Developing a feature to a CRM system with Laravel

Eemil Himanen

Haaga-Helia University of Applied Sciences

Bachelor's Thesis

2023

Bachelor of Business Information Technology

Summary

Author
Eemil Himanen

Studies
Business Information Technology

Thesis name
Developing a feature to a CRM system with Laravel

Pages and attachments
16 + 1

This thesis is about developing a new feature to a customer relationship management (CRM) system with Laravel. That is done by programming the new feature to the existing CRM system. The development work used for this project is done between 1.2.2023-31.3.2023 among other job duties. So during that time the developing has been done for 0-4 hours in a day.

Keywords
Laravel, Programming, PHP, CRM

Table of contents

1 Introduction

This thesis is about developing a new feature to a CRM system. The CRM system is built with Laravel and the database is using MySQL. The technologies are explained in the list below.

- CRM is a customer relationship management system.
- Laravel is a PHP framework.
- PHP is a programming language.
- MySQL is a relational database management system that uses structured query language (SQL) for managing and organizing data.

The development work is done locally, which means that there is a copy of the CRM codebase and database on the developers computer. That way testing is easier and the development will not affect the live version of the CRM.

The development work used for this project is done between 1.2.2023-31.3.2023 among other job duties. So during that time the developing has been done for 0-4 hours in a day. The feature is based on user needs of this system. This feature will benefit the users of this CRM because it will provide them with more information. The problem solved is that we can see and use more information in the CRM system, which was just on excel sheets before this. That way we can slowly get rid of all the sheets and this will be an easier, faster and more secure way to store and share that information.

The information is also displayed and certain users can edit that information. Some of the information can be edited in the CRM but some only from the database. There will be new tables added to the database for this project.

Here is how some of the different users use the CRM:

Content creators:

- Content creators can see the customers that they are working with
- They can assign certain statuses for the customer but they can’t use this new feature for assigning the installer
- After this feature is developed they will be able to see who has done the installation of the customers products.

Installers:

- Installers can see the customers that they are working with
- They can assign certain statuses for the customers
- After this feature is developed they will be able to assign who has done the installation from a list of options and they can see who has done the installation of the customers products.

In the end it should be possible for certain users to be able to assign an installer for a customer and all the users can see who did the installing work for a certain customer. The user roles are already done so this project will not assign or create any new roles. Installer means that he does the installation of certain products for a customer.

In the CRM system the users can see a list of customers. There are different user roles in the CRM system like Content creator and Installer. Content creators can see customers in the CRM and they will benefit from knowing the installer because they know who to contact. This feature will provide the installer user with a button that they can use to select a customer. Then they have a dropdown selection of options. They can choose one option and then click a button to assign who did the installation of a customer. That will save the installer for that customer in the MySQL database and display the installer in the list of customers.

2 Technologies used

The CRM system that I will be working with, is built with Laravel which is a PHP framework. The database that it uses is using MySQL. Tools for development are Visual Studio Code, Sequel Pro and git and bitbucket.

2.1 Laravel

Laravel is an open-source PHP web application framework. It follows the Model-View-Controller (MVC) architectural pattern and provides a range of features and tools that enable developers to build robust, scalable, and maintainable web applications (Laravel News, sa). Laravel is a good choice to use for a CRM system because it needs to be scalable.

One of the main features of Laravel is its expressive syntax, which allows developers to write clean and readable code (Laravel, s.a). Laravel provides a wide range of built-in features, such as authentication, routing, caching, and more. It also offers powerful database migration tools, making it easy for developers to manage database schema changes and versioning.

Laravel supports many templating engines, like Blade, which offer powerful features like template inheritance, sections, and loops. This CRM system uses Blade.

2.2 MySQL

MySQL is an open-source relational database management system which uses structured query language (SQL) for managing and organizing data (MySQL, s.a).

MySQL is widely used by developers because it is very scalable and flexible. MySQL supports various data types and scripting languages such as PHP, which can be used to connect and retrieve data from MySQL databases. MySQL is not a database but a tool used to manage databases and servers.

