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Information System Website Design Bina Darma University Professional Certification Institute

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ABSTRACT

Bina Darma University's Professional Certification Institute (LSP) has a central role in supporting the recognition of student competencies through nationally and internationally recognized certifications. Along with the rapid development of technology, the Division of Information Systems and Technology (DS IT) of Bina Darma University identified an urgent need to improve the certification management system by developing a web-based platform that is more efficient and can be accessed easily by students and related parties. This research uses a qualitative approach with descriptive research type. Researchers aim to describe in detail the process of designing and developing a website for the Professional Certification Institute (LSP) of Bina Darma University. Bina Darma University Professional Certification Institute (LSP) functions as an institution that ensures student competence through the certification process. Data management of certification results that are still done manually causes various obstacles, such as difficulty in searching data, delays in distribution of certification results, and the risk of losing physical documents. To overcome these problems, a website-based information system is designed that can support the management of LSP certification data digitally.

Keywords: Professional Certification Institute, Web-Based Platform, Descriptive Research, Information Systems and Technology

1. Instoduction

In the era of growing digitalization, information technology has become a very important element in supporting progress in various sectors, including the world of education and employment. One of the programs that reflects the importance of technology utilization in education is the Merdeka Belajar Kampus Merdeka (MBKM) program launched by the Ministry of Education, Culture, Research and Technology of the Republic of Indonesia. This program provides opportunities for students to develop practical skills through more independent and applicable projects, which aim to improve the quality of human resources who are ready to enter the world of work. The MBKM program not only focuses on academic development but also on providing skills that are relevant to the needs of industry and the business world. This is very important, considering that competition in the world of work is getting tighter, so the competence possessed by students will be one of the determining factors for their success in getting a job.

Bina Darma University Professional Certification Institute (LSP) has a central role in supporting the recognition of student competencies through nationally and internationally recognized certifications. This certification is a formal proof of the expertise possessed by students, which is very important to prepare them to face challenges in the world of work. This certificate of competence will be one of the documents that support students in building careers, both in the public and private sectors. However, currently, the certification management process is still done in a simpler way, such as sending information via email, WhatsApp, or other forms of communication which often takes longer and is prone to errors or inaccuracies in the delivery of information. This indicates inefficiencies in the system used and creates potential

disruptions in the management of accurate and timely certification.

Along with the rapid development of technology, the Division of Information Systems and Technology (DS IT) of Bina Darma University identified an urgent need to improve the certification management system by developing a web-based platform that is more efficient and can be accessed easily by students and related parties. This web-based information system is designed to replace the manual methods used previously, with the main objective of increasing transparency, efficiency, and accuracy in the certification data management process. With the web-based system, students can easily access their certification results in real-time, reducing the potential for errors or delays in the information delivery process, and allowing the LSP to manage data in a more structured and systematic manner. In addition, better data management will also make it easier to update information, so that students always get the most accurate and up-to-date data.

Web-based information systems offer various advantages, one of which is their ability to distribute information quickly and efficiently. Laudon and Laudon (2018) explain that web-based information systems are tools designed to support the collection, storage, and distribution of information that can be accessed via the internet network. In the context of the world of education, the use of web-based information technology can reduce many of the barriers that exist in the process of delivering information. By using a web-based system, the data processing process becomes more structured, accurate, and fast, and allows information to be accessed by students anytime and anywhere. Nugroho (2020) in his research revealed that the application of web-based information systems can increase work efficiency, reduce errors in data input, and increase transparency in the management of academic information. These advantages are very relevant to certification data management, where speed, accuracy, and transparency are very important.

In addition to efficiency, user-friendly website design is also an important factor in ensuring that students can easily access the information they need. Wijaya (2019) emphasizes that attractive and responsive design elements are key in creating a good user experience. A simple and easy-to-understand display will make it easier for students to navigate the website, so they can find information related to certification results quickly without difficulty. Good design will also increase user satisfaction, which in turn will increase trust in the system used. Therefore, website development for Bina Darma University LSP must pay attention to design and functionality aspects in order to meet the needs of students in accessing information on their certification results more efficiently and effectively. A good website implementation will also be an important step to reduce dependence on manual management methods, which in turn will optimize overall certification data management.

2. Research Methodology

1. Definition and Benefits of Information Systems

Information systems (IS) refer to a combination of information technology and human activities that use this technology to support operations, management, and decision making in an organization. According to Turban et al. (2017), information systems play an important role in collecting, processing, storing, and distributing data used by decision makers at various levels of the organization. In the context of education and certification, web-based information systems enable efficient management of certification data, facilitate access for students and related parties, and increase transparency in the delivery of information. Laudon and Laudon (2018) add that the implementation of a web-based system allows access to information that is faster, more efficient, and can be accessed at any time by various parties via the internet network.

