

WEBSITE-BASED CERTIFICATE MANAGEMENT INFORMATION SYSTEM DESIGN IN TRAINING AND CONSULTANT DIVISION

Muhammad Salbiyath ¹; Daning Nur Sulistyowati ²

Information Systems
Nusa Mandiri University
www.nusamandiri.ac.id

¹ 11207134@nusamandiri.ac.id; ² daningnur.dgs@nusamandiri.ac.id



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Abstract — Certification is a determination given by a professional organization to a person to show that a person has competence, able to do a specific job or task. The management of certificates at PT Markco International is still carried out in a simple manner using Microsoft Office applications, starting from managing personal data, passing person status, numbering and issuing certificates. The design of this Certificate Management Information System is intended to provide a better solution, namely a web-based information system that can convert the currently running manual system into a computerized system using a database. Waterfall software development method and data collection techniques by conducting observations and literature studies are applied in the development of this program. This design discusses the process of managing personal data, registration agencies and certificates. As a result, the certificate management program that has been created can manage related information such as data on persons, agencies, certificate categories, registrations and certificates. This proves that the Certificate Management Information System Design at PT Markco International can manage the certificate management process well.

Keywords: information system, certificates, website-base certificates, training and consultant division

Abstract — Sertifikasi merupakan suatu penetapan yang diberikan oleh suatu organisasi profesional terhadap seseorang untuk menunjukkan bahwa orang tersebut memiliki kompetensi, mampu untuk melakukan suatu pekerjaan atau tugas spesifik. Pengelolaan sertifikat pada PT Markco International masih dilakukan secara sederhana menggunakan aplikasi Microsoft Office mulai dari pengelolaan data person, status kelulusan person, penomoran dan penerbitan sertifikat. Perancangan

Sistem Informasi Pengelolaan Sertifikat ini dimaksudkan untuk memberikan solusi yang lebih baik yaitu sistem informasi berbasis web yang dapat mengkonversi sistem manual yang saat ini berjalan ke dalam sistem terkomputerisasi dengan menggunakan database. Metode pengembangan perangkat lunak Waterfall dan teknik pengumpulan data dengan melakukan observasi dan studi pustaka diterapkan dalam pengembangan program ini. Perancangan ini membahas proses pengelolaan data person, instansi, kategori sertifikat, registrasi dan sertifikat. Sebagai hasilnya, program pengelolaan sertifikat yang telah dibuat dapat mengelola informasi terkait seperti data person, instansi, kategori sertifikat, registrasi dan sertifikat. Hal ini membuktikan bahwa Perancangan Sistem Informasi Pengelolaan Sertifikat Pada PT Markco International dapat mengelola proses pengelolaan sertifikat dengan baik.

Kata Kunci: sistem informasi, sertifikat, website sertifikat, divisi training and consultant

INTRODUCTION

The high human need for information encourages the development of technology and information to be very rapid. At this time to get information is very easy, with the help of the internet we can find information very quickly and easily through the website. Website is a collection of web pages that have been published on the internet network and have a domain/URL (Uniform Resource Locator) that can be accessed by all internet users by typing the address. (., Ibrahim, and Ambarita 2018) . This is made possible by the existence of World Wide Web (WWW) technology ". Web- based applications are one form of information technology development that helps make it easier for organizations to do various things,

so that organizations can grow and develop quickly. But at this time there are still many organizations that have not taken advantage of the development of information technology, one of which is Markcert.

Markcert is a brand owned by PT Markco International which is engaged in training and consultant. The process of managing and issuing certificates conventionally at the Bali Province LPMP raises problems including longer processing time and processes, the difficulty of recapitulating the certificates that have been issued, the certificate distribution process is still done manually, allowing data loss if the computer is damaged because the storage is still on the local computer. (Arya et al. 2021) . Markcert has a problem where the management of person data, person graduation status, numbering and certificate issuance is still done simply by using Microsoft Office applications. There are two types of certificates issued by Markcert, namely certificates that are valid for life and certificates that are valid for a certain period. The process of manually issuing certificates takes a long time, then the absence of a system to verify the authenticity of certificate ownership, of course, allows certificate forgery to occur (Samala and Fajri 2021) .

MATERIALS AND METHODS

Markcert is a brand of PT. Markco International and MarkCert are transformations of AFNOR Indonesia in 2020 which have experience in the fields of training, mentoring (consultation), and conformity assessment (certification). Markcert has two types of certificates, namely training certificates and competency certificates. The training certificate is issued after the training has been completed, while the competency certificate is issued after all stages of testing are carried out and the person is declared competent.

