select('id','title')
            ->with(['posts'=>function($q){
                $q->select('id','title')->active();
            }])
            ->get();
    }
}
```

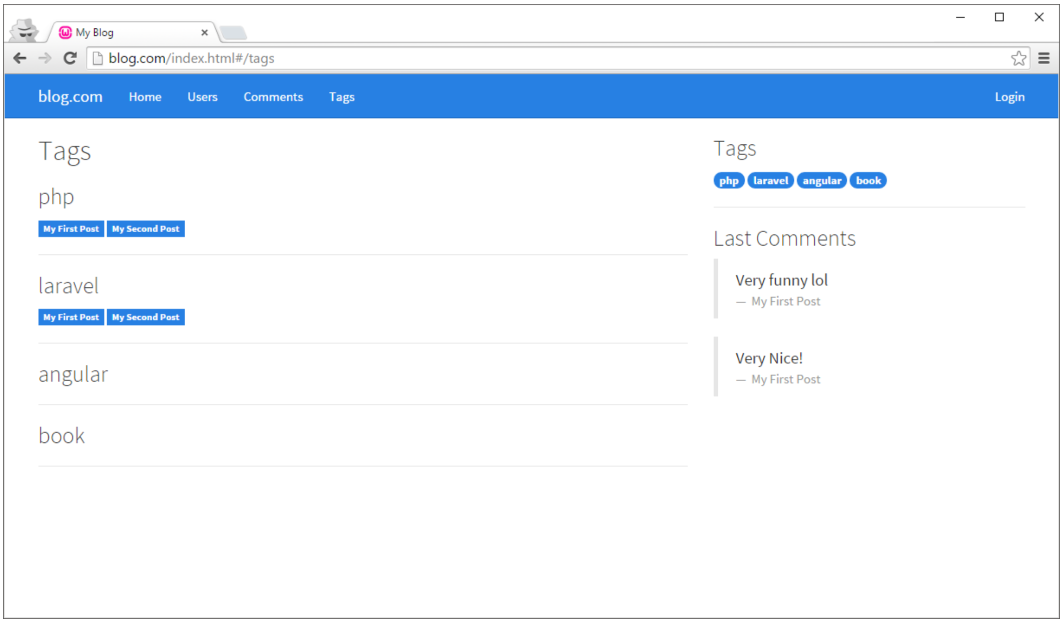
**blog/public/js/app.js**

```
 // ... code ...

app.controller('tagController',function ($scope,$http) {
$scope.tags = [];
$scope.$on('$viewContentLoaded', function(){
    $http.get("/tags/posts").then(function(response){
        $scope.tags = response.data;
    },function(response){
        notifyError(response)
    });
});
});
```

**blog/public/template/tag.html**

```
<h2>Tags</h2>
<div ng-repeat="tag in tags">
    <h3>{{tag.title}}</h3>
    <p>
        <span ng-repeat="post in tag.posts"
        class="label label-primary tag">
        {{post.title}}
    </span>
    </p>
    <hr/>
</div>
```

After finishing this first part of the blog, we can realize that AngularJS access to Laravel conducted via the $http follows a logical sequence between changing the *routes*, creating the method on the Laravel controller, creating the method in the AngularJS controller and setting the template for the page.



Tags

php

My First Post My Second Post

laravel

My First Post My Second Post

angular

book

Tags

php laravel angular book

Last Comments

Very funny lol
— My First Post

Very Nice!
— My First Post

# Chapter 10 - Authentication

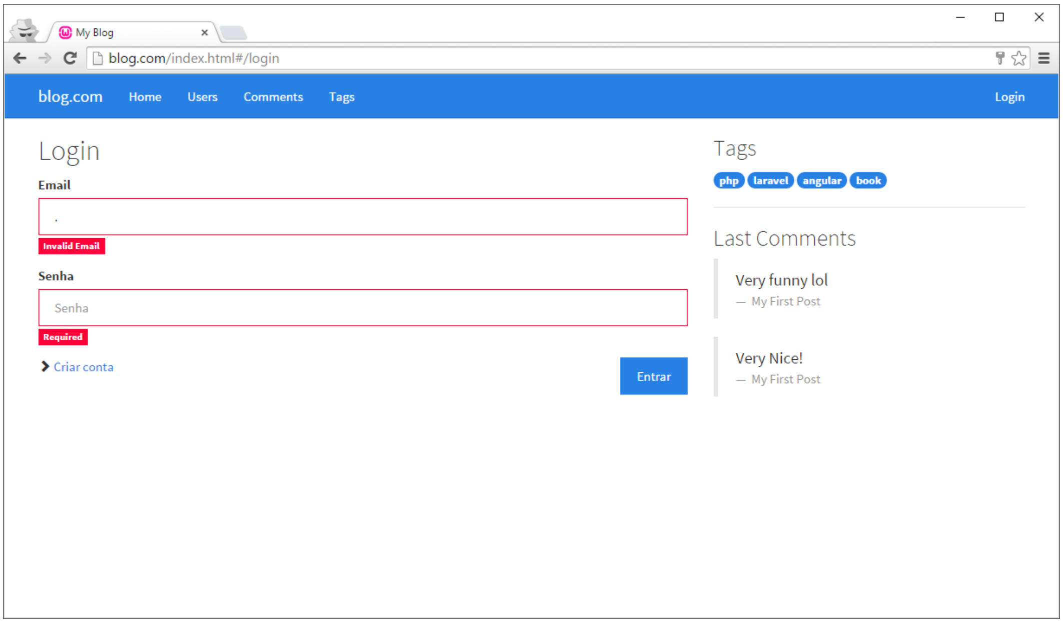
In this chapter, we will see how to perform user authentication via login. Laravel has all the implementation ready to perform login/logout of the application. When we created the application `blog`, the `User` model and the `users` table were created as well.

## Creating the login form

The menu at the top of the site has the "Login" item, that initially points to `#/login` in the AngularJS routing, loading the "login.html" template and "LoginController" controller. The login form is shown below, and has two fields: `email` and `password`. Several implementations were added to the form for fields validation, as seen in the previous chapters.

**blog/public/template/login.html**

```
<h2>Login</h2>

<form name="form" novalidate>

  <div class="form-group"
      ng-class="{ 'has-error': (form.$submitted  ||
      form.loginEmail.$dirty)
        && form.loginEmail.$invalid }">
    <label for="loginEmail">Email</label>
    <input ng-model="user.email" type="email"
           class="form-control"   id="loginEmail"
           name="loginEmail" placeholder="Email" required>
    <span class="label label-danger"
        ng-show="(form.$submitted  ||
        form.loginEmail.$dirty)
        && form.loginEmail.$invalid">
      <span
      ng-show="form.loginEmail.$error.required">
    Required</span>
      <span
      ng-show="form.loginEmail.$error.email">
    Invalid email</span>
    </span>
  </div>

  <div class="form-group"
              ng-class="{ 'has-error':(form.$submitted
              || form.loginPassword.$dirty)
              && form.loginPassword.$invalid }">
    <label for="loginPassword">Password</label>
    <input ng-model="user.password" type="password"
    class="form-control"  id="loginPassword"
    name="loginPassword"
    placeholder="Password" required>
    <span class="label label-danger"
          ng-show="(form.$submitted  ||
          form.loginPassword.$dirty)
      && form.loginPassword.$invalid">
      <span ng-show="form.loginPassword.$error.required">
        Required</span>
    </span>
  </div>
  <div class="form-group pull-right">
    <button type="submit" class="btn btn-primary"
                ng-click="doLogin()">Login</button>
  </div>
  <div class="form-group">
    <span class="glyphicon glyphicon-chevron-right"
    aria-hidden="true"></span>
                <a href="#/new">New account</a>
  </div>
</form>
```



**Login form with validation error**

## Performing the login

The login button runs the `doLogin()` method in `loginController` as the following code:

**blog/public/js/app.js**

```
// .... code ...

app.controller('loginController',
    function ($scope,$http,$location,$rootScope) {

        $scope.user = {};

        $scope.doLogin = function(){
           if ($scope.form.$invalid) {
            console.warn("invalid form");
            return;
        }
        $http.post("/login",
        {
            'email' : $scope.user.email,
            'password' : $scope.user.password
        }).then(function(response){
                                // login done,
                                // redirect to main page
                                $rootScope.authuser = response.data;
                                $location.path('/');
                            },function(response){
                               notifyError(response);
                           });
    }

});
```

In this controller, we bring the new concepts of using the `rootScope` and `location`, properly injected into the method. The `$rootScope` is a global variable to every application (`app`), not only to the controller, in which we use the `$scope`. With that, we can keep the information of the logged in user in the `$rootScope.authuser`. And the `$location` is used to direct the AngularJS router for other pages. In this case, we do the redirect to the main page, once the user is authenticated by Laravel.

## Adding features to the site with the user properly logged in

Before reviewing the code in Laravel, we add two more functionality to the html code, assuming the user is logged in and that the variable `$rootScope.authuser` is not null. First, we add the following verification in the top menu:

```
    <ul class="nav navbar-nav"
                ng-show="$root.authuser==null">
        <li><a href="#/login">Login</a></li>
    </ul>
```

The code `ng-show="$root.authuser==null"` will cause the menu in the upper-right corner of the page to only appears if authuser is null, that is, there is not a logged in user. Another change will be in the right menu of the site, in the `index.html` file, as follows:

**blog/public/index.html**

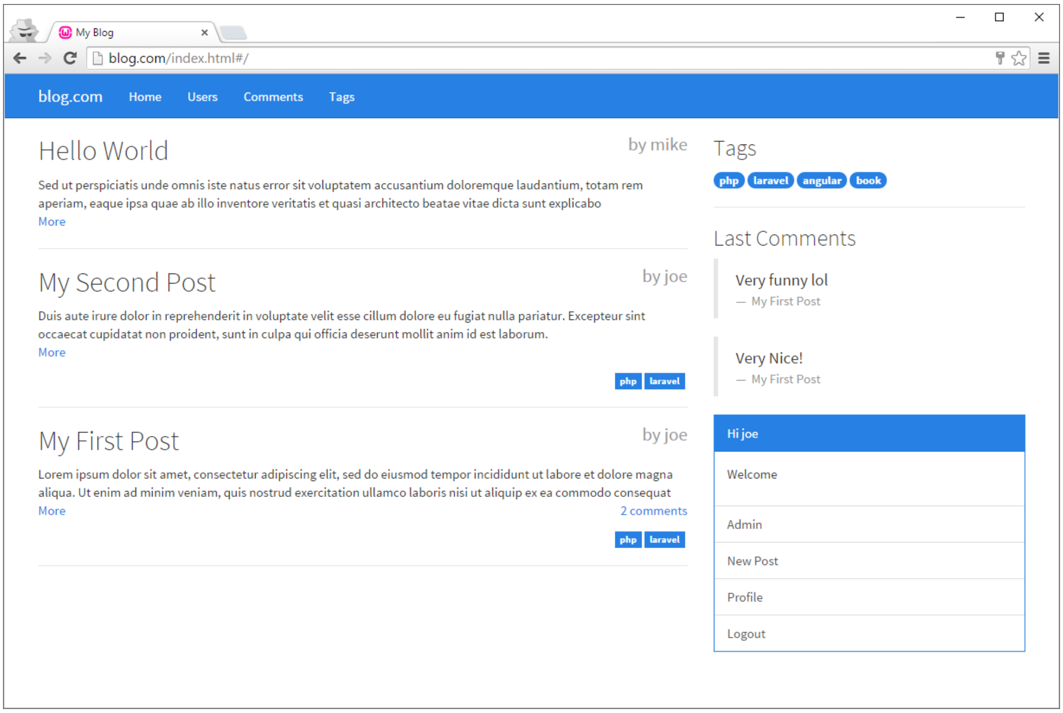
```
<div class="container">
    <div id="loading" loading-indicator></div>
    <div class="row">
        <div class="col-sm-8" ng-view></div>
        <div class="col-sm-4" ng-controller="menuController">
            <h3>Tags</h3>
            <span ng-repeat="tag in tags" class="badge tag">
                {{tag.title}}
            </span>
            <hr/>
            <h3>Last Comments</h3>
            <blockquote ng-repeat="comment in comments">
                {{comment.text}}
                <small> {{comment.post.title}} </small>
            </blockquote>
            <div ng-show="$root.authuser!=null">
                <div class="panel panel-primary">
                    <div class="panel-heading">
                            Hi {{$root.authuser.name}}
                        </div>
                    <div class="panel-body">
                        <p>Welcome! </p>
                    </div>
                    <ul class="list-group">
<a href="admin.html" class="list-group-item">
        Admin</a>
<a href="admin.html#/newpost" class="list-group-item">
        New Post</a>
<a href="admin.html#/perfil" class="list-group-item">
    Profile</a>
<a href="#/logout" class="list-group-item">
    Logout</a>
                    </ul>
                </div>
            </div>
        </div>
    </div>
</div>
```

In the right menu we add another box, which now uses:

```
ng-show="$root.authuser!=null"
```

That means it will only be displayed if the variable `$root.authuser` is not null. This box will display some links, as well as the button to leave, who will perform the logout of the application. Logout is accomplished via `logoutController`, as shown next.

When the user is logged on, the application looks similar to the following figure.



Hello World by mike

Sed ut perspiciatis unde omnis iste natus error sit voluptatem accusantium doloremque laudantium, totam rem aperiam, eaque ipsa quae ab illo inventore veritatis et quasi architecto beatae vitae dicta sunt explicabo
More

My Second Post by joe

Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in culpa qui officia deserunt mollit anim id est laborum.
More
php laravel

My First Post by joe

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat
More
2 comments
php laravel

Tags
php laravel angular book

Last Comments

Very funny lol
— My First Post

Very Nice!
— My First Post

## Logout of the application

To perform the logout of the application, we need to perform a call to the server to log out the user. You must also change the value of the property `scopeRoot.authuser` to null, causing the blog interface to return to its previous state, when there is no user logged in.

**blog/public/js/app.js**

```
// ... code ...

app.controller('logoutController',
    function ($scope,$http,$location,$rootScope) {
    $http.get("/logout").then(function(response){
        notifyOk("you have been logged");
        $rootScope.authuser = null;
        $location.path('#/');
    },function(response){
        notifyError(response);
    });
});
```

## Login and logout on Laravel

When the `doLogin` method from `loginController` is executed, a request to the Laravel server via POST is executed, passing the variables `email` and `password`. It is done by the `blog.com/login` URL, which must be configured in the `routes.php` of the application.

**blog/app/Http/routes.php**

```
Route::post('/login','UserController@doLogin');
Route::get('/logout','UserController@doLogout');
```

We created the `post(/login)` and `get(/logout)` methods accessing the methods `doLogin` and `doLogout` from `UserController`. This is the controller that we will perform the login and logout of the user.

**blog/app/Http/Controllers/UserController.php**

```
<?php

namespace App\Http\Controllers;

use App\Http\Controllers\Controller;
use App\User;
use Illuminate\Http\Request;
use Auth;

class UserController extends Controller
{

    public function doLogin(Request $request){

            if (Auth::attempt(
                    ['email' => $request->email,
                    'password' => $request->password])) {
                    return Auth::user();
        }else{
            throw new \Exception(" Please try again. ");
        }
    }

    public function doLogout(){
        Auth::logout();
        return Auth::user(); //must be null
    }

}
```

The login is done with `Auth::attemp`, where we pass an array with the fields `email` and `password`. If the login is successful, the method `attemp` returns true. With this, we can return to the client with the user data, provided by the `auth::user()` method. And logout is accomplished by the `auth::logout()`.

## Creating a user from login

Let's implement the functionality to create a user, available on the link "create account" in the login form. This link points to "#/new," which has not yet been created in the AngularJS `rootProvider`, displayed below.

**blog/public/js/app.js**

```
/// ... code ...

app.config(['$routeProvider',function($routeProvider){
    $routeProvider.
    when('/',{controller:'mainController',
        templateUrl:'templates/main.html'}).
    when('/users',{controller:'userController',
        templateUrl:'templates/user.html'}).
    when('/comments',{controller:'commentController',
        templateUrl:'templates/comment.html'}).
    when('/tags',{controller:'tagController',
        templateUrl:'templates/tag.html'}).
    when('/login',{controller:'loginController',
        templateUrl:'templates/login.html'}).
    when('/logout',{controller:'logoutController',
        templateUrl:'templates/logout.html'}).
    when('/new',{controller:'newUserController',
        templateUrl:'templates/newuser.html'}).
    otherwise({redirectTo:'/'});
}]);

/// ... code ...
```

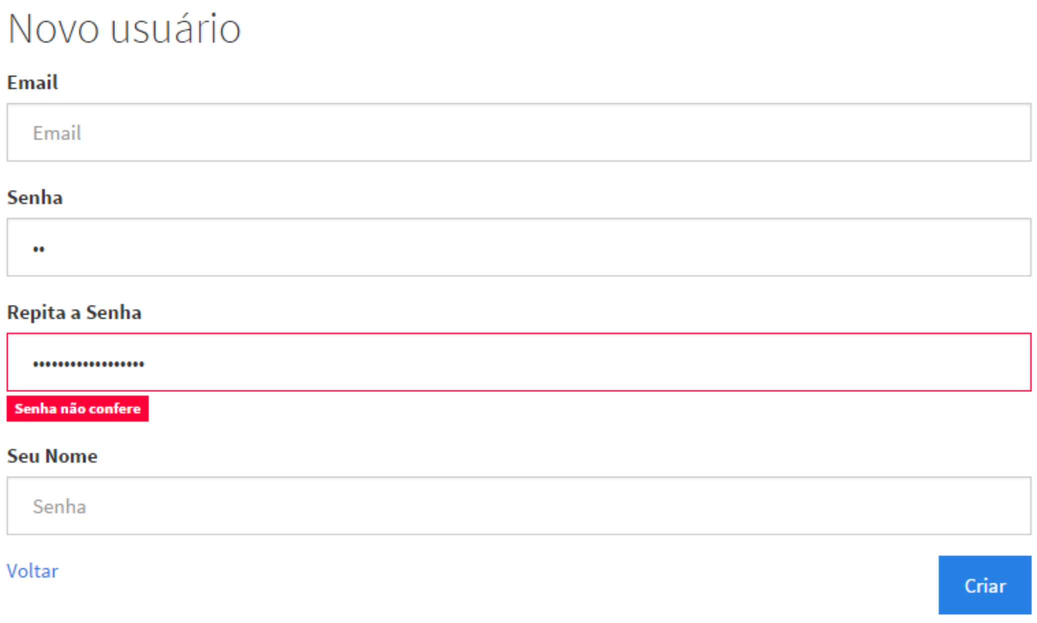
The form to create an account is contained in the template `templates\newuser.html`, displayed below.

**blog/public/template/newuser.html**

```
<h2>New User</h2>

<form name="form" novalidate>

  <div class="form-group"
  ng-class="{ 'has-error': (form.$submitted
        || form.email.$dirty)
          && form.email.$invalid }">
    <label for="email">Email</label>
    <input ng-model="user.email" type="email"
    class="form-control"
            id="email" name="email" placeholder="Email"
            required>
    <span class="label label-danger"
ng-show="(form.$submitted  || form.email.$dirty)
        && form.email.$invalid">
      <span ng-show="form.email.$error.required">
        Required</span>
      <span ng-show="form.email.$error.email">
        Invalid Email</span>
    </span>
  </div>

  <div class="form-group"
ng-class="{ 'has-error':(form.$submitted
      || form.password.$dirty)
      && form.password.$invalid }">
    <label for="password">Password</label>
    <input ng-model="user.password" type="password"
    class="form-control"
      id="password" name="password"
      placeholder="Password" required>
    <span class="label label-danger"
          ng-show="(form.$submitted  || form.password.$dirty)
      && form.password.$invalid">
      <span ng-show="form.password.$error.required">
        Required</span>
    </span>
  </div>

    <div class="form-group"
            ng-class="{ 'has-error':
          (form.$submitted  || form.password2.$dirty)
      && form.password2.$invalid }">
    <label for="password2">Confirm your password</label>
    <input ng-model="user.password2" type="password"
    class="form-control"
      id="password2" name="password2" placeholder="Password"
      required compare-to="user.password">
    <span class="label label-danger"
          ng-show="(form.$submitted  || form.password2.$dirty)
      && form.password2.$invalid">
      <span ng-show="form.password2.$error.required" >
        Required</span>
      <span ng-show="form.password2.$error.compareTo">
       Password don't match</span>
    </span>
  </div>

      <div class="form-group"
            ng-class="{ 'has-error':(form.$submitted
            || form.name.$dirty)
      && form.name.$invalid }">
    <label for="name">Your Name</label>
    <input ng-model="user.name" type="text"
    class="form-control"
      id="name" name="name" placeholder="Password"
      required>
    <span class="label label-danger"
```

```
          ng-show="(form.$submitted  || form.name.$dirty)
      && form.name.$invalid">
      <span ng-show="form.name.$error.required">
        Required:</span>
    </span>
  </div>

  <div class="form-group pull-right">
    <button type="submit" class="btn btn-primary"
                        ng-click="createUser()">Create User</button>
  </div>
  <div class="form-group">
                    <a href="#/">Back</a>
  </div>
</form>
```

A new thing in this form is that the password fields must have the same value, as shown in the following figure.



To create this functionality, create the policy "compareTo" in the `js\app.js` of your application with the following code:

**blog/public/js/app.js**

