

Application of SDLC Method and Laravel Framework in the Development of Web-Based Company Profile Information Systems

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Accepted: April 29, 2024 | Published: April 30, 2024

ABSTRACT

In today's digital era, the need for an effective website is important for companies to increase their visibility and credibility. The development of a web-based company profile information system is one of the important strategies in strengthening corporate identity in the digital space. This study aims to measure the effectiveness of the application of Software Development Life Cycle Method (SDLC) and Laravel Framework in the development of web-based company profile information systems. This research uses the SDLC method to design and develop information systems, by utilizing the features offered by the Laravel Framework. The process includes planning, requirements analysis, design, implementation, testing, and maintenance. The results of this study show that the integration between SDLC and Laravel increases the efficiency of system development. The resulting system not only meets the expected technical specifications, but also provides an intuitive and responsive user interface. By implementing SDLC and Laravel, the development of company profile information systems can be done more systematically and structured. This shows that both methods are well suited for complex and dynamic web application development, and can be adapted for diverse enterprise needs.

Kata kunci : Information Systems, Company Profile, SDLC Method, Laravel Framework, Software Development.

1. Introduction

The use of web-based company profile information systems has become a must for organizations in today's digital era. The ability to effectively present corporate identity, products, and services to customers through online media platforms has become one of the key strategies in expanding market reach and increasing customer interaction. In this context, the development of a structured and efficient information system is essential to ensure the success of future projects.

Software Development Method (SDLC) has become one of the guidelines in the management of the information system development life cycle [1]. With a structured approach and clear stages, SDLC allows developers to manage projects more efficiently, from needs analysis to testing and implementation. Meanwhile, the use of frameworks in software development has also

become a rapidly growing trend today to be an advantage of course. The framework provides a basic structure and built-in features that speed up the development process and ensure application security and scalability. In this study, the application of SDLC Method and Laravel Framework in the development of web-based company profile information systems [2] was discussed. The case study was conducted at Computer Service Center, a technology company focused on providing software and hardware solutions. By applying the systematic approach of SDLC and leveraging the advantages of Laravel as a framework, we explore the effectiveness of this method in achieving project objectives in a timely manner and according to desired specifications.

This research makes an important contribution to practical understanding in the development of web-based information

systems, by providing valuable insights for developers and researchers interested in using structured approaches and modern frameworks in software development projects.

2. Methodology

The methodologies used in developing web-based company profile information systems are SDLC Method and Laravel Framework. This methodology includes the steps taken to analyze the needs, design, implement, and test the system.

Needs Analysis

The first step in the development of information systems is requirements analysis. We conduct an in-depth study of the needs and objectives of the Computer Service Center as a case study. It involves interviews with key stakeholders, analysis of related documents, and literature review to understand the functional and non-functional needs of the system to be developed.

System Planning

Once the system needs are identified, we perform a system design that includes database design, user interface design, and overall system architecture design. We use an object-oriented approach and sound design principles to ensure flexibility, security, and optimal system performance.

Implementation

In the implementation process, Laravel Framework application development is used as a basis for development. By following good coding principles and utilizing Laravel features to speed up the development process and ensure application security.

Testing

Once the implementation is complete, we conduct a series of functional and non-functional tests to ensure that the system operates according to the desired

specifications and meets the established quality standards. Testing includes unit testing, integration testing, performance testing, and security testing.

Evaluation and Validation

The final step in this methodology is the evaluation and validation of the system. We engaged a team from the Computer Service Center to test the system directly and provide suggestions and input that were used for further improvement.

2.1 System Development Life Cycle (SDLC)

The System Development Life Cycle (SDLC) is a methodology used to efficiently design, develop, and test high-quality information systems. SDLC applies a structured approach to minimize complexity in software development and ensure all functional and technical needs are met [3]. SDLC is divided into several successive phases, where each phase has an output that must be met before moving to the next phase [4]. These phases include:



Figure 1. SDLC [5]

- a. Planning
This phase involves gathering business needs, feasibility studies, and resource planning. This is an important stage at which the scope of the project is determined.
- b. Needs Analysis

During this phase, user and system needs are identified in detail. This analysis often involves sessions with stakeholders to ensure all needs and expectations are clearly documented.