TNE and PCP divisions provide registration files to the IT Subdivision. Registration files contains the participant's personal data then the IT Division saves the participant data into the Microsoft Excel application. After the data is saved, the IT division asks for confirmation from the TNE and PCP divisions. The certificate that has been made is then submitted to the TNE and PCP Division for validation, if it is appropriate, the certificate will be distributed to participants. If there is an error in the certificate, it will be returned to the IT division for correction. The system runs on PT. Markco International, especially the Markcert brand, in this certificate management system is still manual with procedures which can be seen in Figure 1.

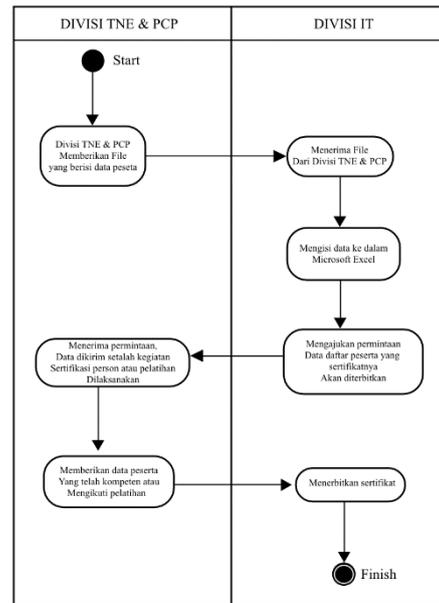


Figure 1 Certificate Making Process

This certificate management system development model uses a web -based system design consisting of:

1. Software Requirements Analysis

The certificate management application requires data such as person, graduation status, schema and other information that is recorded into a single database .

2. Design (Design)

application design uses Unfied Modeling Language (UML) and the diagrams used are Use Case Diagrams . While the database design himself using Entity Relational Diagram (ERD) and Logical Relational Diagrams (LRS).

3. Code Generation

The stage of data translation or problem solving that has been designed into a particular programming language. This application uses PHP, HTML and CSS programming languages which are used to compile the layout of the designs created and the database used is MySQL.

4. Testing

Is the testing phase of the software that was built. Testing is carried out in accordance with the desired system work. Blackbox testing is carried out to ensure whether all the performance of the system is running well.

5. Support

This is the final stage where the software is finished. At this stage ensure that all systems run properly according to user needs and can also provide changes or add new features according to user requests.

RESULTS AND DISCUSSION

Analysis

At this stage, it contains the requirements specification (system requirements) of a web - based certificate management system which is divided into 2 (two), namely:

1. Admin Page
2. Supervisor Page

On the admin page the access obtained includes:

- A.1 Manage Certificate Categories
- A.2 Manage Agencies
- A.3 Manage Person
- A.4 Manage Schema
- A.5 Manage Registration
- A.6 Manage Certificates

As for the access supervisor page, the user management is obtained.

Use Case Diagrams

use case diagram is a diagram that shows the relationship or user interaction with the system being developed (Samala and Fajri 2021) .

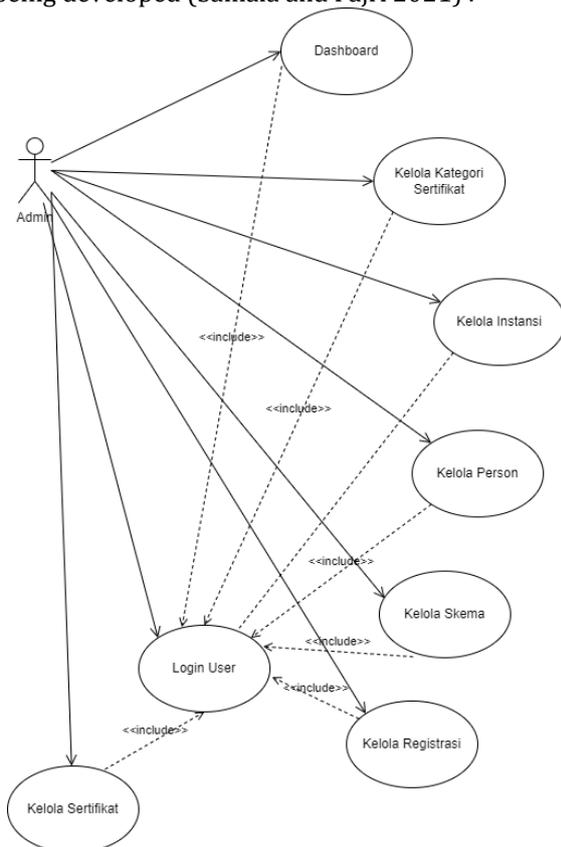


Figure 2 Use Case Diagram Admin

Use case diagram Figure 2 admin can manage certificate categories, agencies, persons, schemas, registrations, certificates online through the website which includes viewing data, adding data and changing data.

