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| Module Code: **PUSL3111** | Module Name: **API Software Development** | |
| Coursework Title: **API Coursework** | | |
| Deadline Date: **11th May 2022** | | Member of staff responsible for coursework: **Dr. Rasika Ranaweera** |
| Programme: **BSc (Hons) Plymouth Software Engineering** | | |
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| Group work: please list all names of all participants formally associated with this work and state whether the work was undertaken alone or as part of a team. Please note you may be required to identify individual responsibility for component parts.  **J.A. Mujeeb – 10707284**  **G.M.D.D. Ratnayake – 10707351**  **S.O. Perera – 10707315**  **N. S. De Alwis – 10707160**  **M. D. A. Medhavi – 10707278**  **P. P. L. Dilhani – 10709402**  ***We confirm that we have read and understood the Plymouth University regulations relating to Assessment Offences and that we are aware of the possible penalties for any breach of these regulations. We confirm that this is the independent work of the group.***  Signed on behalf of the group: **N. S. De Alwis** | | |
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Table of Contents:

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| Name | Student ID | Contribution |
| J.A. Mujeeb | 10707284 | 16.7% |
| G.M.D.D. Ratnayake | 10707351 | 16.7% |
| S.O. Perera | 10707315 | 16.7% |
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# Acknowledgement -

First and foremost, we’d like to extend our sincere gratitude towards Dr. Rasika Ranaweera, our module lecturer. We are extremely humbled and grateful to have been able to receive his mentorship, guidance, and support.

The overall accomplishment of this project demanded a significant amount of guidance from many individuals. As a team, we are extremely fortunate to have had this from start to finish.

Finally, we wouldn’t have been able to successfully complete this assignment without the hard work and assistance of all the team colleagues itself. We all enjoyed working with each other.

# Abstract

This assignment comprises of a documented report on an API Web Application and Mobile Application, pertinent to the Sri Lanka Bureau of Foreign Employment (SLBFE).

**Coursework Supervisor:** Dr. Rasika Ranaweera

**Group:** Group No. 22

**Deadline:** 11th of May 2022

**Introduction**

The Sri Lanka Bureau of Foreign Employment (SLBFE) is a government owned foreign employment agency that assists its citizens in the procurement of global employment opportunities.

It is evident that labour is a fundamental asset that would greatly contribute towards substantial job creation, playing a key role in securing a stable source of foreign currency inflow. It also recognizes predicaments related unemployment, helping more Sri Lankans escape the risks of poverty, bestowing the potentiality to further enhance their prosperity and well-being.

Through the SLBFE, any citizen can hold the potentiality to acquire membership via free online registration. Those that are on the lookout for jobs can utilize the system to update and upload their qualifications, CVs, birth certificates, etc. Bureau Officers are authorized to view and validate the uploaded information. Furthermore, foreign companies and bureau officers can look for workers based on their respective qualifications.

Those who have left for foreign employment must update their real-time location once they go to the foreign company.

Citizens are also permitted to be able to post complaints, which bureau officers can parallelly view and respond to. We have developed a RESTful API web application to address the above scenario.

* Admin is the bureau officer

Assumptions –

Bureau officers can also look for workers based on their respective qualifications.

\*\*\*\*Locations is not available.

**2. PROJECT SCOPE**

The project scope mainly caters towards bestowing the Sri Lankan citizens with productive employment opportunities.

1. **Citizens –**

* Can make complaints once registered

Citizen can register with their name, NIC, company, company address, email, password.

If they have already signed up they only need email and password.

Once signed in, they are taken to a page that consists of profile, complaint, seekers and logout option.

1. **Bureau Officers –**
2. **Admin -**

**3. SYSTEM ARCHITECTURE**

**3.1 Context Diagram**

**3.2 Data Flow Diagram Level 0**

**3.3 Data Flow Diagram Level 01**

**3.4 Use Case Diagram**

**4. API DOCUMENTATION**

* POST /citizens
* PUT /citizens/:nid
* GET /citizens/:nid
  + PUT /citizens/:nid
  + GET /citizens/find(:qualifications)
  + DELETE /citizens/:nid
  + GET /citizens/:nid/contacts

**4.1 JSON Requests and Responses**

**4.2 XML Requests and Responses**

**5. TOOLS AND TECHNOLOGIES**

In pursuance of securing a successful project outcome, we have contended in carefully choosing the most suitable tools and technologies.

