Developing a web application with Lumen and MySql

18 APRIL 2015 | on Php, MySql, Lumen, Laravel | 35 comments

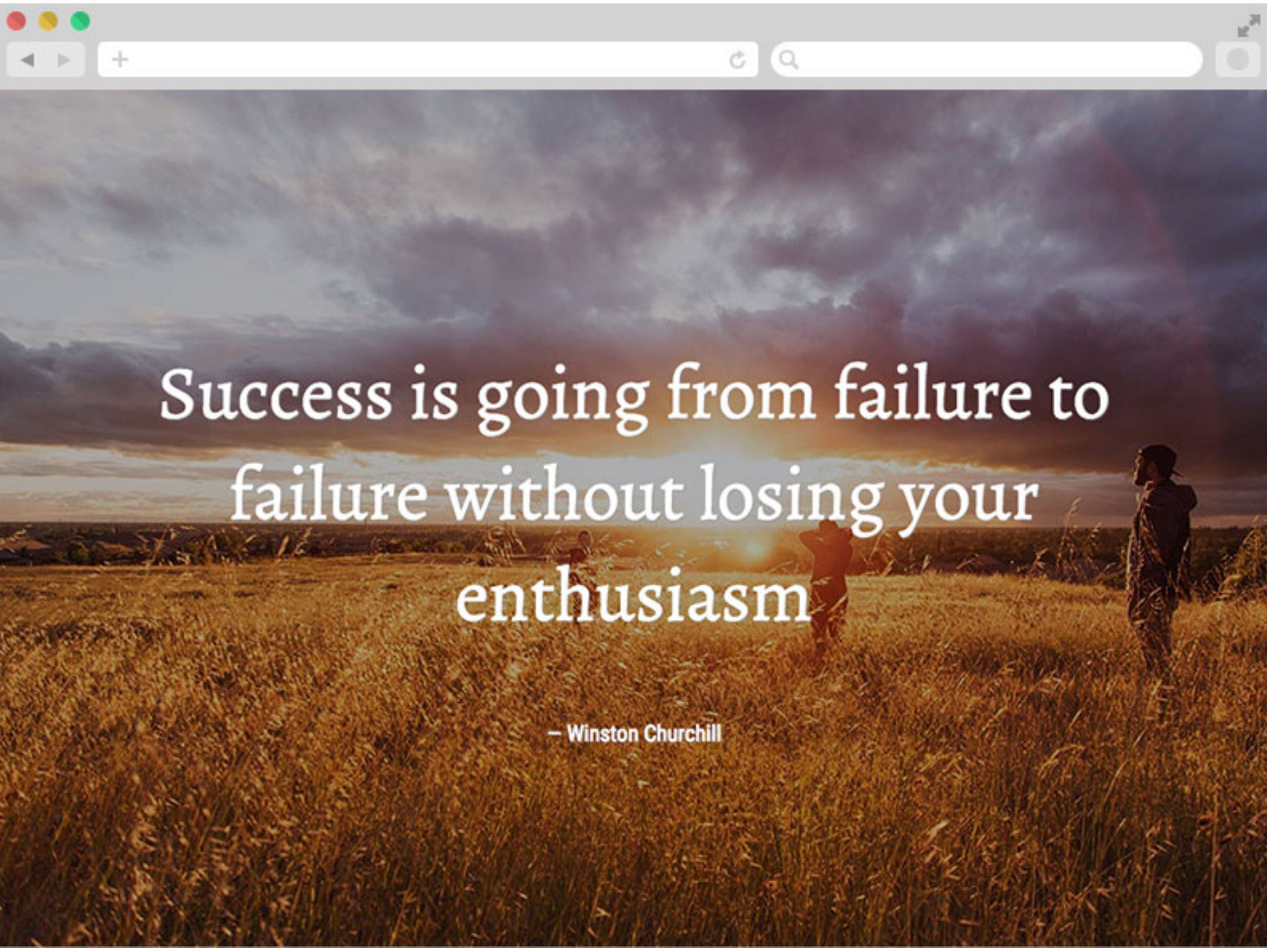
Lumen is a new Php micro-framework developed by Taylor Otwell, the same author of the famous Laravel framework. I wanted to give it a try and I am here to share my experimentations. I am not an expert of Lumen (yet), but I think one of the best characteristics of this framework is that it makes really really easy to bootstrap a new project. So to prove this, we will now build a fully functional app backed by a MySql database in less than 30 minutes. Are you ready to start?

A motivational quote everyday

Our app should be quite simple but I'd like also to make something useful. I am a big fan of motivational quotes, and if you follow me on Twitter (**you should!**) you probably already know it!

So, the idea is to build a web app that showcases a new quote everyday. This way, everyday when you wake up you can run your application and be inspired and motivated by a wise and energising quote to do your best!

To work best our app should obviously be fancy, with über cool background images, like in the screenshot above. That's an importante detail!