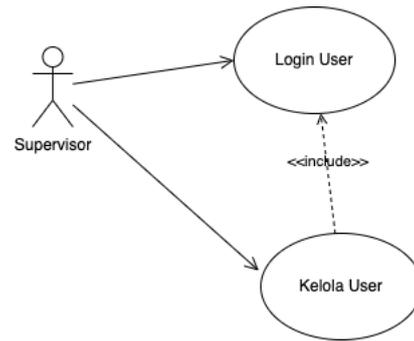


Figure 3 Use Case Diagram Supervisor

Use case diagram Figure 3 supervisor can manage users including viewing user data, adding user data and changing user data.

Activity Diagram

activity diagram is a diagram that describes the flow of work or activities from a system or business process or menu that is in the software (Anna et al. 2018) .

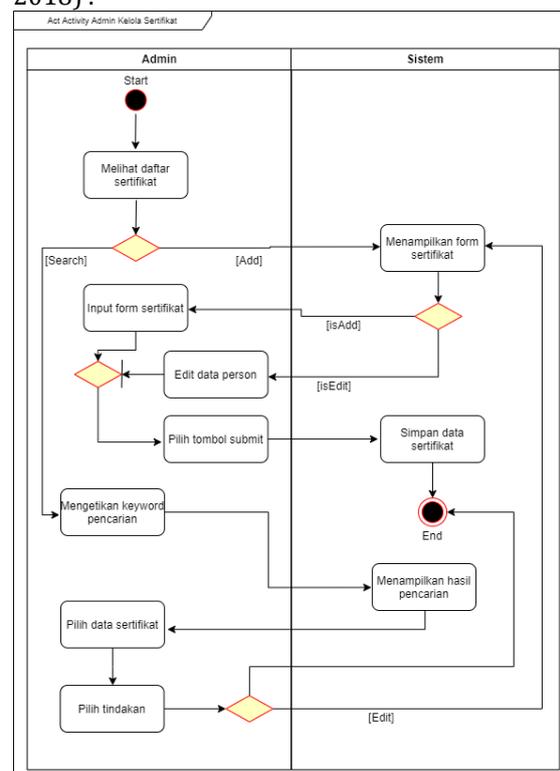


Figure 4 Activity Diagram

Figure 4 is a description of the flow of each process carried out by the admin to manage certificate data in the system.

Design

Software design is the stage of doing design that focuses on making programs including data structures, architecture, user interfaces and coding. The software requirements that have been analyzed at the requirements analysis stage are translated

into a design representation so that the program at the next stage can be implemented (Anna et al. 2018),

At the design stage contains an explanation of the database design and software architecture design of the designed system.

1. Entity Relationship Diagram

Entity Relationship Diagram (ERD) is information that is created, used, and stored in a business system that is shown in the form of images or diagrams (Trisyanto 2018).

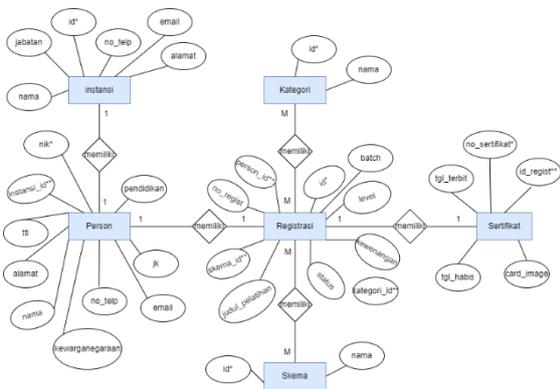


Figure 5 Entity Relationship Diagram

2. Logical Record Structure

Logical Record Structure (LRS) is a representation that comes from the structure of the records in the table where the tables were formed from the results of the set between entities in the entity relationship diagram that has been transformed as an LRS form (Anna et al. 2018).

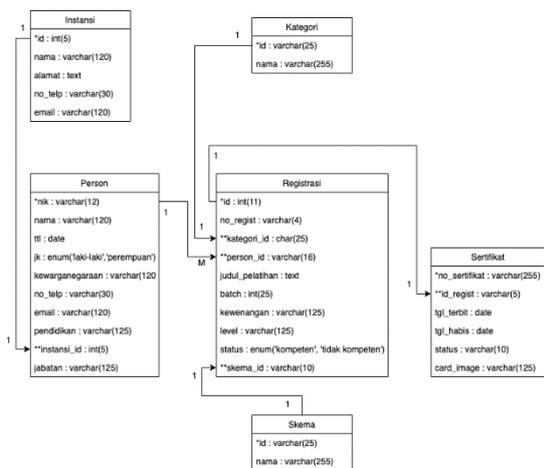


Figure 6 Logical Record Structure

3. Class Diagram

Class diagrams are classes that are defined to build the system. There are attributes and

operations or methods in a class, variables owned by a class are attributes, while methods or operations are functions that are owned by a class (Heriyanto 2018).