MySQL is often used for web applications, content management systems, and e-commerce websites (MySQL s.a). MySQL provides built-in security features that allow you to control access to your data. This includes user authentication and encryption for secure communication between the client and the server (MySQL s.a.).

MySQL is compatible with a wide range of operating systems, including Linux, Windows, and macOS, and can be used with a variety of programming languages. In this project it will be used with MacOS operating system and Laravel, which is a PHP framework.

2.3 Visual Studio Code

Visual Studio Code is a free and powerful source code editor that runs on desktop and web platforms. It is available for Windows, macOS, Linux, and Raspberry Pi OS (Microsoft 2022). Visual Studio Code comes with built-in support for JavaScript, TypeScript, and Node.js and also has a lot of extensions for other programming languages.

2.4 Sequel Pro

Sequel Pro is an open-source tool that provides a simple interface for managing MySQL databases on local and remote servers (Sequel Pro. s.a.). Sequel Pro is a good tool for web development for Mac users. It allows users to easily manage MySQL databases and offers features like easy database creation, table creation, and data import/export.

3. The development work

The development work used for this project is done between 1.2.2023-31.3.2023 among other job duties. So during that time the developing has been done for 0-4 hours in a day. The scope of the project is based on needs. The main feature developed is a feature that I think is useful for the CRM. The CRM has leads and this feature allows to assign who has handled the install of that customer. It will store the information in the database and also display it for the users. In detail, I have to show a button that only certain users with a certain role can use. At this stage the only role that will be able to use the assigning part of this feature is the installers role. That button will let that user select a customer and in a dropdown selection select one option. The dropdown will have the installer options and it will fetch them from the MySQL database. After that they can see another button, that assigns the installer and saves the information to the database. All these buttons and the dropdown are already in the template of the CRM so I will just need to display them for the one user role.

At first my job was to learn more about the existing CRM codebase and Laravel, because I have not been working with Laravel before. After that I started thinking what would be a useful feature for that CRM system based on my own needs regarding my other job duties as a user of that CRM. This feature will benefit the users of this CRM because it will provide them with more information. The CRM shows customers and certain information about them. It does not show who has done the installation of the customer, that has been stored in sheets before this so that is why I thought it would be good to add this feature because it is easier for everyone to see all the information in the CRM and we could slowly get rid of all the sheets.

So the feature I thought would be possible for me to develop in this timeframe and also a pretty important feature was that certain users could assign, who was the installer in a customer case. There would be a list of possible installers in the database and certain users could assign who was the installer for a customer and it would be displayed for everyone.

There was no strict rules for planning the scope of this project. I picked this feature because I know it will display useful information for the users of the CRM. The installers of customers are often needed and before they were stored in an excel sheet so this will solve a real problem because that information can be moved to the CRM now. Then everyone of the users can see it there and they don’t have to ask others who installed some customer.

The development work needs programming with Laravel and adding new databases. The development is done locally, which means I have downloaded the codebase and setup a database locally just on my own computer. The development work done will not affect the live version of the CRM, basically I just have a copy of it working on my computer, which I am doing the programming at first. The testing requires me to also have the MySQL database working locally so it will not affect the real live version of the CRM. Most developing is usually done locally at first and then it will be moved to the live version.

