2u2i

UNIVERSITY MALAYSIA TERENGGANU
FACULTY OF OCEAN ENGINEERING TECHNOLOGY & INFORMATICS

CSM4994
INDUSTRIAL PROJECT DEVELOPMENT

Final Project Documentation

PGPKS System

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ABSTRACT

The Cyber Security Health Check Programme (CSHCP) or Program Galakan Pemerkasaan Keselamatan Siber (PGPKS) is a comprehensive program that delivers cyber security services and approaches to solve increasingly sophisticated cyber threats. In this scenario, Cyber Security Malaysia (CSM) is the primary actor in this system because they will monitor, organize, and report on PGPKS's progress. They must employ a system that can monitor progress.

The purpose of this system is for managing user tasks in a more systematic and effective manner. Instead of performing it manually, which will take a long time, we may use this approach which would save us money on paper and time. This system should have helped CSM monitor SME and Authorized Partners, and track PGPKS progress.

ACKNOWLEDGMENT

I personally want to thank everyone who contributed to the success of our initiative. I want to thank Mr. Syamsul Maizam bin Mohd Shapawi, my industrial supervisor, for his insightful counsel, leadership, and patience throughout the development of the project.

In addition, I want to thank my lecturer, Dr. Mohamad Nor bin Hassan, who helped me with every aspect of the 2u2i programme, from locating a job to completing the report. A special thanks to my teammates, Ms. Yumni Nur Arifa Binti Fikri and Ms. Nur Alya Imanina Binti A. Razak, who helped me with the project's components I didn't even understand and provided advice on my position, which is the back-end (database).

Last but not least, many thanks go to Mr. Syahfulnizam bin Mohamad Nor, the project's manager, who has committed his entire effort to leading the team to success. I must express my gratitude to several other supervisors and even the panels for their assistance, especially during the presentation of our project, which was made stronger by their comments and suggestions.

Declaration

I hereby declare that the "PGPKS System Final Documentation" project work that I submitted to my university supervisor, Dr. Farizah bt Yunus, is a record of original work completed by me under the MSC Management Services Sdn Bhd company's project, under the supervision of my industry supervisor, Mr. Syamsul Maizam bin Mohd Shapawi, and that this project work is submitted in fulfilment of the requirements for completing the 2U2I programme. No other institution or institute has accepted the conclusions described in this paper for the purpose of awarding a degree.

Contents

1. Project Overview

1.1. An introduction to the project

The Cyber Security Health Check Program (CSHCP), also known as Program Galakan Pemerkasaan Keselamatan Siber (PGPKS), is a comprehensive program that utilizes cyber security services and solutions to counteract increasingly sophisticated cyber threats that are in accordance with current and upcoming technologies. Cyber Security Malaysia (CSM), a technical expert agency, will implement a Cyber Security Health Check Program (CSHCP) for Small and Medium Enterprises (SMEs) as part of our development project under the 12th Malaysia Plan. Understanding the significance of cyber security aspects and enabling the digital transformation agenda in Malaysia. Through cyber security health checks, the CSHCP has a role to support and complement the needs of SMEs in solving cyber security concerns and addressing growing cyber risks in keeping with current and future technical developments. It is necessary to establish a strong basis for SME cyber security infrastructures and will present chances to reduce any potential hazards. For this, MSCMS would want to give Cyber Security Malaysia a subscription to Workspace Tools for Cyber Security Health Check Program (CSHCP). These workspace features can be used by CSM to manage the program and get a summary or even a detailed overview of the status of the operations.

1.2. Define project objectives

I. To develop a new system

Since Cyber Security Malaysia (CSM) still use a manual way to approach Small Medium Enterprise (SMEs) we are attempting to manage this situation in a more convenient manner by establishing a system for them. Once they have a mechanism in place, they can simply communicate through it

II. To design a system that saves time

Once this system is completed, Cyber Security Malaysia (CSM) may simply upload the Small Medium Enterprise (SME) questionnaire response to the system, and it will be saved in the database. It not only saves time, but also reduces errors while entering Small Medium Enterprise (SME) information into the system.

III. To build a system that is efficient and effective

As is generally known, the world is increasingly focused on things that make your jobs easier, faster, and more methodical. This system will undoubtedly be built to meet all of these requirements.