A new Lumen project

Let's start. First of all, to create a new Lumen project, we need to have the Lumen command line installer. A very simple tool, which in turn uses Composer, that allow us to bootstrap a new

Lumen project in few seconds. To get it ensure to have installed Composer globally and run the following command:

```
composer global require "laravel/lumen-installer=~1.0"
```

Once we have done this we have a new toy in our shell: the `lumen` command. We can now create a new project by running:

```
lumen new motivational
```

motivational is the name of our new app. The command creates a new folder for it and downloads all the dependencies.

To see our application live we need to `cd` into our `motivational` folder and run

```
php artisan serve
```

Our project will be immediately up and running on `http://localhost:8000`.

Define the data model

We said we want to showcase quotes and in our case a quote is made up by:

- a **text** (The quoted text itself)
- an **author** (The name of the author of the quote)

- a **background** image (Yes, to make everything fancier)

In order to manage data from the database, we need to enable Eloquent (the Lumen/Laravel ORM library), configure our database connection, create a migration and a model and finally seed our database. Let's do it step by step.

Enable Eloquent

To enable Eloquent we need to edit the file `bootstrap/app.php` and remove the comment on the following lines:

```
$app->withFacades();
$app->withEloquent();
```

Notice that the first line enables the support for Facades (a very common feature used in Laravel and inherited by Lumen) that simplifies the usage of some of the core classes of the framework.

Configure the database connection

First of all, be sure to have an instance of MySql running on your machine and to have the credentials to connect to it. Now let's create our `.env` (Dotenv) configuration file. Copy the `.env.example` file into a new `.env` file and open it in your favourite editor.

Here we need to edit the following lines and provide the details

needed to connect to our local mysql instance:

```
DB_CONNECTION=mysql
DB_HOST=localhost
DB_DATABASE=homestead
DB_USERNAME=homestead
DB_PASSWORD=secret
```

Be sure to create the database (`homestead` in this case, but you can obviously customise it).

It's also a good idea in general to change the `APP_KEY` value into some random string in case you are building a "serious" application.

To make Lumen load this configuration file we need, again, to edit the `bootstrap/app.php` file and uncomment the following line:

```
Dotenv::load(__DIR__.'/../');
```

Create a migration

Migrations allows the framework to keep the database schema under control. They define all the database tables and fields programmatically and keep track of the various changes on them (so that we can easily update and rollback the whole schema when needed). We need to initialise the migration system with the command:

```
php artisan migrate:install
```

This command creates a special table in our database called `migrations` that will be used internally from the framework to keep track of all the available migrations and the current one used.

Every migrations is identified by a file that generally lives in the `database/migrations` folder. The file describes the changes in our schema (eg. new tables, new fields, new indexes, tables to be deleted, etc...). In our case we need to create a new table, the "quotes" table to be precise. Let's run this:

```
php artisan make:migration --create=quotes cre-
ate_quotes_table
```

It creates a new file under the `database/migrations` folder that we can easily edit to add the fields we want to have in our table. We just need to tweak the `up()` function a bit:

```
public function up()
{
    Schema::create('quotes', function(Blueprint $ta-
ble)
    {
        $table->increments('id');
                    $table->timestamps();

        // our new fields
                    $table->string('text');
                    $table->string('author');
                    $table->string('background');
    });
}
```

To execute the migration (and effectively create the table on the database) we have to run:

```
php artisan migrate
```

Create the Quote model

In general, a model is a class used to abstract our data and represent it as an object. In ORMs a model class also offers static methods to query the data storage to retrieve the data from the data source and create the corresponding objects.

In our case we need to define the `Quote` model in `app/Models/Quote.php`:

```php
<?php

# app/Models/Quote.php

namespace App\Models;

use Illuminate\Database\Eloquent\Model;

final class Quote extends Model
{

}
```

Yes, that's it... we don't really need to write anything else! We are extending the Eloquent `Model` class that does all the hard work for us, proving a standard model configuration that is good enough most of the times. In this case it automatically maps the class `Quote` to the `quotes` table that we created before.

Seed the database

The seeding process allows us to populate our database with initial data. In our case we can use it to provide some quotes. It's quite useful because we will not build a full fledged admin to do the data entry at this stage (and we also will not have to touch the database manually).

Seeds files are stored in `database/seeds` and we need to create a new file there. We will call it `QuoteTableSeeder`:

```php
<?php

# database/seeds/QuoteTableSeeder.php

use App\Models\Quote;
use Illuminate\Database\Seeder;

class QuoteTableSeeder extends Seeder
{
    public function run()
    {
        Quote::create([
            'text' => 'Success is going from failure to failure without losing your enthusiasm',
            'author' => 'Winston Churchill',
            'background' => '1.jpg'
        ]);

        Quote::create([
            'text' => 'Dream big and dare to fail',
            'author' => 'Norman Vaughan',
            'background' => '2.jpg'
        ]);

        Quote::create([
            'text' => 'It does not matter how slowly you go as long as you do not stop',
            'author' => 'Confucius',
            'background' => '3.jpg'
        ]);

        //... add more quotes if you want!
    }
}
```

The code is quite self explanatory: every call to `Quote::create` inserts a new record into the `quotes` table with the data provided into the array passed as argument. The only thing worth noticing is that we are passing a relative reference to a file in the `background` field. You need to have these files into your `public/img/` folder, as this allows us to serve these files to the browser. If you need some good royalty-free photos have a look

at the Unsplash project.