```
app.directive("compareTo",function() {
    return {
        require: "ngModel",
        scope: {
            otherModelValue: "=compareTo"
        },
        link: function(scope, element, attributes, ngModel) {

            ngModel.$validators.compareTo = function(modelValue) {
                return modelValue == scope.otherModelValue;
            };

            scope.$watch("otherModelValue", function() {
                ngModel.$validate();
            });
        }
    };
});
```

After you create the policy, simply use it in the second field of comparison, in this case we use `compare-to="user.password"` in the field `user.password2`

The "create" button will execute the method `createUser` in the `newUserController` that has the following code.

**blog/public/js/app.js**

```
app.controller('newUserController',
    function ($scope,$http,$location,$rootScope) {
        $scope.user = {};
        $scope.createUser = function(){
         if ($scope.form.$invalid) {
            console.warn("invalid form");
            return;
        }
        $http.post("/user/newlogin",
        {
            'email' : $scope.user.email,
            'password' : $scope.user.password,
            'name':$scope.user.name
        }).then(function(response){
                                 // login done,
                                // redirect to main page
                                $rootScope.authuser = response.data;
                                $location.path('/');
                            },function(response){
                             notifyError(response);
                         });
        }
});
```

In this code, we do a POST to "/user/newlogin" passing the form data. On the server, we create the user and return it already logged in, as in the following code.

**blog/app/Http/Controllers/UserController.php**

```php
<?php

namespace App\Http\Controllers;

use App\Http\Controllers\Controller;
use App\User;
use Illuminate\Http\Request;
use Auth;
use Hash;

class UserController extends Controller
{

    public function createLogin(Request $request){

        $theUser = User::where('email','=', $request->email)
                    ->first();
        if ($theUser)
           throw new \Exception("This email is already registered");

        $user = new User();
        $user->name = $request->name;
        $user->email = $request->email;
        $user->password = bcrypt($request->password);
        $user->save();

        Auth::login($user);

        return Auth::user();
    }

}
```

In this code, we note the existence of the user via his email. If available, you should throw an exception, since we can't have `2` users with the same email. If the email does not exist, create the user and use the `auth::login` method to log him on the site, returning it to the client. Upon returning, in `newUserController`, the procedure of logged in user will be performed by filling in the `$rootScope.authuser`.

# Chapter 11 - Blog administration screen

In this chapter we will create the Blog administration screen, containing the CRUD for Post, Tag, Comment and User. This is a screen that requires the user login, and as it has different features than the blog, we will create it in a separate file from the `index.html` file, which is the main file of the site so far.

Our first task in this separation is to refactor the file `app.js`, since this belongs only to the file `index.html`. In this step, we need to create 3 separate javascript files:

** base.js ** is the base file of any javascript file of the project. It contains any implementation that is reused in other javascript files. For example, the `notifyOk` and `notifyError`, just like the customized policies that will also be in this file.

** index.js ** we will rename the file `app.js` to `index.js`, since this javascript refers to page `index.html`. In this file we will also remove the instantiation of the application, the custom policies, `notifyError` and `notifyOk` methods, and everything that does not belong to the index.html file. Only their internal implementations will stay intact.

** admin.js ** is the javascript file that contains all the implementations of the blog.com administration, and is directly related to the file admin.html

To perform refactoring, do the following:

1-create the file `blog/public/js/base.app`. Move the following implementations from app.js to base.js:

-the creation of app: `app = new angular.module('app',['ngRoute']);` -The interceptor of the loading feedback -The `loadingIndicator` directive -The `compareTo` directive -The `notifyOk` and `notifyError` methods

The file `base.app` is similar to the following code:

**blog/public/js/base.js**

```
app = new angular.module('app',['ngRoute']);

app.config(function($httpProvider) {
    $httpProvider.interceptors.push(function($q, $rootScope) {
        return {
            'request': function(config) {
                $rootScope.$broadcast('loading-started');
                return config || $q.when(config);
            },
            'response': function(response) {
                $rootScope.$broadcast('loading-complete');
                return response || $q.when(response);
            }
        };
    });
});


app.directive("loadingIndicator", function() {
    return {
        restrict : "A",
        template: "<div id='loading'> <img src='images/loading.gif'/>
                                Loading...</div>",
        link : function(scope, element, attrs) {
            element.css({"display" : "none"});
            scope.$on("loading-started", function(e) {
                element.css({"display" : ""});
            });
            scope.$on("loading-complete", function(e) {
                element.css({"display" : "none"});
            });
        }
    };
});
```

```
app.directive("compareTo",function() {
    return {
        require: "ngModel",
        scope: {
            otherModelValue: "=compareTo"
        },
        link: function(scope, element, attributes, ngModel) {
            ngModel.$validators.compareTo = function(modelValue) {
                return modelValue == scope.otherModelValue;
            };
            scope.$watch("otherModelValue", function() {
                ngModel.$validate();
            });
        }
    };
});


function notifyOk(message){
   $('.bottom-right').notify({
    message: { text: message}
}).show();
}
function notifyError(error){
    message = "";
    if (error.data!=null)
        if (error.data.message!=null)
            message = error.data.message;

      if (message=="")
            if (error.statusText!=null)
                message = "Error: " + error.statusText;
        if (message=="")
            if (typeof error == "string")
                message = error;


        $('.bottom-right').notify({
            message: { text: message},
            type: 'danger',
        }).show();

        $('#loading').css('display','none');
    }
```

2- Rename the file app.js to index.js

The file `index.js` now has only implementations regarding the file `index.html`. The following is how the file is, displaying only their methods:

**blog/public/js/index.js**

```
app.config(['$routeProvider',function($routeProvider){
        $routeProvider.
        when('/',{controller:'mainController',
                                templateUrl:'templates/main.html'}).
        when('/users',{controller:'userController',
                                templateUrl:'templates/user.html'}).
        when('/comments',{controller:'commentController',
                                templateUrl:'templates/comment.html'}).
        when('/tags',{controller:'tagController',
                                templateUrl:'templates/tag.html'}).
        when('/login',{controller:'loginController',
                                templateUrl:'templates/login.html'}).
        when('/logout',{controller:'logoutController',
                                templateUrl:'templates/logout.html'}).
        when('/new',{controller:'newUserController',
                                templateUrl:'templates/newuser.html'}).
        otherwise({redirectTo:'/'});
}]);

app.controller('mainController',function ($scope,$http) {
///code...
});

app.controller('menuController',
                        function ($scope,$http,$rootScope) {
///code...
});

app.controller('userController',function ($scope,$http) {
///code...
});

app.controller('commentController', function ($scope,$http) {
///code...
});

app.controller('tagController',        function ($scope,$http) {
///code...
});


app.controller('loginController',
                        function ($scope,$http,$location,$rootScope) {
///code...
});

app.controller('newUserController',
                        function ($scope,$http,$location,$rootScope) {
///code...
});
```

```
app.controller('logoutController',
                        function ($scope,$http,$location,$rootScope) {
///code...
});
```

3-Change the index.html file

Rather than add the file `app.js`, we need to add two files: `base.js` and `index.js`, as in the following code.

**blog/public/index.html**

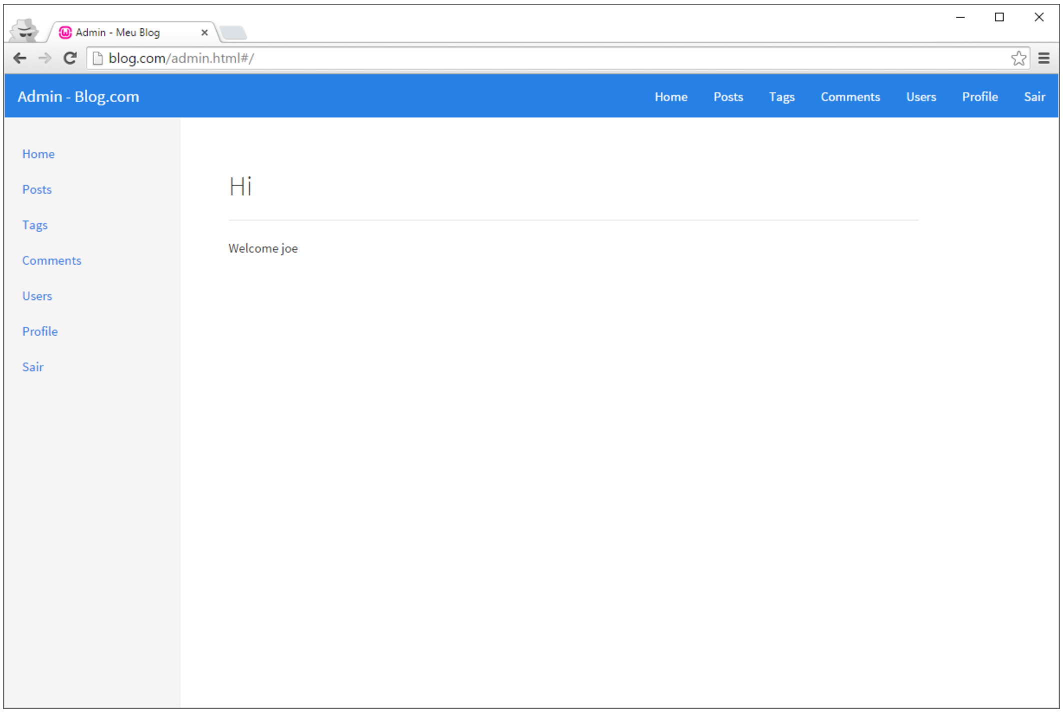
```
<!doctype html>
<html ng-app="app">
<head>
    <meta name="viewport" content="width=device-width,
    initial-scale=1">
    <link rel="stylesheet" href="bower_components/
    bootswatch-dist/css/bootstrap.min.css">
    <link rel="stylesheet" href="bower_components/
    bootstrap-notify/css/bootstrap-notify.css">
    <link rel="stylesheet" href="css/custom.css">
    <title> My Blog </title>
</head>
<body>

    ///code....