1.3. Explain the outcomes of the project

The Cyber Security Health Check Programme (CSHCP), also known as the Program Galakan Pemerkasaan Keselamatan Siber, uses the PGPKS system as a platform (PGPKS). The admin, Cyber Security Malaysia, may organise, analyze, and report on the development of PGPKS for PKS in a more organised and effective way thanks to this technology.

Furthermore, this system will generate data on SME questionnaire responses that must be uploaded by admin. By using the method, the admin did not even have to manually enter SME data into Excel or Word, thus reducing errors and typos while entering SME details.

2. Project Requirements

2.1. Describe the features of the solutions/products

The products have a few features, such as online web applications with login and credentials. For access to their own page, users must login with their email address and password. In the system, there are two different types of roles: administrators, or Cyber Security Malaysia (CSM), and authorised partners.

One of the primary aspects of the product is the dashboard. To display the data summary, the system builds a dashboard. The admin can view statistics for all authorised partners and registered SMEs on the dashboard. A bar chart and a pie chart can also be used to display statistics on SMEs by state and status, respectively.

The CSM or admin may also be in charge of managing the information of authorised partners. The data of authorised partners who want to take part in the programme can be stored in this system. CSM had access to edit and delete data on authorised partners.

Additionally, CSM or admin may manage and record SME data. To participate in the initiative, SMEs can register their details using this system. CSM had access to SME data and could view, edit, and remove it.

In order to store the data for SME preliminary evaluation and scoring, CSM could also upload and download excel files containing responses from SMEs to the system. Through the information based on tier and remarks, the CSM may choose which SME will participate in the PGPKS programme. The data of SMEs could be edited, viewed, and removed by CSM.

Furthermore, the CSM should be able to track a SME's current status in the PGPKS programme using information from authorised partners. CSM should also be able to approve it if the status was complete. Additionally, the CSM might be able to see the actual dates that the authorised partner will begin and end the programme.

As a result, CSM may organise and coordinate the date between SMEs and authorised partners in the next service on the page for upcoming services. CSM will need to select SMEs and authorised partners, as well as start and end dates for the service.

Lastly, CSM can access and download the report via a PDF file on the report website after approved partners have finished the service.

3. Technical implementation of the project

3.1. Technology used (Front-end and Back-end)

Framework	Laravel	Laravel is a PHP-based framework with a complete structure. It configures in an MVC pattern (Model View Controller).
Front-end	Bootstrap	A front-end framework is Bootstrap. It is open-source and cost-free to use, but it also includes a good amount of HTML and CSS UI interface element templates.
Language	PHP	PHP is a primary scripting language.
Database	MySQL	Based on structured query language, MySQL is a relational database management system (RDBMS) created by Oracle (SQL).
Tool	Visual Studio Code	Version control, task execution, and debugging are all supported by the simplified code editor known as Visual Studio Code.

Table 1: List of technology used

3.2. Framework, microservices, container, API, or cloud computing platform

The system uses the Laravel 8 framework as a framework. Laravel is an open-source, PHP-based framework for creating a variety of specialised web applications. It is a completely server-side framework that maintains data with the aid of an MVC design, which divides the back-end architecture of an application into logical sections.

The routes/api.php file is used as the API when building a RESTful API. It requires developing a project's back end using Laravel and its front end using a different framework (such as angular). Then all of the routes will be in routes/api.

An effective solution for handling class dependencies and conducting dependency injection is the Laravel service container. Class dependencies are "injected" into the class via the function Object(), or, in other circumstances, "setter" methods, according to the technical term for what is essentially just this.