The benefits of implementing information systems are extensive, especially in the world of education. Nugroho (2020) states that by using a web-based information system, data input errors can be minimized, information accessibility is increased, and it is easier for users to obtain relevant and updated data. A well-integrated system can reduce administrative burdens, speed up data processing, and provide accurate reports in real-time, which is very beneficial for educational institutions that have a large number of students and complex data.

2. Application of Information Systems in Education and Certification

The application of web-based information systems in education has great potential to improve the way academic data is managed, including competency certification. Research by Wijaya (2019) highlights the importance of user-friendly website design in improving user experience. A website that is intuitive, responsive, and easy to access provides great benefits, especially in delivering certification information to students. The system allows students to access their certification results at any time without having to go through long and time-consuming manual procedures.

In addition, in the context of Professional Certification Institutions (LSPs), the application of information systems can improve efficiency in certificate management. As an institution responsible for assessing and recognizing professional competence, LSP needs to have a system that can manage and

deliver certification results quickly and accurately to students and related parties. This is important to ensure that certificates issued have credibility and can be accounted for, as well as facilitate access for students who need this information.

3. Role and Function of LSP in the World of Work

Professional Certification Agency (LSP) is an institution that has the authority to carry out competency certification in accordance with established standards. LSP plays an important role in ensuring that college graduates have competencies that match the needs of the world of work. According to Law No. 13/2003 on Manpower, LSPs function to accredit and regulate competency certification systems in various sectors. Certification provided by an LSP provides a guarantee that a person has competencies that are recognized nationally or internationally (Prasetyo, 2018). Therefore, the existence of LSPs is vital in creating a competent and ready-to-use workforce in the industrial world.

In the context of education, LSPs are tasked with organizing the certification process for students who wish to test their competence in a particular field. In addition, the LSP is also responsible for documenting and managing the certification results so that they can be delivered appropriately to students and related parties. A web-based information system is needed in this case to improve efficiency and transparency in certificate management.

4. Certification Standards Applied by the LSP

LSP applies certification standards based on the Indonesian National Work Competency Standards (SKKNI) set by the National Professional Certification Agency (BNSP). This standard aims to ensure that the competencies obtained by students or workers are in accordance with industry needs. According to Prasetyo's research (2018), the standards applied by LSP cover various aspects, ranging from basic knowledge to technical skills required in the job. Consistent and structured application of standards is essential to maintain the quality of certification issued by LSPs and to ensure that graduates have abilities that are relevant to the demands of the world of work.

With a web-based information system, the LSP can ensure that information regarding the applicable certification standards can be easily accessed by students and related parties. It also allows students to better prepare themselves before taking the certification exam.

2.5 Framework yang Digunakan (Laravel, Bootstrap, MySQL)

In developing a web-based information system for LSP, choosing the right framework and technology is very important to ensure that the system can run well, safely, and can be accessed by various devices. Laravel is a PHP framework that is widely used in web application development because of its ease and security. Laravel supports the development of large-scale and complex applications by providing various features such as routing, middleware, authentication, and authorization (Tyrrell, 2020). In addition, Laravel has a large community and complete documentation, making it easier to develop and maintain applications.

Bootstrap is a front-end framework used to design responsive and mobile-friendly web interfaces. The use of Bootstrap allows the development of a consistent user interface that can be accessed properly on various devices, both desktop and mobile. MySQL, as a relational database management system, was used to efficiently store and manage the certification data. MySQL supports data integrity and allows the system to handle large amounts of data with good performance.

5. Database Management Concept for Certification Data Management

Database management (DBMS) plays an important role in the management of certification data in LSPs. A good database system will simplify the management of certification information, reduce errors, and allow quick and secure access to data. MySQL, as the DBMS used in the development of this information system, provides various features such as data normalization to avoid redundancy, as well as fast query capabilities to access information (Kumar & Patel, 2019). Efficient data management allows LSPs to store certification data securely and ensure that the information provided to students or related parties is accurate and up-to-date.

3. Result and Discussion

1. Research approach

This research uses a qualitative approach with a descriptive research type. Researchers aim to describe in detail the process of designing and developing a website for the Professional Certification Institute (LSP) of Bina Darma University. This approach allows researchers to gain an in-depth

understanding related to system needs as well as design solutions that are in accordance with user characteristics and organizational needs.

