|  |  |  |
| --- | --- | --- |
| **BASIS OF** | **LARAVEL** | **CODEIGNITER** |
| Database Model | Laravel is object oriented. Example: ORACLE, Microsoft SQL Server, IBM DB2, MYSQL. | Codeigniter is relational object oriented. Example: MySQL, PostgreSQL, Microsoft BI, and MongoDB. |
| Built in Module | It comes with built in Module which can be further divided into small modules. | It does not offer built in Module. A separate modular extension can be used. |
| Support for RESTful API | The RESTful Controllers allows to build REST APIs in less time. | CodeIgniter does not enable efficient way to develop REST APIs. |
| Integrated ORM | Eloquent ORM. | Doctrine Datamapper Gas. |
| Structure | It follows MVC structure of filing with command line tool called the Artisan. | The structure is MVC based on object-oriented programming. |
| Development and Templates | Laravel is good for front end developer and it come with Blade template engine. | Codeigniter is easy to use and there is no template engine. |
| HTTP Support | Laravel allows to outline custom HTTPs routes. The developers can also create a specific URL for each HTTPS route. | CodeIgniter does not support HTTPS fully. Therefore, Pats are created in order to use URL for safe data transmission. |
| Libraries | It provides its own official documentation which is very helpful. | It provides lots of built-in functionality. |
| Authentication | The Authentication Class feature helps to implement authentication and authorization rules. | CodeIgniter lacks built-in authentication features. So, developers require custom CodeIgniter extensions to authenticate and authorize users. |
| Unit Testing | The application could be checked thoroughly and continuously with the help of PHPUnit. | It has no inbuilt unit testing tools. Thus, supplementary unit testing tools is needed to assess the quality of the application and code |
|  |  |  |
| Routing | It supports Explicit Routing. | It supports both Explicit and Implicit Routing. |

ayushjoshi599, 2020. *Difference Between Laravel and CodeIgniter Framework in PHP.* [Online]   
Available at: https://www.geeksforgeeks.org/difference-between-laravel-and-codeigniter-framework-in-php/  
[Accessed 07 April 2021].

Guru 99, 2021. *Laravel vs CodeIgniter: Which is Better?.* [Online]   
Available at: https://www.guru99.com/laravel-vs-codeigniter.html  
[Accessed 07 April 2021].

**Reason to select Laravel over CodeIgniter**

Laravel has a lot of built-in features which saves extra time and effort of developers. Likewise, it is efficient and reliable to use than third party tools and extensions. Laravel has templates which are simple and functional to use. Likewise, it has built-in dynamic libraries with features like CSRF insurance, watchword reset, encryption, and checking dynamic clients. It provides secure authentication and authorization which is crucial to businesses for web solution. On the contrary, CodeIgniter requires extensive time and effort to maintain structured, readable, and clean code. It lacks inbuilt Unit testing tool and authentication features.

To conclude, currently Laravel is the most popular web application framework with massive active community members which is beneficial to grow skills, get help, support, and solutions. (Patel, 2019)

Patel, R., 2019. *Laravel vs CodeIgniter | Choosing the Best PHP Tech in 2021.* [Online]   
Available at: https://aglowiditsolutions.com/blog/laravel-vs-codeigniter/  
[Accessed 07 April 2021].

**Reason to choose PHP over Java and Python**

Python is broadly used in engineering, science and graphics and Java is used for complex and large projects. Unlike Java and Python, PHP is used generally for web development purpose. PHP is readable object-oriented interpreted language and executed on the server. Whereas Java and Python requires little effort to install and run-on various platforms. The development cost and time on PHP is far less compared to Java and Python. Additionally, the higher product quality makes it the preferred language for small and medium projects, especially for web development.

Boersma, E., 2020. *PHP vs Python: Is There a Clear Choice in 2020?.* [Online]   
Available at: https://stackify.com/php-vs-python-which-should-you-choose-in-2019/  
[Accessed 07 April 2021].

Burets, A., 2019. *PHP vs Java: Which Is Better For Web Development.* [Online]   
Available at: https://scand.com/company/blog/php-vs-java-difference-comparison/  
[Accessed 07 April 2021].