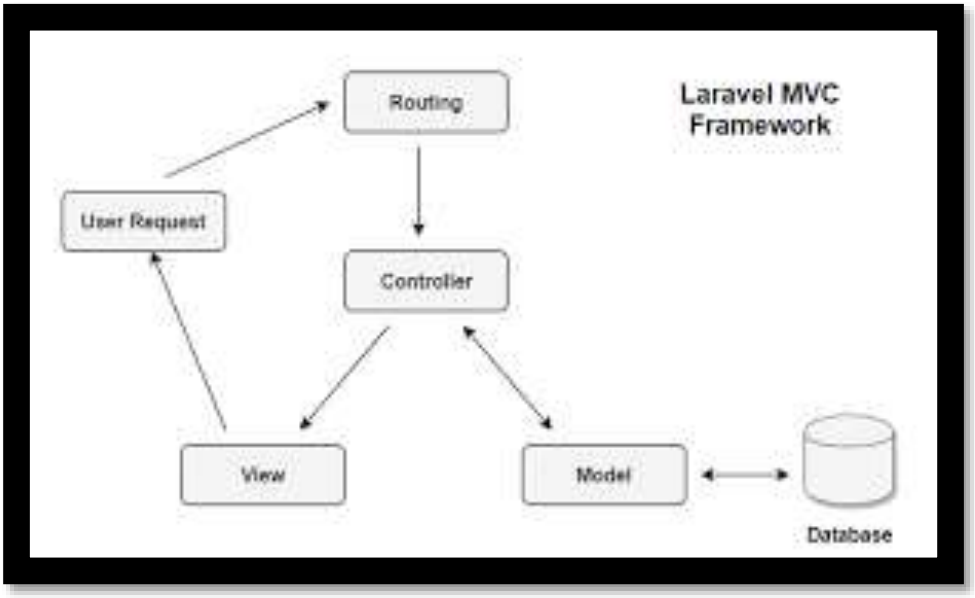

Figure 1: Laravel MVC Framework

3.3.Sample source code for front-end development

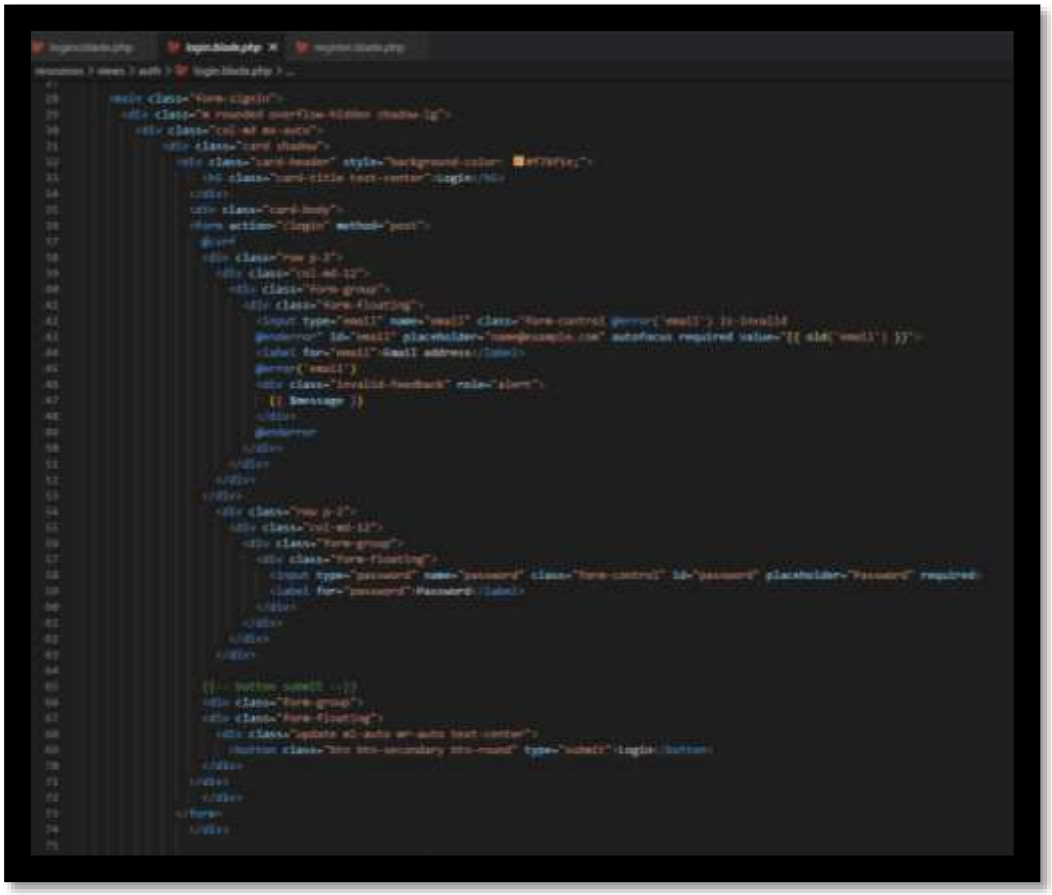

Figure 2: Code for login.blade.php

3.4.Sample source code for back-end development

```
routes > web.php > #Function#8b03874
33  |
34  */
35
36
37  Route::get('/', function () {
38      return view('auth.login');
39  });
40
41
42  Route::middleware(['middleware'=>'PreventBackHistory'])->group(function () {
43      Auth::routes();
44  });
45
46
47  Route::get('/home', [App\Http\Controllers\HomeController::class, 'index'])->name('home');
48
49  Route::get('/dashboard',function(){
50      return view('dashboards.admins.index');
51  })->middleware('isAdmin');
52
53  Route::group(['prefix'=>'admin', 'middleware'=>['isAdmin','auth','PreventBackHistory']], function(){
54          Route::get('dashboard',[AdminController::class,'index'])->name('admin.dashboard');
55          // Route::get('profile',[AdminController::class,'profile'])->name('admin.profile');
56
57          Route::resource('registermps', RegistermpController::class);
58          Route::resource('registersmes', RegistersmeController::class);
59          Route::resource('statistics', StatisticController::class);
60
61          Route::resource('pgpksprogrammes', Pgpksprogramme Controller::class);
62
63          Route::resource('bookingdates', BookingdateController::class);
64
65          //import excel
66          Route::get('/index', [SmeexcelController::class, 'index']);
67          Route::post('/index', [SmeexcelController::class, 'import']);
68          Route::get('/upload/show', [SmeexcelController::class, 'show']);
69          Route::post('index/{$id}', [SmeexcelController::class, 'destroy']);
70
71          Route::resource('smeexcels',SmeexcelController::class);
72
73          //export excel
74          Route::get('/export',[SmeexcelController::class, 'export']);
75
76          Route::get('export-csv', function () {
77              return Excel::download(new SmeexcelsExport, 'smeexcels.csv');
78          });
```