<script src="bower_components/jquery/dist/jquery.min.js">
    </script>
<script src="bower_components/bootstrap/dist/js/
    bootstrap.min.js"></script>
<script src="bower_components/bootstrap-notify/js/
    bootstrap-notify.js"></script>
<script src="bower_components/angular/angular.min.js">
    </script>
```

```
<script src="bower_components/angular-route/
    angular-route.min.js"></script>
<script src="bower_components/angular-resource/
    angular-resource.min.js"></script>

    <script src="js/base.js"></script>
    <script src="js/index.js"></script>

</body>
</html>
```

Now, we have the `base.js` file that will serve as the main javascript file of any internal application of `blog.com`. We have, so far, two applications, the page `index.html` just refactored and contain the start page, and the page `admin.html`, which contains the administrative part of the blog, that we will create in this chapter.

## Creating the admin.html file

Now that we have refactored the `index.html` file, we can create the `admin.html`. The page layout is different from the blog, with an interface with a top menu and another on the left side of the site, as the following layout.



Hi

Welcome joe

This interface comes from the `Dashboard` example located in <http://getbootstrap.com/examples/dashboard/> with the following code:

**blog/public/admin.html**

```
<!doctype html>
<html ng-app="app">
<head>
    <meta name="viewport"
    content="width=device-width, initial-scale=1">
    <link rel="stylesheet"
        href="bower_components/bootswatch-dist/css/bootstrap.min.css\
">
    <link rel="stylesheet"
        href="bower_components/bootstrap-notify/css/bootstrap-notify\
.css">
    <link rel="stylesheet" href="css/admin.css">
    <title> Admin - My Blog </title>
</head>
<body>

    <nav class="navbar navbar-inverse navbar-fixed-top">
        <div class="container-fluid">
            <div class="navbar-header">
                <button type="button"
                    class="navbar-toggle collapsed"
                        data-toggle="collapse" data-target="#navbar"
                        aria-expanded="false" aria-controls="navbar">
                    <span class="sr-only">Toggle navigation</span>
                    <span class="icon-bar"></span>
                    <span class="icon-bar"></span>
                    <span class="icon-bar"></span>
                </button>
                <a class="navbar-brand" href="#">Admin - Blog.com</a>
            </div>
            <div id="navbar" class="navbar-collapse collapse">
                <ul class="nav navbar-nav navbar-right">
                    <li ><a href="#/">Home</a></li>
                    <li><a href="#/post">Posts</a></li>
                    <li><a href="#/tag">Tags</a></li>
                    <li><a href="#/comment">Comments</a></li>
                    <li><a href="#/user">Users</a></li>
                    <li><a href="#/profile">Profile</a></li>
                    <li><a href="#/logout">Sair</a></li>
                </ul>
            </div>
        </div>
    </nav>

    <div class="container">
        <div class="row">
            <div class="col-sm-3 col-md-2 sidebar">
```

```
                <ul class="nav nav-sidebar">
                    <li ><a href="#/">Home</a></li>
                    <li><a href="#/post">Posts</a></li>
                    <li><a href="#/tag">Tags</a></li>
                    <li><a href="#/comment">Comments</a></li>
                    <li><a href="#/user">Users</a></li>
                    <li><a href="#/profile">Profile</a></li>
                    <li><a href="#/logout">Sair</a></li>
                </ul>
            </div>
            <div class="col-sm-9 col-sm-offset-2 main" ng-view>

            </div>
        </div>
    </div>

    <div class='notifications bottom-right'></div>

<script src="bower_components/jquery/dist/jquery.min.js">
</script>

<script src="bower_components/bootstrap/dist/js/bootstrap.min.js">
</script>

<script src="bower_components/bootstrap-notify/js/bootstrap-notify.j\
s">
</script>

<script src="bower_components/angular/angular.min.js">
</script>

<script src="bower_components/angular-route/angular-route.min.js">
</script>

<script src="bower_components/angular-resource/angular-resource.min.\
js">
</script>

    <script src="js/base.js"></script>
    <script src="js/admin.js"></script>
</body>
</html>
```

Note that, at the end of the file, we add `admin.js` and `base.js`. The javascript file `admin.js` will contain all the controllers of this screen.

## Configuring admin routing

Now that the main page `admin.html` is ready, we will create the routing using the deepLinking feature of AngularJS, in the same way we did before. Initially, the `admin.js` file contains the following code:

**blog/public/js/admin.js**

```
app.config(['$routeProvider',function($routeProvider){
        $routeProvider.
        when('/',{controller:'adminController',
                                templateUrl:'templates/admin/admin.html'}).
        when('/post',{controller:'postController',
                                templateUrl:'templates/admin/post.html'}).
        when('/tag',{controller:'tagController',
                                templateUrl:'templates/admin/tag.html'}).
        when('/comment',{controller:'commentController',
                                templateUrl:'templates/admin/comment.html'}).
        when('/user',{controller:'userController',
                                templateUrl:'templates/admin/user.html'}).
        when('/profile',{controller:'profileController',
                                templateUrl:'templates/admin/profile.html'}).
        when('/logout',{controller:'logoutController',
                                templateUrl:'templates/logout.html'}).
        otherwise({redirectTo:'/'});
}]);

app.controller('adminController',function ($scope) {



});

app.controller('postController',function ($scope) {



});

app.controller('tagController',function ($scope) {


});

app.controller('commentController',function ($scope) {


});

app.controller('userController',function ($scope) {


});

app.controller('profileController',function ($scope) {


});
```

```
app.controller('logoutController',function ($scope) {


});
```

We created various routes, linking their controllers and templates, which are in the folder "blog/public/templates/admin". The first route is the one that displays the admin main page, containing only a welcome message, but with an important function, which is to get the user logged into the system.

## Getting the user login again

As we moved from page `index.html` to `admin.html`, you must update the user logged in again. Of course we won't open a login form, as this has been done on the site. There, the user logged in and then clicked on the link "Admin", coming to the page "admin.html". Now, we must get this login again, and this will be done in the `adminController` controller, as set up in the AngularJS routing. The code to get the user's login is displayed below.

**blog/public/js/admin.js**

```
// ...code...

app.controller('adminController',
        function ($scope,$http,$rootScope,$location) {
                $scope.$on('$viewContentLoaded', function(){
                //Verify user login
                $http.get("/login").then(function(response){
                        if (response.data.id){
                                $rootScope.authuser = response.data;
                        }else{
                                window.location.assign('index.html');
                        }
                },function(response){
                        notifyError(response);
```

```
                    });
            });

});
```

In this controller, we accessed, via GET, the address `blog.com/login`, that has the following routing in the `app/Http/routes.php` file:

```
Route::get(`/login`,`UserController@getLogin`);
```

This routing calls the `getLogin` of `UserController`, that has the following code:

```
public function getLogin(){
    return Auth::user();
}
```

When Laravel returns with the logged in user, the variable `$rootScope.authuser` is set and may be used by the application.

## Protecting the other pages against improper access

Now that the variable `$rootScope.authuser` has a value, we can create a method to protect any page or controller against improper access. To do this, we will create an AngularJS *service* on the `base.js` file, to be able to inject it in any controller to verify login.

**blog/public/js/base.js**

```
app = new angular.module('app',['ngRoute']);

// ...code...

app.service('login',function($rootScope){
    this.check = function(){
        if ($rootScope.authuser == null){
            window.location.assign('/index.html');
        }
    }
});
```

In this code, we created the service with the name “login” and defined a method called `check()`, which will check if the variable `$rootScope.authuser` has a value. If not, we will use the javascript method `window.location.assign` to return the main page of the Blog.

Create a *service* just to be able to use it in controllers, as follows:

```
app.controller(`postController`,function ($scope,login) {
    login.check();
});
```

In this controller, we inject the service into the variable `login`, and call the `check()` method.

## Creating the CRUD of Tags

Now let’s create some crud screens, starting with “Tag”, which appears to be the simplest. We use $resource to perform some operations, so check if the `angular-resource.js` file is being added into `admin.html` file, and in the ‘base.app file, if the $resource being loaded when defining the app variable:

```
app = new angular.module(`app`,[`ngRoute`,`ngResource`]);
```

## Implementing the crud via $resource

After checking that the resource is being loaded properly, we can change the `admin.js` file including the following code:

**blog/public/js/admin.js**

```
// ...code...

app.controller('tagController',
    function ($scope,$resource,login) {

        login.check();

        //Page Title
        $scope.title = "Tags";

        $scope.rows = null;

        $scope.row = null;

        //Resource Tag
        var Tag = $resource("tags/:id");

        $scope.$on('$viewContentLoaded', function(){
            $scope.loadAll();
       });

        $scope.loadAll = function(){
            $scope.row = null;
            $scope.title = "Tags";
            Tag.query(function(data){
                $scope.rows = data;
            },function(response){
                notifyError(response);
            });
        }

        $scope.getById = function($id){
            Tag.get({id:$id},function(data){
                $scope.title = "Tag: " + data.title;
                $scope.row = data;
            },function(data){
                notifyError(data);
            });
        }

        $scope.createNew = function(){
            $scope.row = {title:""};
        }

        $scope.save = function(){
            if ($scope.form.$invalid) {
                notifyError("Invalid values");
                return;
            }
            Tag.save($scope.row,function(data){
                notifyOk(data.title + " saved.");
                $scope.loadAll();
            },function(data){
                notifyError(data);
            });
        }
});
```

This controller injects 3 variables. The first is `$scope`, used to access global variables from `tagController` controller. The second is `$resource`, which we will use to access the Laravel server. And the third is `login`, the service that we created to check if the user is logged in.

At the beginning of the controller, beside checking for the login, we create the next variables that will be used on the view:

- $scope.title the title that appears in the view, It can be "Tags" or the name of the "Tag" that we are editing
- $scope.rows corresponds to the records that will populate the tags table
- $scope.row corresponds to a single record, used to fill the form for editing or creating a tag.
- Tag this variable corresponds to the $resource itself, that we use to access the server.

After defining the initial variables, we use the method `$scope.$on` that is executed when the view of the controller is loaded. In this context, we call the `loadAll()` method.

The `loadAll()` method is responsible for loading all the tags to the view, displaying them in a table. Note that we used the resource `Tag.query` which will automatically do a `GET` call to the server, using the Url `/tags`. When the server returns the data, the first method of the `Tag.query` query is executed and, in it, we populate the `$scope.rows` variable. Note that we are never working with the View, we are just filling an object with an array of data. The act of filling the View is done automatically by AngularJS.

The `getById()` method uses `Tag.get` to get a single tag, which is populated in the variable `$scope.row`.

The `createNew()` method just adds an empty object in the variable `$scope.row`, preparing to add a new record.

The `save()` method gets the data of `$scope.row` to save a tag. This procedure is used to create or edit a tag, with the resource `Tag.save`.

## Configuring the `tag.html` template

Now that we have created the CRUD logic for the tags, let's create the view. The template will have only Html code and the directives of AngularJS, showing how the AngularJS is powerful in this context.

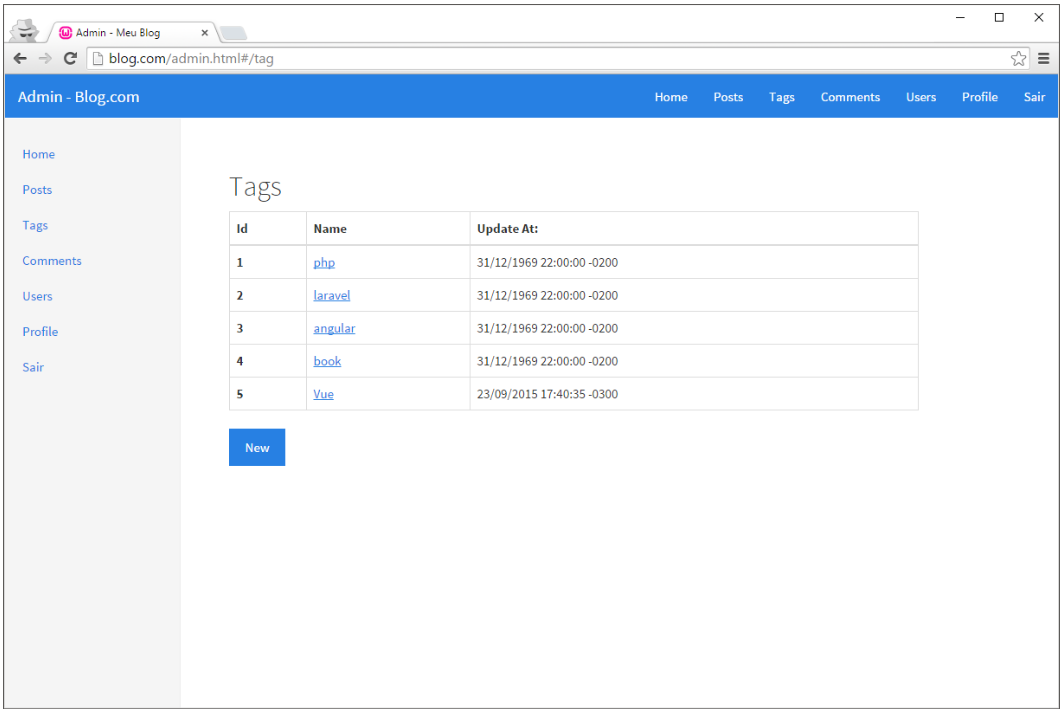
**blog/public/template/admin/tag.html**