The method used in this research adopts the System Development Life Cycle (SDLC) approach, which includes important stages in system development, from analysis to system testing. SDLC is a popular and effective approach in designing web-based information systems, including LSP websites. This approach will assist researchers in designing and developing information systems that are efficient and in line with user needs.

2. Research Location

The location of this research was conducted at the Division of Information Systems and Technology (DS IT) of Bina Darma University. This location was chosen because DS IT has an important role in the development and management of university information systems. In addition, DS IT has a competent team in the field of information technology that allows the development of the LSP website to be carried out effectively. Researchers also made observations to study the workflow in the Information Systems and Technology Division, so as to provide useful information in the system design process.

3. Data Sources

The data sources in this study are divided into two categories: primary data and secondary data.

- a. Primary data: obtained through in-depth interviews with staff at the Division of Information Systems and Technology (DS IT) of Bina Darma University. This interview aims to explore information related to system needs, features needed, and challenges faced in managing professional certification.
- b. Secondary Data: Secondary data is obtained from related documents, such as previous information system development reports, professional certification policy documents, and literature related to website development and information technology. This secondary data is used to further explore the context of the system to be developed.

The data collection method in this research consists of several techniques, namely:

- a. Interviews: Interviews were conducted with staff involved in LSP management and information system development. Researchers used a semi-structured interview guide to explore various information related to system needs and obstacles faced in managing professional certification.
- b. Documentation Study: Researchers conducted a documentation study by analyzing various documents related to certification policies, performance reports, and technical guidelines needed to design a system that meets the needs.
- c. Observation: Researchers observed the work process in the Information Systems and Technology Division, studied the existing work methods, and recognized the problems that occur in the system currently used.

4. Data Analysis Techniques

The data analysis used in this study includes:

- a. Qualitative Analysis: Data obtained from interviews were analyzed qualitatively with a thematic approach. This approach is used to find patterns or themes that are relevant to website design and system requirements. Researchers organize data so that it can provide an overview of user needs and system specifications.
- b. Descriptive Analysis: Secondary data was analyzed descriptively to provide an overview of the functional and non-functional requirements of the LSP website, as well as technical solutions that can be applied to the system.
- c. SWOT Analysis: Researchers also used SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis to evaluate internal and external factors that could affect the development of the information system. This analysis aims to identify potential strengths and weaknesses of the system being developed, as well as opportunities and challenges that exist outside of the developer's control.

5. System Development Process (SDLC)

This research utilizes the SDLC stages in the LSP website development process, which includes the following steps:

- a. Needs Analysis: This stage begins with the identification of user and stakeholder needs for the LSP website development. This includes gathering information through interviews, observations, and documentation studies to understand what is needed in the system.
- b. System Design: In the design stage, researchers designed the website architecture and interface, and formulated the database design to support the management of certification data. This design must also pay attention to user-friendly aspects, data security, and proper functionality.
- c. System Implementation After the system design is complete, website development is carried out using relevant technologies, such as Laravel, Bootstrap, and MySQL. This implementation includes creating functional pages such as certification result pages, student profiles, and other features.
- d. System Testing: After the system has been developed, testing is carried out to ensure that all features work properly and in accordance with user needs. This testing includes functionality tests, security tests, and usage tests to ensure the system can be accessed easily by users.

6. System Requirements

Functional Requirements: The system should be able to provide the following features:

- a. Display of certification results that are easily accessible by students.
- b. Search for certification data by name or certificate number.
- c. Notification feature to notify students about certification updates.
- d. Structured and secure certification data management.

Non-Functional Needs:

- a. Data Security: The website must have a strong security system to protect student personal data and certification results from the threat of unauthorized access.
- b. Accessibility and User-Friendly Design: The website design should be responsive and easy to use by students with various technical backgrounds. This is to ensure that all users can access information easily and without barriers.

4. System Design

1. System Architecture Design

The design of the Bina Darma University Professional Certification Institute (LSP) website system follows the principles of web-based architecture with a three-tier architecture model, which consists of:

- a. Presentation Layer: A user interface developed using HTML, CSS, Bootstrap, and JavaScript to provide a responsive and user-friendly display.
- b. Application Layer: Contains business logic and data processing, developed using Laravel as the backend framework.
- c. Data Layer: Contains a MySQL database that stores certification, user, and system activity information.

The system is implemented using a Model-View-Controller (MVC) approach that separates business logic from views and data to increase the modularity and scalability of the system.

2. Use Case Diagram

The Use Case diagram is used to describe the interaction between the user and the system. In this system, there are three main actors, namely:

- a. Student: Can view certification results, search for certificates, and download certificates.
- b. LSP Admin: Manage certification data, add users, and manage certification results.
- c. Verifier: Verifies the validity of certificates issued by the LSP.