Figure 3: Code for Web.php

Figure 4: Code for LoginController.php

3.5. Include a diagram or figure outlining the solutions' architecture

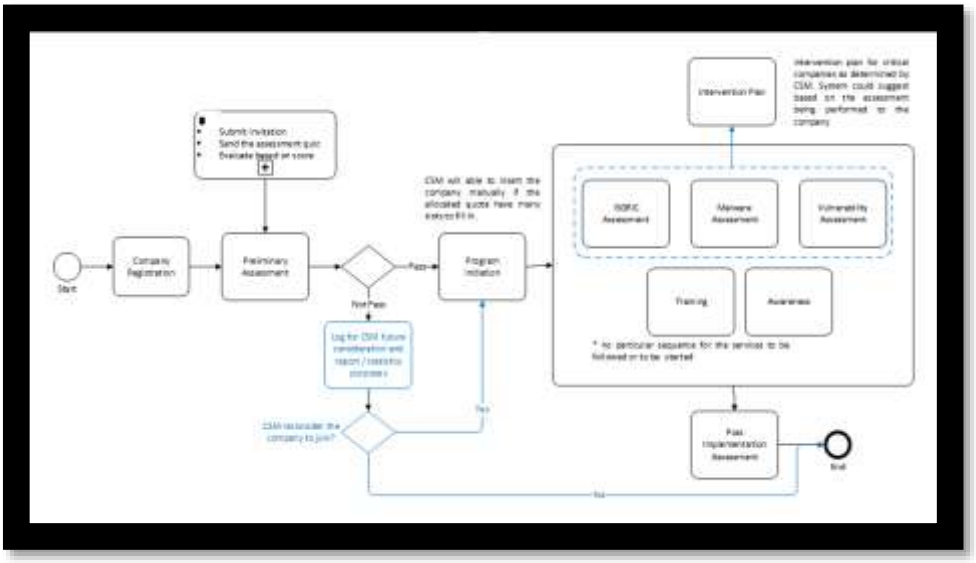

Figure 5: Process Flow

3.6. A sample user interface with an explanation

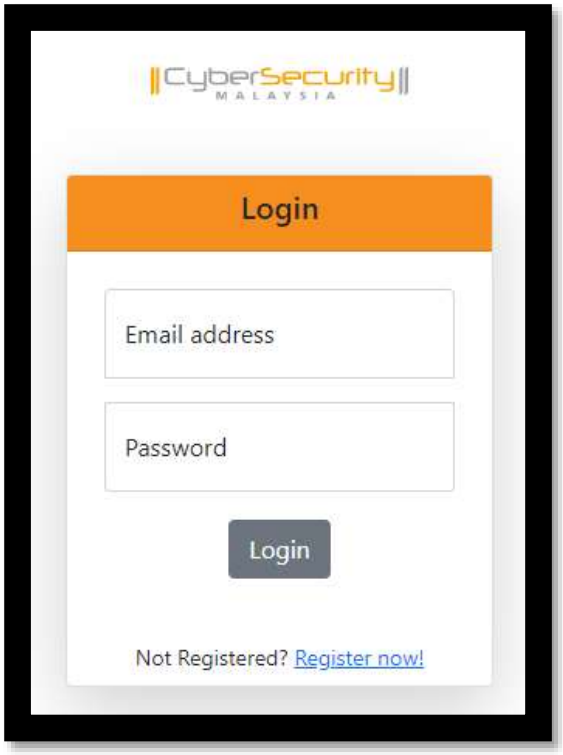

Figure 6: Login page

Figure 7: Admin Dashboard Page

4. The outcomes of the project

4.1. List and explain the list of deliverables/outputs and the percentage of completion

Deliverables/Output	Description	System Percentage	Individual Task Percentage
Login Page	Login by role. The system has two types of roles, which are admin or CSM, and authorized partner.	100%	100%
Dashboard	Display summary of total SME registered	80%	100%
	Display summary of total Authorized Partner registered		100%
	Statistic for SME by state (Bar Chart)		10%
	Statistic for SME by status (Pie Chart)		10%
SME Preliminary Assessment and Scoring	Import Excel file	100%	100%
	Export excel file		100%
	CRUD Details SMEs		100%
	Accept button for register SMEs		100%
	Pagination		100%
	Create, Retrieve, Update and Delete		100%
PGPKS Program	View progress of SME	10%	0%
	Approve SME status		0%
SME Information	Retrieve, Update and Delete	100%	100%
Authorized Partner Information	Create, Retrieve, Update and Delete	100%	100%

Upcoming Service	Retrieve SMEs List into select-form.	80%	80%
	Retrieve authorized partner list into select-form.		80%
	Create, Update, Retrieve and Delete the booking date.		100%
Report	View and download PDF file report	90%	100%

Table 2: List of Deliverable

5. New knowledge/experience

5.1. Explain a minimum of three new knowledge or experience while involved in the project development

New Knowledge

To develop the system, I'm exploring in the Laravel framework. It is an open source for PHP. The new knowledge that I found is authentication. Authentication is to access security system when access to specific page. Laravel's authentication facilities are made up of "guards" and "providers". Guards define how users are authenticated for each request.. And for Authorization is to verify and give permission to user access such as admin or normal user. Secondly, Laravel route is a way of creating a request URL of your application. These URLs do not have to map to specific files on a website. The best thing about these URLs is that they are