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Module Title: Advanced Web Development

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Assessment Title: Web Development with Frameworks

### Overview of Laravel

A similar PHP framework is Laravel, which has many of the same features as Symfony but implemented in a different way.

Laravel is a well-known, open source framework that provides tools for things like routing, authentication and data management for web applications.

### Key features

Many key features of the Laravel framework are shared with Symfony – both are based on the MVC (model-view-controller) design pattern, have many integrated features such as authentication and unit testing, and are both open-source projects.

Both frameworks use the composer command line tool for creation of new projects and management of dependencies and plugins. Both frameworks can be extended by using first or third-party bundles (Symfony) or packages (Laravel)

They also each have the use of a command line tool for development, with Symfony using the ‘bin/console’ tool (console tool found in the bin directory) and Laravel using its own ‘artisan’ tool found at the root of the project.

Both Symfony’s and Laravel’s console tools allow easy development in their frameworks by providing boilerplate code and model generation, and a way to interact with their respective ORM tools. Symfony uses the Doctrine ORM tool, while Laravel uses the Eloquent ORM.

The main difference between Eloquent and Doctrine is their method of abstraction of the database layer. Eloquent uses the active record pattern, which would mean each model has a corresponding table in the database which in turn has methods for manipulating the data itself. Doctrine uses the data mapper pattern, which means each model represents an object that is mapped to a table but does not directly allow manipulation of the table. (PHP Applications, 2023)

For page construction, both frameworks rely on a templating engine – Symfony using Twig, and Laravel using Blade. Both engines are considered very similar, aside from syntax – although Blade is usually considered as a simpler alternative to Twig. (Chojrin, 28 July 2021)

Both frameworks use the .env file for environment configuration and variables. Laravel uses this file and other PHP files at the root of the project to configure its behaviour. With Symfony, there are many more configuration files such as YAML, XML or PHP files in each bundles configuration folders. Symfony also uses PHP annotations (PHP < 8) or PHP Attributes (PHP >= 8) which can be used in model classes for ORM mapping information, or in controllers for Route information if not defined in the YAML files for the routing. All these configuration types are used in unison to complete the entire projects configuration.

Both frameworks can implement unit testing, but both have their own way of further testing methods.

### Advantages and Disadvantages

A smaller advantage Laravel holds over Symfony is in development on specific machines – Laravel provides a tool called Laravel Herd which is exclusive to MacOS – this is a GUI tool developed for anyone creating Laravel applications on a MacOS machine, and provides an environment with PHP, Nginx and DNSMasq. There is no first party equivalent for Windows or Linux, and Symfony provides no such application. (Laravel LLC)

Another advantage of Laravel over Symfony may be performance. Laravel is generally lighter weight than Symfony, meaning can perform better in terms of application speed, however this comes at a loss for configuration options.

Laravel can also be considered as a simpler framework to learn and start developing in, which may be an advantage for beginners looking to start programming with a PHP framework, however once your familiarity grows with either framework, this may not matter as much and so would be less of a consideration when picking between the two.

Development in the Laravel framework is considered to be more suited to rapid development and deployment than Symfony, as there is less configuration and setup to get all the features of the framework in a useable state, however this does mean there is less fine tuning that can be done with it.

Symfony would require more time for a developer to configure and learn, however this comes with the advantage of more options that can be changed and be fine-tuned to the applications use-cases.

Both frameworks are also considered highly scalable as both are very responsive and leverage other technologies that can allow it to grow with demand for its purpose – however Symfony pulls a small lead over Laravel as it can be more efficient at scaling. (Javaid, 7 August 2023)

Laravel is also used much more widely than Symfony, most likely due to its lesser learning curve from a traditional PHP application – Symfony has a more options and configurations to be aware of over Laravel.

### Application of framework to this assignment

Using Laravel instead of Symfony for this assignment work would not have been much different in the design pattern of the application. Both frameworks use an MVC design pattern, meaning controller functions and page templating would not have been much different between the two besides syntax for the templating engine and how the routes for each page are defined.

A difference between the two may be the application of the ORM – interaction with the database and how the models were used in the application may have been slightly different due to the different design patterns of the implemented ORMs.

The same design of the application can be employed using either framework, as both include bundles/packages that are required to create this application as it is fairly simple – both have secure implementations of authentication and are able to make simple database queries to store information about the movies and reviews.

The framework itself would be a little more responsive, especially for a smaller web application such as this as it is not required to be scaled, but both are well suited for this type of dynamic web application regardless.

Laravel has just as wide support as Symfony does, so development and debugging in both frameworks would not be an issue, so this would not have changed much in this aspect.

### Conclusions

This comes with a decision for what framework to use depending on the application itself. Laravel can perform better with smaller web applications, but Symfony is more scalable and configurable than Laravel, meaning for larger web applications Symfony may end up being more performative and more appropriate for the use case.

Other than these small differences, as both frameworks use the same design pattern for their application, they should both be considered for use when building a web application. Experience with either should always be considered when choosing which you will use for development as experience in either can lead to a much more developed and efficient application being built, regardless of complexity.

If learning from scratch using either framework, especially with a limited knowledge of PHP, Laravel may be a more suitable choice

### References

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