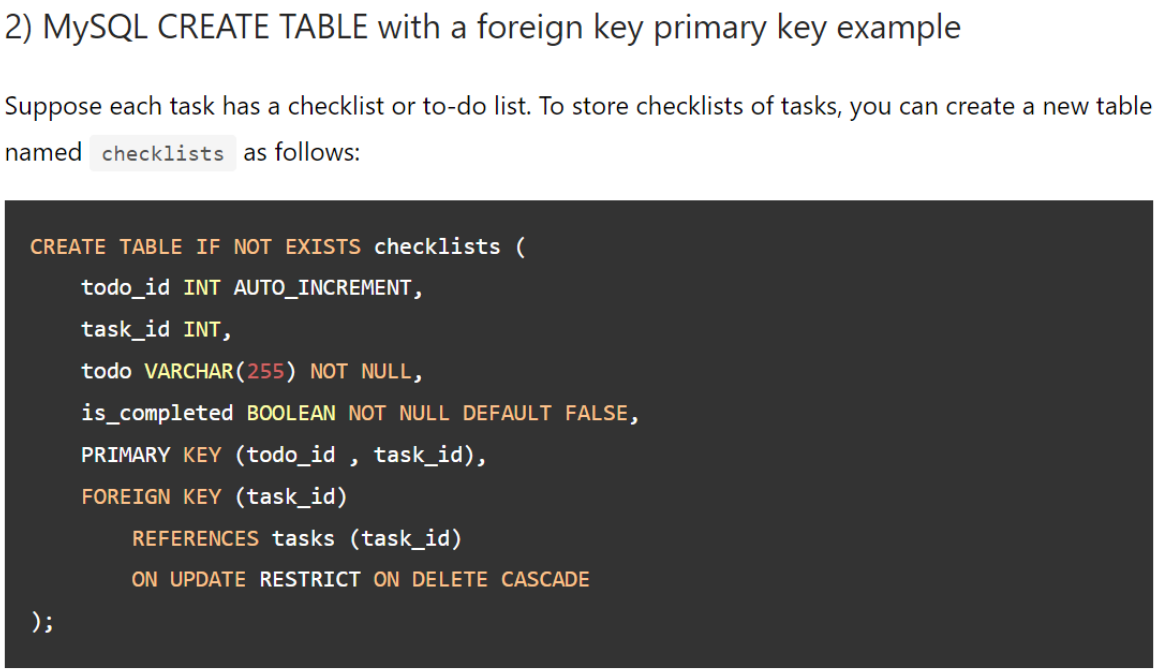
There are also other users with different roles that can see who has done the installation but they will not be able to change the installer or assign an installer for anyone. That will be taken care of in the code but the user roles are already done. This project will not create or edit the user roles that are already defined in the CRM system.

4. Development in practice

The development of the feature that has been chosen will be done with a Mac computer and the code editor is Visual Studio Code. The database will be managed with Sequel Pro. These are all very popular systems for coding and these were my own choice because I am familiar with these systems. The code will be pushed to Bitbucket with Git to a new branch that is created for this feature.

At first I did the visual changes needed with the code. There is a list of customers in the CRM and there are 6 columns and I added one more column and also added a title for that which was ”Installer”. After that I needed to show new options in an existing dropdown when the certain user role will select a customer. In the code I restricted the use of this feature for other roles but one. I had to test this by logging in with different role users and test every role that they can’t see it. Only one user role can see this feature.

From the live version of the CRM I got a file of the exported database. Then I had to import that to Sequel Pro and then I assigned the information needed to fetch that database. To that database I added a new table with a script. Below in the picture 1 is an example what a script for creating a table would look like.



Picture 1. MySQL Create table (MySQL Tutorial s.a.)

After that I was ready to work on the functionality of the new feature. Now the buttons and database tables were ready but I needed to make them functional so when the user selects an customer and for that customer an installer from the dropdown and saves the changes, It should be saved in the database. In the database I should save things like the id of the customer, the installers name, and timestamp when this was done. I created the functions needed for that and then I would just have to display the installer of the customer in the column that I created earlier.