c. System and Software Design

At this stage, the system architecture is organized and a detailed design is created. This design includes diagrams, data models, and communication protocols between components.

d. Implementation and Codification

During this phase, code is built from the system design that has been created. This is the actual development stage, during which developers write code to make the system function operational.

e. Testing

Once the system is developed, a testing phase is carried out to find and fix bugs or issues. Testing can include various types, such as unit testing, integration testing, and system testing.

f. Application

The finished and tested system is ready to be launched and integrated into the user environment. Sometimes the implementation is carried out gradually depending on the complexity of the system.

g. Maintenance and Support

Once the system is operational, regular maintenance is required to ensure the system continues to run properly and meets user needs. Improvements and upgrades can be made during this phase.

2.2 Method MVC (Model-View-Controller)

Model-View-Controller (MVC) is an architectural design pattern used in software development to separate applications into three main components: model, view, and controller [6]. The

purpose of this pattern is to separate application data and business logic from the user interface (UI) to make the application easier to manage and develop.

a. Type

This component is responsible for data, business logic, and application rules. A model represents the underlying data structure of an application and provides methods for accessing, modifying, and updating relevant data in a database or other data source.

b. View

A view is a visual representation of the data provided by the model. This component displays data to the user and sends user commands to the controller to act on that data. View does not perform data processing; It only displays the results provided by the controller.

c. Controller

The controller acts as an intermediary between the model and the view. It receives input from the user through the view, processes that input by modifying the model data, and then returns the updated representation to the view. The controller governs the flow of data in the application and handles the control logic.

The MVC method is a very effective design pattern in software development, particularly web applications, because it simplifies project management, increases flexibility in development, and eases the testing process. By using MVC, developers can more easily isolate and handle changes to applications, improving the quality and efficiency of software development.

2.3 Laravel

Laravel is an open-source PHP-based web application framework, used to build efficient

and extensible web applications [7]. Designed with expressive and easy-to-understand syntax, Laravel offers a wide range of rich features and development tools that speed up the process of creating web applications.

Key Features of Laravel

- a. Expressive Routing
Laravel provides an easy-to-use and expressive routing system, allowing developers to define routes clearly and easily understood.
- b. Template Engine Blade
Blade is a powerful template engine included with Laravel, which allows developers to create views with a clean and intuitive syntax.
- c. ORM Eloquent
Laravel provides an elegant and expressive ORM (Object-Relational Mapping) called Eloquent, which allows developers to interact with databases using a consistent and easy-to-understand PHP syntax.
- d. Migrations and Seeders
Migrations and seeders are Laravel built-in features that make it easy for developers to manage database schemas and insert initial data into the database.
- e. Integrated Authentication System
Laravel provides a ready-to-use authentication system, which makes it easy for developers to implement user authentication quickly and securely.
- f. Laravel Mix
Laravel Mix is a powerful tool for managing web application assets, such as CSS, JavaScript, and Sass files, allowing developers to merge, compress, and minify assets easily.

Laravel is one of the most popular and powerful PHP frameworks used by thousands of web developers around the world. With powerful features, comprehensive documentation, and an active community, Laravel is the top choice for developers who want to build

efficient, scalable, and manageable web applications.

3. Results and discussion

The following is the process up to the results of research on the design of the Company Profile information system with the SDLC method at the Computer Service Center

3.1 Sequence Diagram

Sequence diagram is a type of diagram used to illustrate the interaction between objects in a system or scenario. The following diagram illustrates the sequence of method calls or invocations between these objects over time:

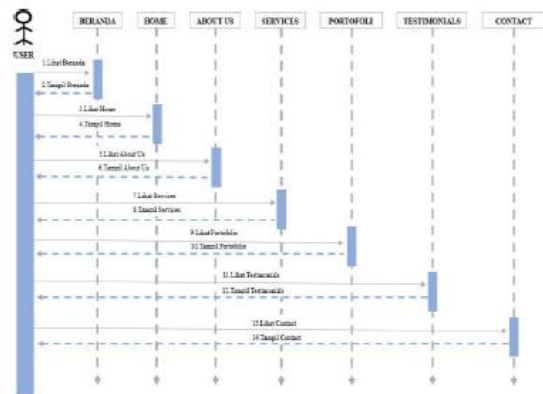


Figure 2. Sequence Diagram

This User Sequence Diagram tells the user about the information on each page option that the user wants to see.