```
<h2>{{title}}</h2>

<div ng-show="row==null">
    <table class="table table-hover table-bordered">
        <thead>
            <tr>
                <th>Id</th>
                <th>Name</th>
                <th>Updated at:</th>
            </tr>
        </thead>
        <tbody>
            <tr ng-repeat="row in rows">
                <th >{{row.id}}</th>
                <td><a href="#/tag" ng-click="getById(row.id)">
                    {{row.title}}</td>
                <td>
                    {{ row.updated_at | date:'dd/MM/yyyy HH:mm:ss Z'\
}}
                </td>
            </tr>
        </tbody>
    </table>
    <a href="#/tag" class="btn btn-primary"
    ng-click="createNew()">New</a>
</div>

<div ng-show="row!=null">

    <form name="form" novalidate>

        <div class="form-group"
        ng-class="{ 'has-error':
        (form.$submitted  || form.title.$dirty)
        && form.title.$invalid }">
        <label for="title">Title</label>
        <input ng-model="row.title" type="text" class="form-control"
        id="title" name="title" placeholder="Title" required>
        <span class="label label-danger"
        ng-show="(form.$submitted  || form.title.$dirty)
        && form.title.$invalid">
        <span ng-show="form.title.$error.required">
            Required</span>
    </span>

</div>
<div class="form-group ">
    <button type="submit" class="btn"
    ng-click="loadAll()">Back</button>
    <button type="submit" class="btn btn-primary pull-right"
    ng-click="save()">Save</button>
</div>
</form>

</div>
```

This HTML code can be split into two parts. In the first, we have a `<table>` that is displayed or not, according to the `row` variable. Note that, on the table, we looped `row in rows`, where `rows`is the `$scope.rows` from `TagController` as seen previously. On the table rows we show the tag id, the tag title (that executes the `getById` method when clicked) and the last edited date. After the table, we have a button to create a new Tag.

In the second part of the view we have the form with the "title" field. This form has the visibility controlled by `ng-show="row!=null"`, that means, it will only be visible if the variable `$scope.row` is not null. In this way we control the visibility of screen elements solely by the state of the variable `row`. If the list displays null we show the Tag list. And when the user clicks on a tag we populate the `row` variable, the table is hidden and the form appears.

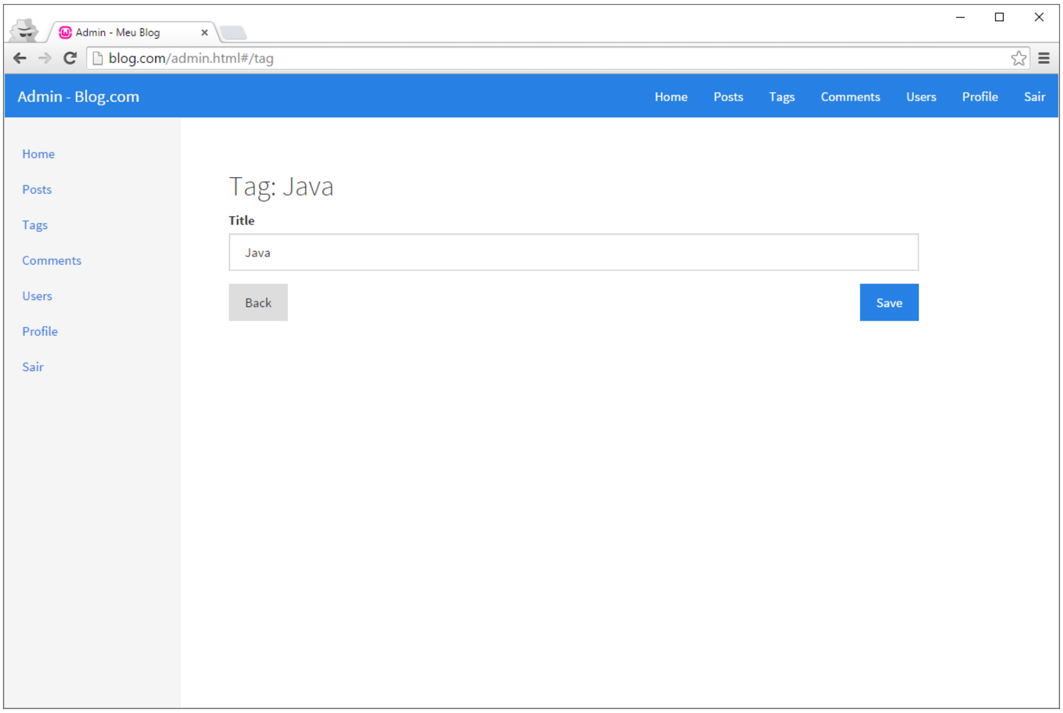
In the image below we have the situation in which the table is visible.



Tags

| Id | Name | Update At: |
|---|---|---|
| 1 | php | 31/12/1969 22:00:00 -0200 |
| 2 | laravel | 31/12/1969 22:00:00 -0200 |
| 3 | angular | 31/12/1969 22:00:00 -0200 |
| 4 | book | 31/12/1969 22:00:00 -0200 |
| 5 | Vue | 23/09/2015 17:40:35 -0300 |

When you click on a tag, we have the following form:



Tag: Java

Title

Java

## Formatting the date on the table

As we have seen in the previous image, the update date of the record is displayed as follows:

```
{{ row.updated_at | date:`dd/MM/yyyy HH:mm:ss Z`}}
```

AngularJS himself gets the data and formats it according to the defined format. But for this to work you need to return the date from Laravel to the client in the form of milliseconds, and for this we need to add the following code in the `Tag.php` model.

**blog/app/Tag.php**

```php
<?php

namespace App;

use Illuminate\Database\Eloquent\Model;

class Tag extends Model
{
    public function posts()
    {
        return $this->belongsToMany('App\Post');
    }

     public function getCreatedAtAttribute($value)
    {
        $value = date('U', strtotime($value));
        return $value * 1000;
    }

    public function getUpdatedAtAttribute($value)
    {
        $value = date('U', strtotime($value));
        return $value * 1000;
    }
}
```

## Setting up Laravel

With the client side code ready, we need to set up Laravel to provide the information to AngularJS. Initially, we need to create the entries in the `routes.php` file, as follows:

**blog/app/Http/routes.php**

```
/// ...code...

//TagResource Routes
Route::get('/tags', 'TagController@index');
Route::get('/tags/{id}', 'TagController@show');
Route::post('/tags', 'TagController@save');
```

We create three entries that match all tags, get a tag and save a tag. Save encompasses the operations of insert and edit that are in the file `TagController.php`, as in the following code.

**blog/app/Http/Controllers/TagController.php**

```
<?php

namespace App\Http\Controllers;

use Illuminate\Http\Request;

use App\Http\Requests;
use App\Http\Controllers\Controller;
use App\Tag;

class TagController extends Controller
{
    /**
     * Display a listing of the resource.
     *
     * @return Response
     */
    public function index()
    {
        return Tag::get();
    }
```

```
/**
 * Display the specified resource.
 *
 * @param  int  $id
 * @return Response
 */
public function show($id)
{
    return Tag::find($id);
}

public function save(Request $request){

    $tag = null;
    if ($request->id){ //edit
        $tag=Tag::find($request->id);
    }else{ //new
        $tag = new Tag();
    }
    $tag->title = $request->title;
    $tag->save();
    return $tag;

}

public function getAll(){
    return Tag::select('id','title')->get();
}

public function getAllwithPosts(){
    return Tag::select('id','title')
    ->with(['posts'=>function($q){
        $q->select('id','title')->active();
    }])
```

```
        ->get();
    }
}
```

The method `show($id)` returns a Tag, given an id. The `save` method analyzes whether the `$request->id` exists, if the tag is in the process of editing, then use `Tag::find` to get it. Otherwise, we are creating a new Tag via the `new Tag()`. After this verification, update the value of the title, because it is the only field to be updated in the table, and we use the `save()` method to persist the record in the `tags`. The last method, `getAll()` returns all records from the table.

## Securing access to the server

We have seen how you can protect the admin screen access on the client, using AngularJS. But there are other checks that must be performed in Laravel also, protecting agains improper access, especially when there are changes to the data in the tables.

The best way to protect its routes agains improper access is to use the middleware `auth` previously set up by Laravel. Remember that before accessing the Admin screen, it's necessary to log in and use `Auth::login`. A basic authentication middleware can be set up as follows:

```
from:
Route::get(`/tags`, `TagController@index`);
to:
Route::get(`/tags`, [`middleware`=>`auth`,
                              `uses`=>`TagController@index`]);
```

Note that, instead of when we would return a second parameter to the `Route::get`, we create an array with two keys. The first is called middleware and has the value `auth`. This entry was created by Laravel and is defined in the class `\App\Http\Middleware\Auther` according to the file `kernel.php`. The second value of the array consists of the `uses` and contains the controller route.

For the tags handling routes, we need to protect mainly the edition, as follows:

```
Route::post(`/tags`, [`middleware`=>`auth`,
                                `uses`=>`TagController@save`]);
```

## The CRUD comments

The Comments CRUD follows the same Tags CRUD pattern with a few more components. First, we display a table with the blog posts, and from this table, we display the comments. This is a typical 1xN screen in which many systems have.

**blog/public/js/admin.js**

```
app.controller('commentController',function ($scope,$resource,login)\
 {

    login.check();

    //Array de posts
    $scope.posts = null;

    $scope.post = null;

    $scope.rows = null;


    $scope.row = null;

    //Resource
    var Comment = $resource("comments/:id",{},{
        getByPost: {url:'/comments/post/:id',
                method:'GET',isArray:true}
    });

    //Resource
    var Post = $resource("posts/:id",{},{
        getTitles: {url:'/posts/getTitles',
                method:'GET',isArray:true}
    });

    $scope.$on('$viewContentLoaded', function(){
        $scope.loadAllPosts();
    });

    $scope.loadAllPosts = function(){
        Post.getTitles(function(data){
            $scope.posts = data;
       });
    }

    $scope.selectPost = function($post){
        $scope.post = $post;
        $scope.row = null;
        Comment.getByPost({id:$post.id},function(data){
            $scope.rows = data;
        });
    }

    $scope.selectComment = function($comment){
        $scope.row = $comment;
    }

    $scope.save = function(){
    if ($scope.form.$invalid) {
        notifyError("Invalid Values");
        return;
    }
    Comment.save($scope.row,function(data){
        notifyOk("Saved.");
        $scope.selectPost($scope.post);
    },function(data){
        notifyError(data);
    });
}


});
```

The CommentController is slightly larger than the TagController, and has some extra features. The first is the creation of custom methods in the $resource, both for comments and posts. Note that we created the getByPost method in comments $resource, because we want to get the comments related to a Post. The same happens for the Posts $resource, where we want to get only the id and the title of the post, without its contents.

When the CommentController loads, first we load all the Posts from the site. When the user clicks on a Post, then we load the post comments. Finally, when the user clicks on a comment, we load the comment on the form. In this form we use the checkbox field with two new properties from AngularJS, ‘ng-true-value’ and ‘ng-false-value’. They define when the selection box is checked or not. Here is the comments template:

**blog/public/template/admin/comment.html**

```
<h2>Comments</h2>

<h3>Posts</h3>
<div>
    <small>Select a post to display your comments</small>
    <table class="table table-hover table-bordered">
        <thead>
            <tr>
                <th>Id</th>
                <th>Title</th>
            </tr>
        </thead>
        <tbody>
            <tr ng-repeat="post in posts">
```

```
                <th >{{post.id}}</th>
                <td><a href="#/comment"
                    ng-click="selectPost(post)">
                    {{post.title}}
                </td>
            </tr>
        </tbody>
    </table>
</div>

<div ng-show="post!=null">
    <h3>Comments of the post <b>{{post.title}}</b></h3>
    <table class="table table-hover table-bordered">
        <thead>
            <tr>
                <th>Id</th>
                <th>Text</th>
                <th>Email</th>
                <th>Active?</th>
            </tr>
        </thead>
        <tbody>
            <tr ng-repeat="row in rows">
                <th ><a href="#/comment"
                    ng-click='selectComment(row)'>
                    {{row.id}}</a></th>
                <td>{{row.text}}</td>
                <td>{{row.email}}</td>
                <td>{{row.active}}</td>
            </tr>
        </tbody>
    </table>
</div>

<div ng-show="row!=null">
```

```
    <h3>Edit <b>{{row.id}}</b></h3>
    <form name="form" novalidate>

        <div class="form-group"
        ng-class="{ 'has-error':
        (form.$submitted  || form.text.$dirty)
        && form.text.$invalid }">
        <label for="text">Text</label>
        <input ng-model="row.text" type="text" class="form-control"
        id="text" name="text" placeholder="Text" required>
        <span class="label label-danger"
        ng-show="(form.$submitted  || form.text.$dirty)
        && form.text.$invalid">
        <span ng-show="form.text.$error.required">
            Required</span>
    </span>

       <div class="form-group"
        ng-class="{ 'has-error':
        (form.$submitted  || form.email.$dirty)
        && form.email.$invalid }">
        <label for="email">Email</label>
        <input ng-model="row.email" type="email" class="form-control\
"
        id="email" name="email" placeholder="Email" required>
        <span class="label label-danger" ng-show="
        (form.$submitted  || form.email.$dirty)
        && form.email.$invalid">
        <span ng-show="form.email.$error.required">
            Required</span>
        <span ng-show="form.email.$error.email">
            Invalid Email</span>
    </span>

     <div class="form-group" >
```

```
        <input type="checkbox"
           ng-model="row.active"
            ng-true-value="1"
       ng-false-value="0"
    > Active
     </div>

</div>
<div class="form-group ">
    <button type="submit"
    class="btn btn-primary pull-right"
    ng-click="save()">Save</button>
</div>
</form>
```

In Laravel, we have the creation of the `PostController@getTitles` and `CommentController@getCommentsByPost` methods, as in the following code.

**blog/app/Http/routes.php**

```
//...code...

//Posts routes
Route::get('/posts', 'PostController@index');
Route::get('/posts/getTitles', 'PostController@getTitles');

//Comments Routes
Route::get('/comments/post/{id}',
            'CommentController@getCommentsByPost');
Route::post('/comments', ['middleware'=>'auth',
            'uses'=>'CommentController@save']);
```

**blog/app/Http/Controllers/CommentController.php**

```
<?php

namespace App\Http\Controllers;

use Illuminate\Http\Request;

use App\Http\Requests;
use App\Http\Controllers\Controller;
use App\Comment;

class CommentController extends Controller
{

    public function last($n=3){
        return Comment::select('id','text','post_id')
            ->active()
            ->orderBy('id', 'desc')
            ->with(['post'=>function($q){
                $q->select('id','title');
            }])
            ->take($n)
            ->get();
    }

    public function getAll(){
          return Comment::select('id','text','email','post_id')
            ->active()
            ->orderBy('id', 'desc')
            ->with(['post'=>function($q){
                $q->select('id','title');
            }])
            ->get();
    }
    public function getCommentsByPost($id){
        return Comment::select('*')
            ->where('post_id','=',$id)
            ->get();
    }

    public function save(Request $request){

        $comment = null;
        if ($request->id){ //edit
            $comment=Comment::find($request->id);
        }else{ //new
            $comment = new Comment();
        }
        $comment->text = $request->text;
        $comment->active = $request->active;
        $comment->email = $request->email;
        $comment->save();
        return $comment;

    }
}
```

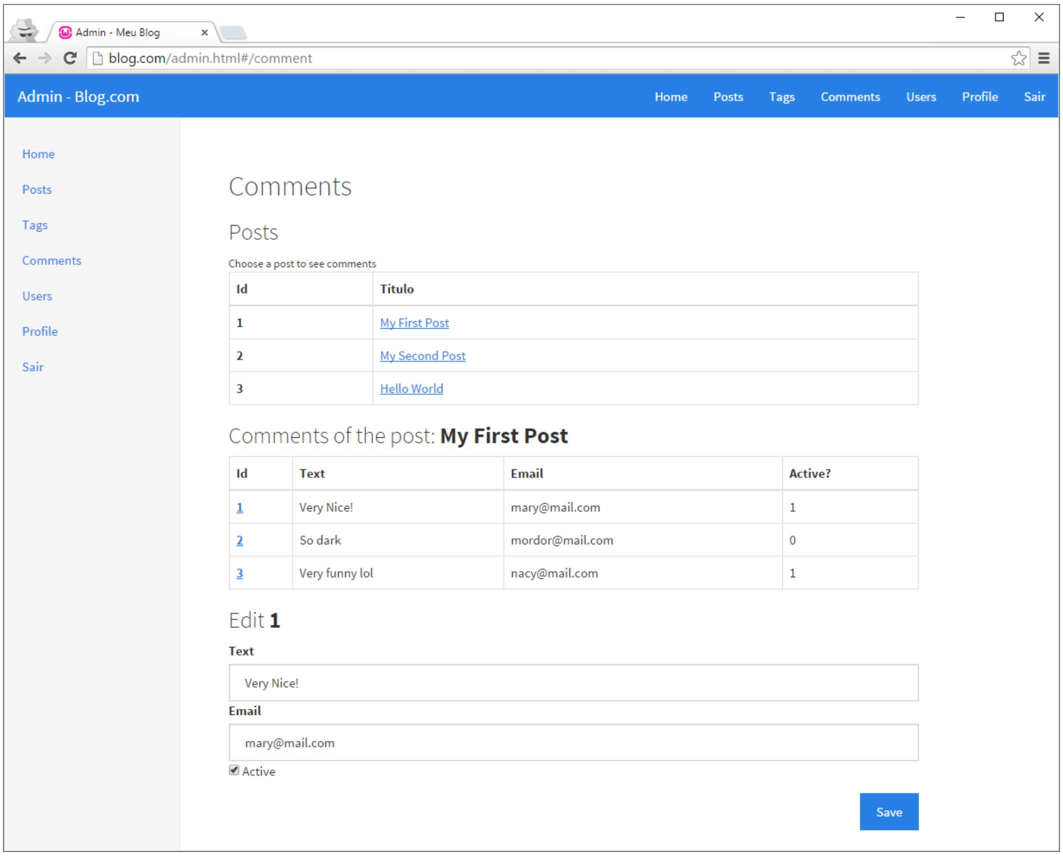
**blog/app/Http/Controllers/PostController.php**

```
<?php

namespace App\Http\Controllers;

use Illuminate\Http\Request;

use App\Http\Requests;
use App\Http\Controllers\Controller;
use App\Post;
```

```
class PostController extends Controller
{
    /**
     * Display a listing of the resource.
     *
     * @return Response
     */
    public function index()
    {
       return Post::get();
    }

    public function getTitles()
    {
       return Post::select('id','title')->get();
    }

    /**
    * Get posts in chronological order
     * @param  int  $n number of posts
     * @return Collection Posts collection
    */
    public function last($n=3){

        return Post::select('id','title', 'text','active','user_id')
            ->with(['tags'=>function($q){
                   $q->select('id','title');
                }])
            ->with(['comments'=>function($q){
                   $q->active()->select('active','post_id');
                }])
            ->with(['user'=>function($q){
                   $q->select('id','name','email');
                }])
            ->orderBy('id', 'desc')
```