both human readable and SEO friendly. In Laravel, routes are created inside the routes folder. Routes for the website are created in web. And finally, Laravel is an MVC-based PHP framework that ensures a tight separation between presentation layers and business logic. MVC stands for Model, View, and Controller. It is a design pattern that separates the model (logic, data handling), view (UI), and controller processes (interface).

6. Issue and limitations

6.1. Explain any existing issues or impediments to accomplishing the project

There are some issues that we faced while develop this project such as:

- Understanding its concept

  When requirements are unclear, it might be problematic for developers to complete the development phases since we did not address the issue as quickly as possible, which led to misunderstandings, misreading, or confusion. And when we begin creating the coding, it will be a serious issue.

- Overlooking the little things

  Due to my lack of comprehension of the system changes, it is difficult for me to adjust my plans to changing circumstances. Aside from that, I had one objective on my mind. I'll take a while to do the task until it's finish.

7. Suggestions for future improvement on project development or system development

- This system can be monitor thru smart phone apps
- The system can calculate the tier category for SMEs
- User can make register their own account in the system

8. Lesson learned

- To learn the tricks and shortcuts of the tools that you have in your development environment. It will simplify your work and help you increase your output.
- To ask enough questions to understand the requirements. Even if it is obvious, make sure to reconfirm your understanding with the PO or the client.
- To break down the requirements into smaller logical parts. It is more efficient to size smaller tasks and aggregate them.

9. Conclusion

The incredible features of Laravel have made it one of the most loved frameworks nowadays. Apart from this, extensive community support is provided for its users, which makes it approachable and understandable by all its users. Laravel is scalable and helps in software delivery in a fast and cost-effective manner. Therefore, not a big problem finding developers to work on this framework.

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