3.2 Component Diagram

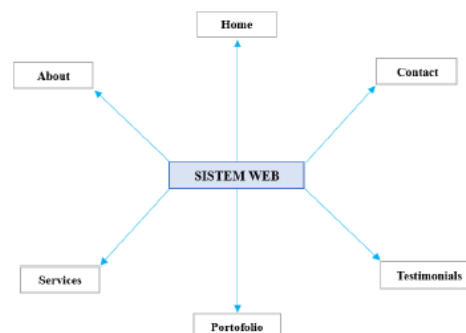


Figure 3. Component Diagram

This component diagram explains the interconnection between one component and

another component consisting of several forms.

3.3 Activity Diagram

Is a diagram that visually represents the flow of activities, actions, and decision points in a particular system or process.

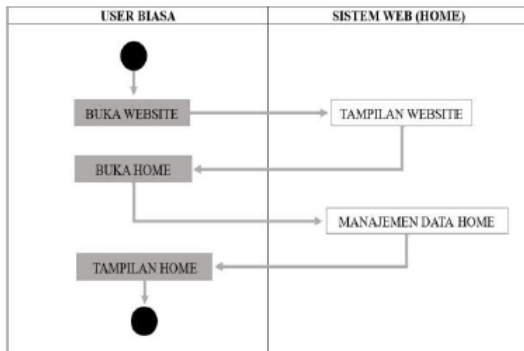


Figure 4. Activity Diagram Home

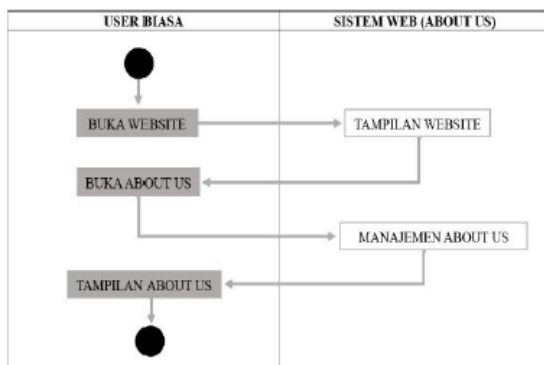


Figure 5. Activity Diagram About

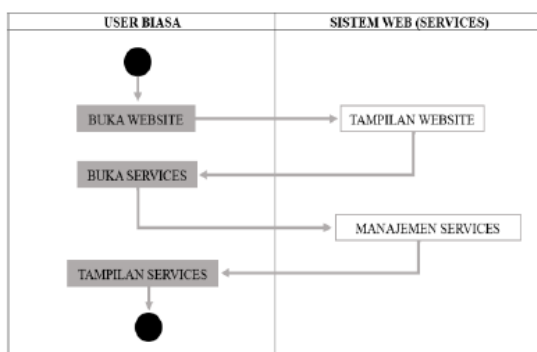


Figure 6. Activity Diagram Service

3.4 Website Display Results



Figure 7. Home Page



Figure 8. Home Page b

The results of the User Interface display from the Computer Service Server company profile website are equipped with the display of the system management content page below.

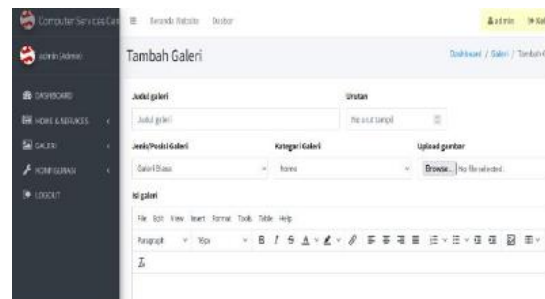


Figure 9. CMS Page

3.5 Conclusions and Advice

The information system company profile Computer Service Center is expected to help related parties in disseminating information to be more attractive, effective and efficient. In addition, it can also change manual information systems to web-based information systems, and provide convenience in managing and accessing information both in terms of its use and in the delivery process.

The suggestions that can help the development of this Computer Service Center

application in the future, include making a mobile version to be able to cover more users

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