* Web Application - PHP based Laravel
* mobile application - Java

PhpMyAdmin –

Since PHP has been used to code the Web Application, it was more coherent to utilize PhpMyAdmin for MySQL database management. PhpMyAdmin is an open-source third-party software tool, written in PHP. The primary objective of utilizing phpMyAdmin is to superintend and operate the administration of MySQL over the web. It is also feasible to run CRUD operations like databases, copy, tables, rename, databases, tables, columns, etc.

phpMyAdmin can run on any server or any OS as it has a web browser.

With the utilization of phpMyAdmin, it is possible to edit, create or delete the database without much difficulty. In collation to the MySQL command-line editor, it is easier to manage elements with the utilization of the phpMyAdmin graphical interface. Several servers can also be operated simultaneously. Data can also be exported into various formats like Word, PDF, SQL, XML, Spreadsheet, etc.

Laravel –

Laravel is a PHP framework that adheres to an MVC design pattern.

It is possible to increase the overall web application scalability with the Laravel framework.

The utilization of Laravel framework is deemed time-saving, as the existing framework components that aid in the creation of the web application is reused.

Laravel reuses the existing components of different frameworks which helps in creating a web application. The web application thus designed is more structured and pragmatic.

Laravel offers a rich set of functionalities which incorporates the basic features of PHP frameworks like CodeIgniter, Yii and other programming languages like Ruby on Rails. Laravel has a very rich set of features which will boost the speed of web development.

If you are familiar with Core PHP and Advanced PHP, Laravel will make your task easier. It saves a lot time if you are planning to develop a website from scratch. Moreover, a website built in Laravel is secure and prevents several web attacks.

A free and open source PHP Web framework intended for developing web applications following a model view controller (MVC) architectural pattern. Among its many features Eloquent ORML object – relational mapping, Query building, Reverse routing are advanced PitP implementations for the development of applications now.

Laravel provides auto loading of classes without the need of manual maintenance. Views, serve as customizable logical code units that can be executed when loaded. Laravel RESTful Controller provides the option of separating the logic behind HTTP GET and POST request as well, making routing easier to understand. Services such as Migrations offered, provide a Version Control system for database schemas, making changes code based and changes to the database layout a possibility. This process, simplifies deployment and updating of Laravel based applications. Laravel’s command line interface (CLI) is called, Artisan. Its features are mapped into different subcomponents of the artisan command – line utility. It’s common users go for managing database migrations, publishing package assets etc. User authentication is of common in relevance to web applications. Laravel makes it easy when it comes to authentication as it includes features such as register, forgot password and send reminders. (Peter, 2021) (Tawde) (Example of Laravel QR Code generator with Laravel 5.8, 2012)

PHP –

Java -

**5.1 PhpMyAdmin**

**6.**

**6.1 Client Website Features**

**6.2 Client Mobile App Features**

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2. G.M.D.D. Ratnayake (10707351) -
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**7.2 G.M.D.D.Rathnayake** (10707351) -

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**8. APPENDIX**

**8.1 Controller Scripts and blade.php**

**8.2 Mobile App Main Classes**

Java was been utilized in the Mobile Application of our project due to its robustness, ease of use, and cross-platform development competencies. It is secure, straightforward and easy to comprehend, making code implementation relatively easier.

As it is an Object-Oriented Programming Language, OOPs concepts like abstraction, encapsulation and inheritance help in the enhancement of security. It is also compatible and platform-independent, meaning that code written once can be run anywhere else (on other systems that also possess Java). As it is a High-Level Programming Language, it has fewer and simpler syntaxes.

**9. REFERENCES**