In Laravel you have controllers, views and routing so I had to made changes in multiple files. Below in pictures 2, 3 and 4 is an example of how to fetch data from a database and display it so the last step of building this feature. There are 3 files needeed for that and in picture 2 is the view so the table where the data is displayed. In picture 3 there are two files, the web routing where the data is retrieved and the controller file where the function for displaying the data is. In picture 4 is what this code would look like.

stud_view.blade.php

```
<!DOCTPE html>
<html>
<head>
<title>View Student Records</title>
</head>
<body>
<table border = "1">
<tr>
<td>Id</td>
<td>First Name</td>
<td>Last Name</td>
<td>City Name</td>
<td>Email</td>
</tr>
@foreach ($users as $user)
<tr>
<td>{{ $user->id }}</td>
<td>{{ $user->first_name }}</td>
<td>{{ $user->last_name }}</td>
<td>{{ $user->city_name }}</td>
<td>{{ $user->email }}</td>
</tr>
@endforeach
</table>
</body>
</html>
```

Picture 2. Retrieve data from database using Laravel framework. (Students tutorial s.a.)

StudViewController.php

```php
<?php
namespace App\Http\Controllers;
use Illuminate\Http\Request;
use DB;
use App\Http\Requests;
use App\Http\Controllers\Controller;
class StudViewController extends Controller {
public function index(){
$users = DB::select('select * from student_details');
return view('stud_view',['users'=>$users]);
}
}
```

web.php

```php
<?php
/*
|--------------------------------------------------------------------------
| Web Routes
|--------------------------------------------------------------------------
|
| Here is where you can register web routes for your application. These
| routes are loaded by the RouteServiceProvider within a group which
| contains the "web" middleware group. Now create something great!
|
*/
//retrive data
Route::get('view-records','StudViewController@index');
```

Picture 3. Retrieve data from database using Laravel framework. (Students tutorial s.a.)

id	first name	last name	City name	Email id
1	name1	last name 1	city 1	email 1
2	name2	last name 2	city 2	email 2
3	name3	last name 3	city 3	email 3

Picture 4.

The testing of the feature was done so that I tried different scenarios to save and update the data multiple times and checked from Sequel Pro that it gets updated correctly in the database. After that it was ready.

5. The problem solved

The problem was that the information which is useful mostly for content creators and installers will be visible in the CRM. The installer list which was in a sheet can be moved manually to the CRM because the amount of data was fairly small. So the problem can be solved because the sheets can be deleted and all the information can be moved to one place so it is easier and faster to see for everyone.

6. Thoughts about the development

At first I had to learn about Laravel. This was my first project, which is done with Laravel and MySQL. I knew the basics of PHP and MySQL so that helped me to learn about Laravel and this project pretty quickly. The Laravel documentation was also good for learning. The developing of this CRM was not my main task at work.

Laravel was quite easy to work with because it is intuitive and comes with many templates. There were also similar functions in the code already and it was easy to find help from the Laravel documentation and other sources online. I had to learn this all by myself but that way the learning is better than if someone just tells you how to do it.

Sources

Laravel docs. s.a. Laravel docs version 10.x. Readable: https://laravel.com/docs/10.x
Read: 14.03.2023.

Laravel news. s.a. Laravel news. Readable: https://laravel-news.com/
Read: 14.03.2023.

MySQL. s.a. MySQL Documentation. Readable: https://dev.mysql.com/doc/refman/8.0/en/what-is-mysql.html
Read: 14.03.2023.

Talend. s.a. What is MySQL? Readable: https://www.talend.com/resources/what-is-mysql/
Read: 02.05.2023

MySQL. s.a. MySQL Tutorial. Readable: https://www.mysqltutorial.org/
Read: 17.03.2023.

Visual Studio Code. s.a. Visual Studio Code Documentation. Readable: https://code.visualstudio.com/docs Read: 02.05.2023

Microsoft 2022. GitHub Copilot and Visual Studio 2022. Readable: https://visualstudio.microsoft.com/ Read: 02.05.2023

Sequel Pro. s.a. Sequel Pro Documentation. Readable: https://sequelpro.com/docs Read: 02.05.2023

Students tutorial. s.a. Retrieve data from database using Laravel framework. Readable: https://www.studentstutorial.com/laravel/retrieve-data-laravel?utm_content=cmp-true
Read: 02.05.2023

MySQL Tutorial s.a. MySQL Create table. Readable: https://www.mysqltutorial.org/mysql-create-table/ Read: 02.05.2023

Attachments