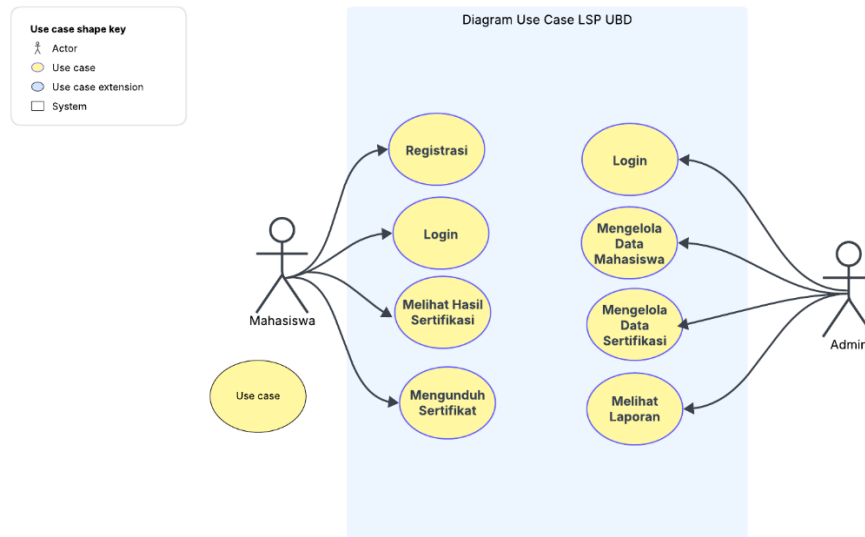


Figure 1. Use Case Diagram

3. ERD (Entity Relationship Diagram)

ERD diagram is used to describe the relationship between entities in the database. The main entities in this system include:

- Student (student_id, name, email, password, status)
- Certification (id_certification, student_id, certification_name, date_terbit, status)
- Examiner (id_examiner, name, field, email)
- Administrator (id_admin, name, email, password)
- Activity Log (id_log, id_user, activity, timestamp)

Main relation:

- Students can have multiple certifications.
- Examiners can verify multiple certifications.
- Administrator manages users and certifications.

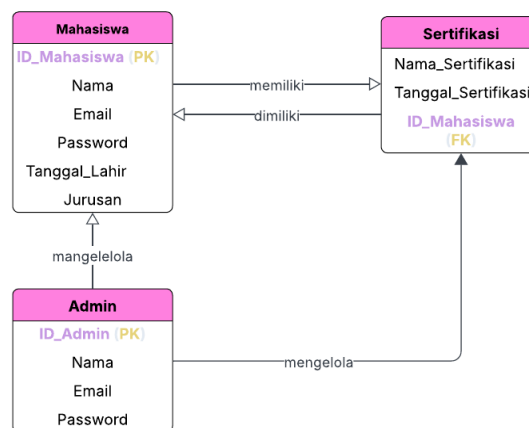


Figure 2. Erd (Entity Relationship Diagram)

4. Interface Design (UI/UX)

The interface design of the LSP website was created using a User-Centered Design (UCD) approach to ensure an optimal user experience. Display Sketches:

- Main Page : Header with navigation (Home, scheme, profile, Registration, Contact). Main banner with information about the LSP. Student testimonials
- Registration Page : Registration form with input validation. Email confirmation
- Admin Dashboard : Certification data management menu. User management panel. Certification activity statistics graph

5. Use of CSS and Bootstrap for Responsiveness

To ensure responsive website display, we used:

- Bootstrap 5 for grid layout and UI components
- Custom CSS for display customization
- Media queries to support various layer sizes