Tech Differences, 2021. *Difference Between PHP and Python.* [Online]   
Available at: https://techdifferences.com/difference-between-php-and-python.html  
[Accessed 07 April 2021].

**Limitations:**

* Requires internet and browser to run.
* Requires no verification to register user/students.
* Limited number of registered students up to 500.
* Students have limited access right to change/modify contents or details.
* A single student can book no more than one room.

**JavaScript**

It is an open and cross platform scripting language for web pages. It supports HTML, XML, and Ajax and popular browsers like Chrome, Safari, and Mozilla Firefox. The performance of JavaScript depends on client system as it executes on client side. (SunTec India, 2021)

SunTec India, 2021. *Python vs PHP vs JavaScript: Which is Best For Your Next Project?.* [Online]   
Available at: https://hackernoon.com/python-vs-php-vs-javascript-which-is-best-for-your-next-project-i33v31y1  
[Accessed 07 April 2021].

**Reason to choose MySQL over Oracle**

Both MySQL and Oracle are popular relational database system. Oracle is licensed and suited for large enterprise projects whereas MySQL is free and open-source cross platform relational database management system. MySQL is mostly used for small and medium businesses. It supports most operating system like Windows, Mac OS X, Linux, and UNIX. It is based on client/server architecture with have features like scalability, flexibility, increased productivity, security and crash support and recovery.

Javatpoint, 2021. *Difference between MySQL and Oracle.* [Online]   
Available at: https://www.javatpoint.com/mysql-vs-oracle  
[Accessed 07 April 2021].

Dearmer, A., 2020. *Oracle vs. MySQL: Detailed Comparison of Syntax & Uses for These Databases.* [Online]   
Available at: https://www.xplenty.com/blog/oracle-vs-mysql/  
[Accessed 07 April 2021].

**Reason to choose HTML, CSS, and Bootstrap**

**HTML**

HTML is a markup language for web development solutions. It is free, easy to learn and use. It is supported by almost all browsers and integrate easily with other languages. It us user friendly and simple to edit even in basic text tool like Notepad. (Goyal, n.d.)

Goyal, Y., n.d. *Advantages of HTML.* [Online]   
Available at: https://www.educba.com/advantages-of-html/  
[Accessed 07 April 2021].

**CSS**

CSS is preferred than HTML for webpage presentation style. Rather, CSS helps to keep the web contents separate from the display style. The benefits of using CSS are to avoid duplication, easy maintenance, and flexibility to customize the style for each individual contents.

W3 Org, n.d. *HTML & CSS.* [Online]   
Available at: https://www.w3.org/standards/webdesign/htmlcss  
[Accessed 07 April 2021].

Webplatform.org, n.d. *Why use CSS? Webplatform Docs.* [Online]   
Available at: https://webplatform.github.io/docs/tutorials/learning\_why\_we\_use\_css/#:~:text=CSS%20helps%20you%20to%20keep,Avoid%20duplication  
[Accessed 07 April 2021].

**Bootstrap**

It is a toolkit which contains HTML, CSS, and JavaScript tools developed for front end design purpose in order to minimize the time and effort. It is an open-source platform and has immense community support and resources available. It provides consistency with use of libraries between front end and back-end development teams. It is a cross browser compatible, hence works across all browsers. It offers full customizations and responsive by design allows immediate real-time view of the design.

Bacinger, T., n.d. *What is Bootstrap? A Short Bootstrap Tutorial on the What, Why, and How.* [Online]   
Available at: https://www.toptal.com/front-end/what-is-bootstrap-a-short-tutorial-on-the-what-why-and-how#:~:text=Web%20designers%20and%20web%20developers,use%20and%20quick%20to%20learn.  
[Accessed 07 April 2021].

Prabhu, J., 2020. *8 Reasons Why You Should Use Bootstrap.* [Online]   
Available at: https://techaffinity.com/blog/why-use-bootstrap-for-frontend-design/  
[Accessed 07 April 2021].