```
                ->take($n)
                ->get();
    }
}
```

The feedback screen is similar to the following image.



Comments

Posts

Choose a post to see comments

| Id | Titulo |
|---|---|
| 1 | My First Post |
| 2 | My Second Post |
| 3 | Hello World |

Comments of the post: **My First Post**

| Id | Text | Email | Active? |
|---|---|---|---|
| 1 | Very Nice! | mary@mail.com | 1 |
| 2 | So dark | mordor@mail.com | 0 |
| 3 | Very funny lol | nacy@mail.com | 1 |

Edit **1**

**Text**

Very Nice!

**Email**

mary@mail.com

☑ Active

## CRUD for Posts

The view to create and edit posts follows the same pattern of the other views. The main difference is that we have a verification of the logged in user on the controller, and its use as the author of the post, which means that only the author of the post can edit it.

**blog/public/js/admin.js**

```
// code...

app.controller('postController',function ($scope,login,$resource) {

   login.check();

    //Page Title
    $scope.title = "Posts";

    $scope.rows = null;

    $scope.row = null;

    //Resource Tag
    var Post = $resource("posts/:id");

    $scope.$on('$viewContentLoaded', function(){
        $scope.loadAll();
    });

    $scope.loadAll = function(){
        $scope.row = null;
        $scope.title = "Posts";
        Post.query(function(data){
            $scope.rows = data;
        },function(response){
            notifyError(response);
        });
    }

    $scope.getById = function($id){
        Post.get({id:$id},function(data){
            $scope.title = "Post: " + data.title;
            $scope.row = data;
        },function(data){
            notifyError(data);
        });
    }

    $scope.createNew = function(){
         $scope.row = {title:"",active:0};
    }

    $scope.save = function(){
        if ($scope.form.$invalid) {
            notifyError("Invalid values");
            return;
        }
        Post.save($scope.row,function(data){
            notifyOk(data.title + " saved.");
            $scope.loadAll();
        },function(data){
            notifyError(data);
        });
    }

});
```

**blog/public/template/admin/post.html**

```
<h2>{{title}}</h2>

<div ng-show="row==null">
    <table class="table table-hover table-bordered">
        <thead>
            <tr>
                <th>Id</th>
                <th>Title</th>
                <th>Update at</th>
                <th>User:</th>
                <th>Active?</th>
            </tr>
        </thead>
        <tbody>
            <tr ng-repeat="row in rows">
                <th >{{row.id}}</th>
                <td><a href="#/post"
                    ng-click="getById(row.id)">{{row.title}}</td>
                <td>{{ row.updated_at | date:'dd/MM/yyyy HH:mm:ss Z'\
}}</td>
                <td> {{row.user.name}} </td>
                <td> {{row.active}} </td>
            </tr>
        </tbody>
    </table>
    <a href="#/post" class="btn btn-primary"
                    ng-click="createNew()">New</a>
</div>

<div ng-show="row!=null">

    <form name="form" novalidate>

        <div class="form-group"
        ng-class="{ 'has-error':
        (form.$submitted  || form.title.$dirty)
        && form.title.$invalid }">
        <label for="title">Title</label>
        <input ng-model="row.title" type="text" class="form-control"
        id="title" name="title" placeholder="Title" required>
        <span class="label label-danger"
        ng-show="(form.$submitted  || form.title.$dirty)
        && form.title.$invalid">
        <span ng-show="form.title.$error.required">
            Required</span>
    </span>

        <div class="form-group"
        ng-class="{ 'has-error':
        (form.$submitted  || form.text.$dirty)
        && form.text.$invalid }">
        <label for="text">Text</label>
        <textarea rows=5 cols=40 ng-model="row.text"
        type="text" class="form-control"
        id="text" name="text" placeholder="Title" required></textare\
a>
        <span class="label label-danger"
        ng-show="(form.$submitted  || form.text.$dirty)
        && form.text.$invalid">
        <span ng-show="form.text.$error.required">
            Required</span>
    </span>

    <div class="form-group" >
        <input type="checkbox"
           ng-model="row.active"
            ng-true-value="1"
       ng-false-value="0"
    > Active
```

```
     </div>

</div>
<div class="form-group ">
    <button type="submit" class="btn"
    ng-click="loadAll()">Back</button>
    <button type="submit"
    class="btn btn-primary pull-right"
    ng-click="save()">Save</button>
</div>
</form>

</div>
```

**blog/app/Http/routes.php**

```
//PostResource routes
Route::get('/posts', 'PostController@index');
Route::get('/posts/getTitles', 'PostController@getTitles');
Route::get('/posts/{id}', 'PostController@show');
Route::post('/posts', ['middleware'=>'auth',
                             'uses'=>'PostController@save']);
```

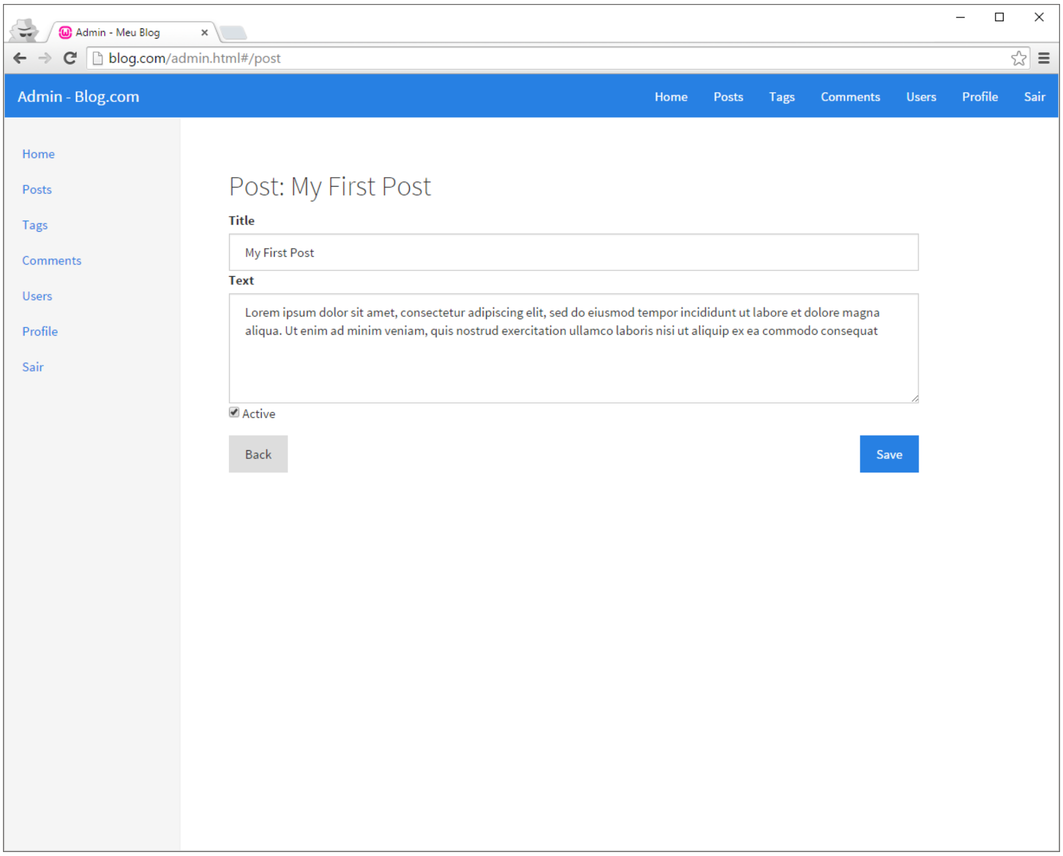
**blog/app/Http/Controllers/PostController.php**

```
<?php

namespace App\Http\Controllers;

use Illuminate\Http\Request;

use App\Http\Requests;
use App\Http\Controllers\Controller;
use App\Post;
use Auth;

class PostController extends Controller
{
    /**
     * Display a listing of the resource.
     *
     * @return Response
     */
    public function index()
    {
       return Post::with(['user'=>function($q){
                    $q->select('id','name','email');
                }])->get();
    }

     public function getTitles()
    {
       return Post::select('id','title')->get();
    }

    /**
     * Display the specified resource.
     *
     * @param  int  $id
     * @return Response
     */
    public function show($id)
    {
        return Post::select('*')
               ->with(['user'=>function($q){
                    $q->select('id','name','email');
                }])
            ->find($id);
    }
```

```
public function save(Request $request){

        if (Auth::user()==null)
            throw new \Exception("Login needed");

if ($request->id!=null &&
   Auth::user()->id!=$request->user_id)
     throw new \Exception("You can edit
            only your posts");

    $post = null;
    if ($request->id){ //edit
        $post=Post::find($request->id);
    }else{ //new
        $post = new Post();
    }
    $post->user_id = Auth::user()->id;
    $post->title = $request->title;
    $post->text = $request->text;
    $post->active = $request->active;
    $post->save();
    return $post;
}

   /**
* Get posts in chronological order
 * @param  int  $n number of posts
 * @return Collection Posts collection
*/
public function last($n=3){

    return Post::select('id','title', 'text','active','user_id')
        ->with(['tags'=>function($q){
               $q->select('id','title');
```

```
                }])
            ->with(['comments'=>function($q){
                    $q->active()->select('active','post_id');
                }])
            ->with(['user'=>function($q){
                    $q->select('id','name','email');
                }])
            ->orderBy('id', 'desc')
            ->take($n)
            ->get();
    }
}
```

Editing posts is similar to the following image.



Post: My First Post

Title

My First Post

Text

Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat

☑ Active

## CRUD for users

The crud for users follows the pattern of others, but you will not be able to edit the user's password, only the name and email.

**blog/public/js/admin.js**

```
app.controller('userController',function ($scope,$resource,login) {

 login.check();

    //Page Title
    $scope.title = "Users";

    $scope.rows = null;

    $scope.row = null;

    //Resource Tag
    var User = $resource("users/:id");

    $scope.$on('$viewContentLoaded', function(){
        $scope.loadAll();
    });

    $scope.loadAll = function(){
        $scope.row = null;
        $scope.title = "Users";
        User.query(function(data){
            $scope.rows = data;
        },function(response){
            notifyError(response);
        });
    }

    $scope.getById = function($id){
        User.get({id:$id},function(data){
            $scope.title = "User: " + data.name;
            $scope.row = data;
        },function(data){
            notifyError(data);
        });
    }

    $scope.createNew = function(){
        $scope.row = {name:""};
    }

    $scope.save = function(){
        if ($scope.form.$invalid) {
            notifyError("Invalid Values");
            return;
        }
        User.save($scope.row,function(data){
            notifyOk(data.title + "saved.");
            $scope.loadAll();
        },function(data){
            notifyError(data);
        });
    }