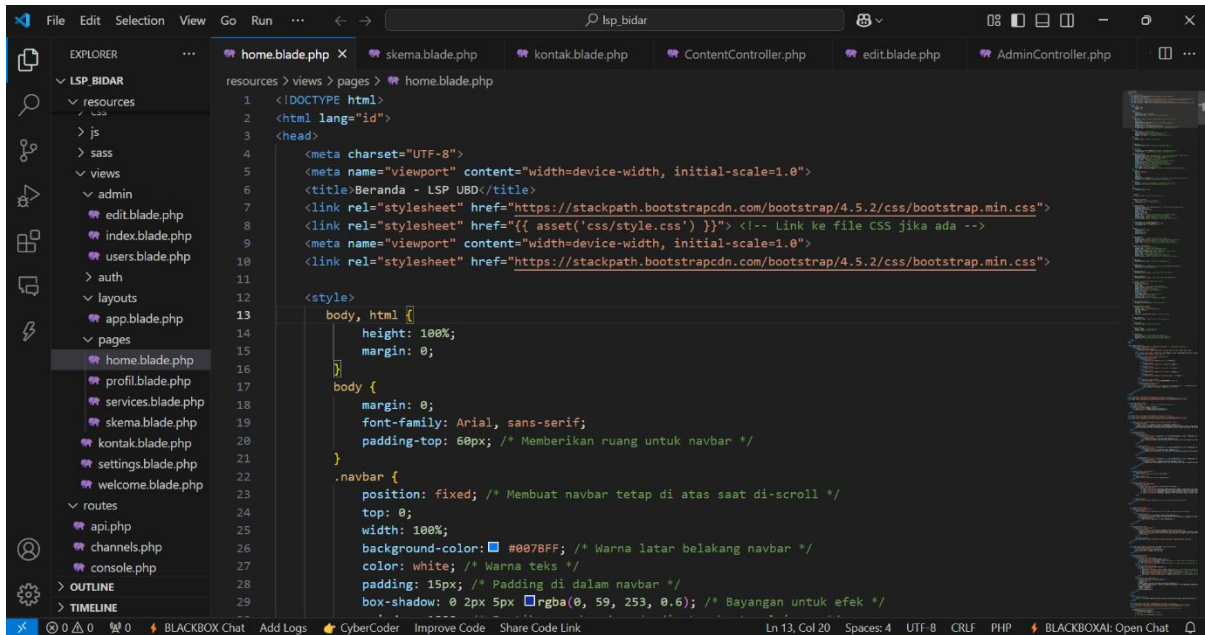


Figure 3. coding process

5. Results and Discussion

Bina Darma University Professional Certification Institute (LSP) functions as an institution that guarantees student competence through the certification process. Data management of certification results that are still done manually causes various obstacles, such as difficulty in searching data, delays in distribution of certification results, and the risk of losing physical documents. To overcome these problems, a website-based information system is designed that can support the management of LSP certification data digitally.

1. Description of Research Results

System Requirements Analysis Through observations and interviews with LSP staff, some key system requirements were identified:

- Digitalization of the certification data management process to reduce reliance on physical documents.
- Easy access to certification information for students in real-time.
- Provision of clear information on certification schemes, organizational structure, and contacts.

Website System Design is developed using the waterfall method, with the stages of needs analysis, design, implementation, and testing. The technologies used include PHP (Laravel) as the backend and MySQL for the database. The interface is developed with HTML, CSS, and Bootstrap to be responsive on various devices. Implementation Results The implementation result of this research is a website that has various features, including:

- Home: Displays the latest information about LSP services.
- Certification Scheme: Provides detailed information on various certification schemes.
- Profile: Displays the organizational structure of Bina Darma University LSP.
- Contact: Allows users to send messages and obtain LSP contact information.
- Admin: Manages system content and users.

Although the search and notification features are not yet fully developed, the website has provided benefits in the efficiency of certification management.

2. Discussion

Efficiency and Ease of Access Compared to the previous manual system, this website improves efficiency in certification management by providing real-time access to certification information. Students do not need to come directly to the LSP office to obtain data, thus saving time and effort. **Transparency and Security** The website improves transparency by providing information that can be accessed by students and related parties at any time. A user authentication system is implemented to maintain data security and integrity. **Implementation Challenges** Some of the challenges faced during the implementation process include:

- a. **Manual to digital data migration:** This process requires time and accuracy to avoid errors in data entry.
- b. **LSP staff training:** Not all staff have a technical background, so training is needed to ensure they can operate the system properly.
- c. **Limited time and resources:** Some features such as search and notifications have not been fully developed due to time constraints.

System Sustainability The system is expected to be further developed with additional features such as certification search, notification, and online certificate printing. Integration with the university academic system is also recommended so that LSP services are more integrated with student needs.

6. Conclusion

The information system website for LSP Bina Darma University has been successfully designed and implemented, providing benefits in digitizing certification management, increasing efficiency, and data transparency. This system has helped in reducing dependence on physical documents, accelerating access to information for students, and increasing security in the storage and distribution of certification data.

Although this system has had a positive impact, there are still some aspects that need to be further developed. Some features such as more efficient certification search, automatic notification system, and digital certificate printing have not been fully implemented. In addition, training for LSP staff is an important aspect for optimal utilization of the system.

In the future, the development of this system can be directed towards integration with the university's academic system so that student certification data can be better synchronized with their academic data. Thus, this system is expected to continue to grow to support the student certification process more effectively and efficiently.

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