To enable this seed script we need to link it to the main `DatabaseSeeder` script by adding the following line within the `run()` method:

```
$this->call('QuoteTableSeeder');
```

Now we just need to launch the following command to execute the seed script and populate the database:

```
php artisan db:seed
```

Damn, we got a `Class QuoteTableSeeder does not exist`! That's why by default Lumen Composer file maps the `database` path with the `classmap` strategy. That means that every time Composer dumps the autoloader, it creates a static map of all the classes available inside that folder. So every time we add a new class there we need to manually re-dump the autoloader script:

```
composer dumpautoloader
```

Now let's run again `php artisan db:seed` and this time everything should be fine.
If you explore your database you will see some records within the `quotes` table.

The routing

Until now we just defined the data model of our application and populated our database. Now we will add some business logic and we will map it to some routes.

We will have two routes:

- GET `/` - the main route, providing a new quote everyday
- GET `/{id}` - the route of a specific quote, mapped by id

To define the business logic associate to a route we have to edit the `app/Http/routes.php` file:

```php
<?php

# app/Http/routes.php

use App\Models\Quote;

/**
 * Display the today quote
 */
$app->get('/', function() use ($app) {

    /*
     * Picks a different quote every day
     * (for a maximum of 366 quotes)
     *
     *   - $count: the total number of available
quotes
     *   - $day: the current day of the year (from 0
to 365)
     *   - $page: the page to look for to retrieve
the
     *            correct record
     */
    $count = Quote::query()->get()->count();
    $day = (int) date('z');
    $page = $day % $count + 1;

    $quotes = Quote::query()->get()->forPage($page,
1)->all();

    if (empty($quotes)) {
        throw new \Illuminate\Database\Eloquent\Mod-
elNotFoundException();
    }

    return view('quote', ['quote' => $quotes[0]]);
});

/**
```

The two `$app->get` defines the two routes we need for our app. For every route we define the business logic within a closure function. The code is very straightforward and, thanks to the comments, it should be quite easy to understand.

The `view()` function allow to render a template. In this case we are rendering the `quote` template passing the model as `quote` variable. In the next paragraph we will see how to define our template.

The template

Lumen uses the Laravel default template language, Blade. Blade allows us to render complex HTML code in a easy way. All the templates live in the `resources/views` folder. Let's create the `quote.blade.php` file:

```
<!-- resources/views/quote.blade.php -->

<html>
<head>
    <title>Motivaitonal — Your daily source of moti-
vation!</title>
    <link href="/css/style.css" rel="stylesheet"
type="text/css"/>
    <link href='http://fonts.googleapis.com/css?fami-
ly=Alegreya:400,700|Roboto+Condensed'
rel='stylesheet' type='text/css'>
</head>
<body style="background-image: url('/img/{{$quote-
>background}}')">
<div class="container">
    <div class="quote-container">
        <p class="text">{{$quote->text}}</p>
        <p class="author">— {{$quote->author}}</p>
    </div>
</div>
</body>
</html>
```

As you can see we can use the double curly braces syntax to reference variable values.

To finish we just need to create our `public/css/style.css` stylesheet file:

```
html, body {
    height: 100%;
    padding: 0;
    margin: 0;
}

body {
    background-size: cover;
}

.container {
    height: 100%;
    background: rgba(0,0,0,.3);
}

.quote-container {
    position: relative;
    top: 50%;
    transform: translateY(-50%);
    padding: 2em 4em;
}

.quote-container p {
    text-align: center;
    color: #fff;
    text-shadow: 1px 1px 1px rgba(150, 150, 150,
0.8);
}

.quote-container p.text {
    font-family: 'Alegreya', serif;
    font-size: 4em;
}

.quote-container p.author {
    font-family: 'Roboto Condensed', sans-serif;
    font-size: 1.2em;
}
```

That's it, now your app is up and running. Isn't it beautiful? Hey,

let me know if you decide to publish it and motivate the whole world! ;)

Conclusions

Lumen seems to be a very promising framework for the fast prototyping of small web apps. I look forward to use it again for slightly more complex use cases where I can adopt other interesting features like the cache layer and the job queue library. Have you already used Lumen? Do you think it will become a mainstream framework along Laravel or it will just be another of the hundreds of Php framework available out there? I'm really curious to know what you think about it, let me know it in the comments!

Best regards and have a very motivated day ;)

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the end!

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