});
```

**blog/public/template/admin/user.html**

```
<h2>{{title}}</h2>

<div ng-show="row==null">
    <table class="table table-hover table-bordered">
        <thead>
            <tr>
                <th>Id</th>
                <th>Name</th>
                <th>Email</th>
                <th>Updated at:</th>
            </tr>
        </thead>
        <tbody>
            <tr ng-repeat="row in rows">
                <th >{{row.id}}</th>
                <td><a href="#/user" ng-click="getById(row.id)">
                    {{row.name}}
                </td>
                <td >{{row.email}}</td>
<td>{{ row.updated_at | date:'dd/MM/yyyy HH:mm:ss Z'}}</td>
            </tr>
        </tbody>
    </table>
    <a href="#/user" class="btn btn-primary"
    ng-click="createNew()">
    Create</a>
</div>

<div ng-show="row!=null">

    <form name="form" novalidate>

        <div class="form-group"
        ng-class="{ 'has-error': (form.$submitted
        || form.name.$dirty)
        && form.name.$invalid }">
        <label for="name">Title</label>
        <input ng-model="row.name" type="text"
        class="form-control"
        id="name" name="name" placeholder="Title" required>
        <span class="label label-danger" ng-show="
        (form.$submitted  || form.name.$dirty)
        && form.name.$invalid">
        <span ng-show="form.name.$error.required">
            Required</span>
    </span>
```

```
      <div class="form-group"
      ng-class="{ 'has-error': (form.$submitted
      || form.email.$dirty)
          && form.email.$invalid }">
    <label for="email">Email</label>
    <input ng-model="row.email" type="email"
    class="form-control"
            id="email" name="email" placeholder="Email"
            required>
    <span class="label label-danger" ng-show="
    (form.$submitted  || form.email.$dirty)
        && form.email.$invalid">
      <span ng-show="form.email.$error.required">
        Required</span>
      <span ng-show="form.email.$error.email">
      Invalid Email</span>
    </span>
  </div>

</div>
<div class="form-group ">
    <button type="submit" class="btn"
    ng-click="loadAll()">Back</button>
    <button type="submit"
    class="btn btn-primary pull-right"
    ng-click="save()">Save</button>
</div>
</form>

</div>
```

**blog/app/Http/routes.php**

```
//UserResource Routes
Route::get('/users', 'UserController@index');
Route::get('/users/{id}', 'UserController@show');
Route::post('/users', ['middleware'=>'auth',
                'uses'=>'UserController@saveFromRequest']);
```

**blog/app/Http/Controllers/UserController.php**

```
<?php

namespace App\Http\Controllers;

use App\Http\Controllers\Controller;
use App\User;
use Illuminate\Http\Request;
use Auth;
use Hash;

class UserController extends Controller
{

    public function getAllPosts()
    {
        return User::select('id','name','email')
            ->with(['posts'=>function($q){
                $q->select('id','title','user_id')->active();
            }])
            ->get();
    }

    public function doLogin(Request $request){

            if (Auth::attempt(['email' => $request->email,
                'password' => $request->password])) {
                    return Auth::user();
        }else{
            throw new \Exception("Unable login.
                         Try again.");
        }
    }

    public function doLogout(){
        Auth::logout();
        return Auth::user();
    }

    public function getLogin(){
        return Auth::user();
    }

    public function createLogin(Request $request){

        $theUser = User::where('email','=',
            $request->email)->first();
        if ($theUser)
           throw new \Exception("Email already
                registered");

        $user = new User();
        $user->name = $request->name;
        $user->email = $request->email;
        $user->password = bcrypt($request->password);
        $user->save();

        Auth::login($user);

        return Auth::user();
    }
```

```
     public function saveFromRequest(Request $request){

        $user = null;
        if ($request->id){ //edit
            $user=User::find($request->id);
        }else{ //new
            $user = new User();
        }
        $user->name = $request->name;
        $user->email = $request->email;
        $user->save();
        return $user;

    }

    public function index()
    {
        return User::get();
    }

    public function show($id)
    {
        return User::find($id);
    }

}
```

## The user profile view

This view displays some fields of the logged in user with email and password. Each user can only change its own data.

**blog/public/js/admin.js**

```
app.controller('profileController',
    function ($scope,login,$resource,$rootScope) {


 login.check();

    //Page title
    $scope.title = "Profiles";

      // a object'
    $scope.row = null;

    //Resource Tag
    var User = $resource("users/:id");

    $scope.$on('$viewContentLoaded', function(){
        $scope.getById($rootScope.authuser.id);
    });

    $scope.getById = function($id){
        User.get({id:$id},function(data){
            $scope.row = data;
        },function(data){
            notifyError(data);
        });
    }

    $scope.save = function(){
        if ($scope.form.$invalid) {
            notifyError("Invalid Values");
            return;
        }
        User.save($scope.row,function(data){
            notifyOk(data.name + " saved.");
```

```
              $scope.getById($rootScope.authuser.id);
        },function(data){
            notifyError(data);
        });
    }

});

app.controller('logoutController',function ($scope) {


});
```

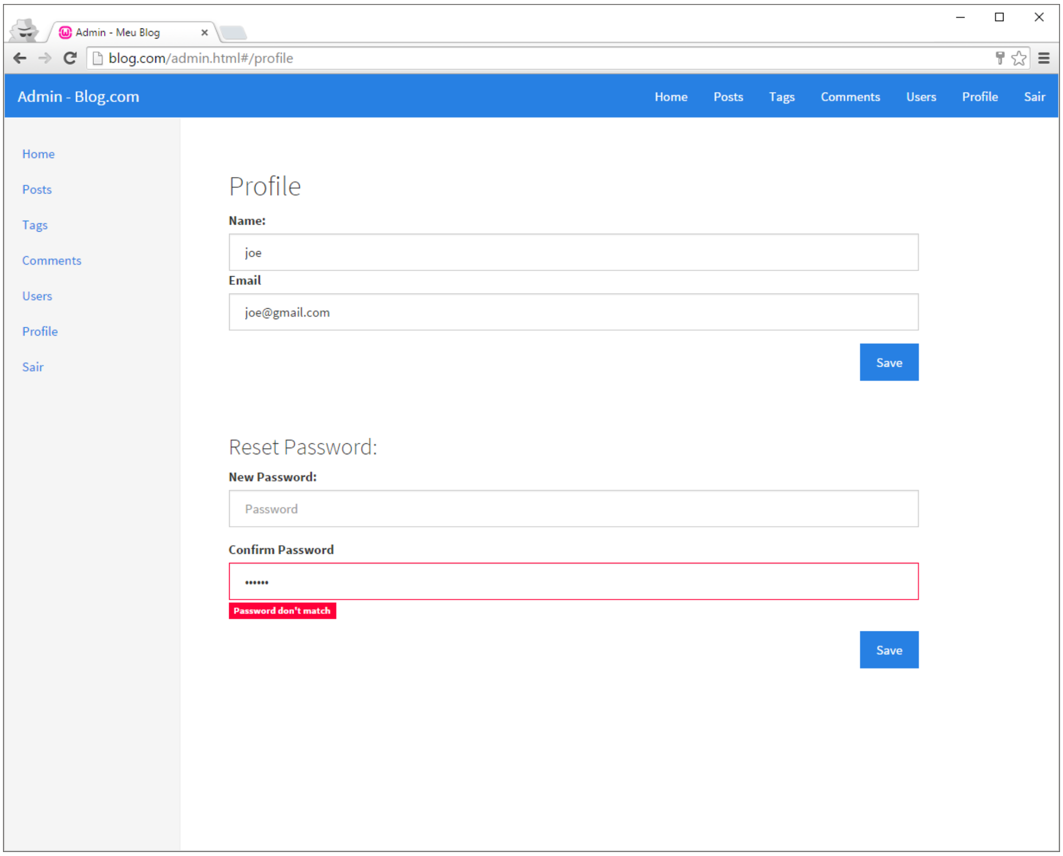
**blog/public/template/admin/profile.html**

```
<h2>{{title}}</h2>

<form name="form" novalidate>

          <div class="form-group"
        ng-class="{ 'has-error':
        (form.$submitted  || form.name.$dirty)
        && form.name.$invalid }">
        <label for="name">Name:</label>
        <input ng-model="row.name" type="text"
        class="form-control"
        id="name" name="name" placeholder="Title" required>
        <span class="label label-danger"
        ng-show="(form.$submitted  || form.name.$dirty)
        && form.name.$invalid">
        <span ng-show="form.name.$error.required">
          Required</span>
    </span>

  <div class="form-group"
```

```
      ng-class="{ 'has-error':
      (form.$submitted  || form.email.$dirty)
          && form.email.$invalid }">
    <label for="email">Email</label>
    <input ng-model="row.email" type="email" class="form-control"
           id="email" name="email" placeholder="Email" required>
    <span class="label label-danger"
    ng-show="(form.$submitted  || form.email.$dirty)
        && form.email.$invalid">
      <span ng-show="form.email.$error.required">
        Required</span>
      <span ng-show="form.email.$error.email">
        Invalid Email</span>
    </span>
  </div>
    <div class="form-group pull-right">
  <button type="submit" class="btn btn-primary pull-right"
    ng-click="save()">Save</button>
  </div>

<br/><br/><br/><br/>

  <h3>Reset password:</h3>

  <div class="form-group">
    <label for="password">New password:</label>
    <input ng-model="row.password" type="password"
    class="form-control"
      id="password" name="password" placeholder="Password">
  </div>


    <div class="form-group"
              ng-class="{ 'has-error':(form.$submitted
              || form.password2.$dirty)
      && form.password2.$invalid }">
    <label for="password2">Confirm password</label>
    <input ng-model="row.password2" type="password"
    class="form-control"
      id="password2" name="password2" placeholder="Password"
      compare-to="row.password">
    <span class="label label-danger"
          ng-show="(form.$submitted  || form.password2.$dirty)
      && form.password2.$invalid">
      <span ng-show="form.password2.$error.compareTo">
        Password dont match</span>
    </span>
  </div>

  <div class="form-group pull-right">
  <button type="submit" class="btn btn-primary pull-right"
    ng-click="save()">Save</button>
  </div>
</form>
```

As the user changes the profile data on the `UserController` class, we didn‘t need to change any information on the Laravel server side.

The user profile view is displayed below.



Profile

Name:

joe

Email

joe@gmail.com

Save

Reset Password:

New Password:

Password

Confirm Password

••••••

Password don't match

Save

Logout is accomplished in the same way as done in the main blog, with the following controller.

```
app.controller('logoutController',
    function ($scope,$http,$location,$rootScope) {
    $http.get("/logout").then(function(response){
        notifyOk("Logout realizado.");
        $rootScope.authuser = null;
        window.location.assign('/index.html');
    },function(response){
        notifyError(response);
    });
});
```