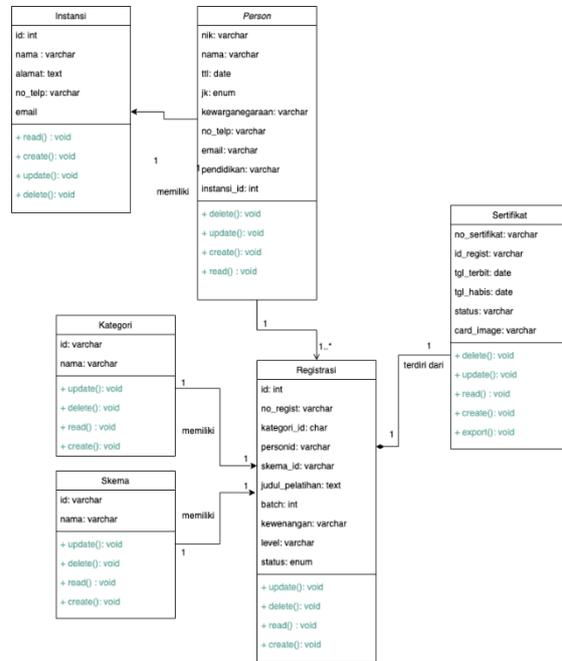


Figure 7 Class Diagram

4. Sequence Diagrams

Sequence diagrams are interactions between objects that occur in and around the system (including displays, users and so on) in the form of messages depicted against time described through pictures. (Anna et al. 2018).

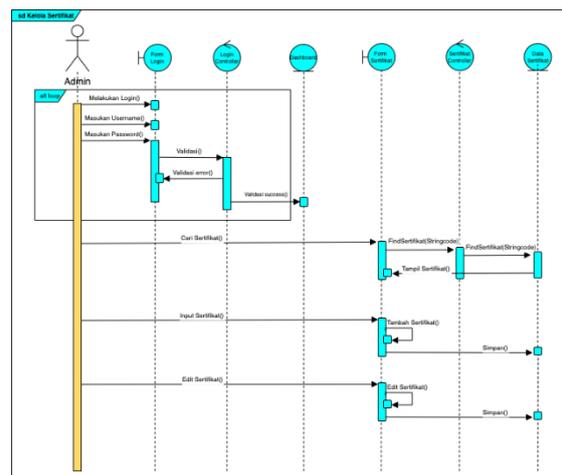


Figure 8 Sequence Diagram

5. Component Diagram

Component diagram is a system dependency component or software on existing components and managing organization, component diagrams are related to class diagrams (Cordeaux 1877).

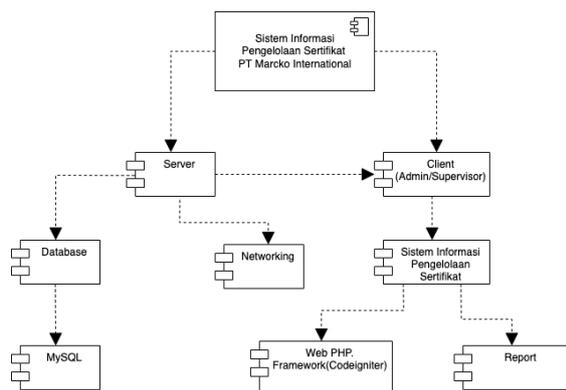


Figure 9 Component Diagram

6. Deployment Diagram

Deployment diagram is a diagram that describes how the components are arranged in detail on the system infrastructure (Anna et al. 2018).

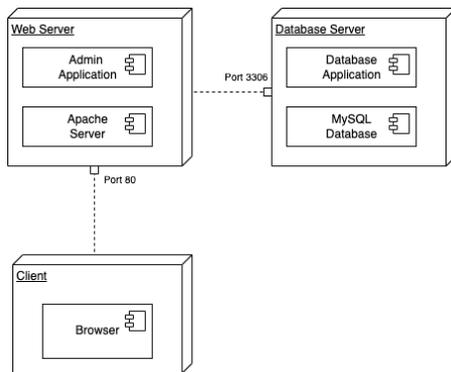


Figure 10 Deployment Diagram

Implementation

Implementation of the designed system can be seen as follows.

1. Dashboard

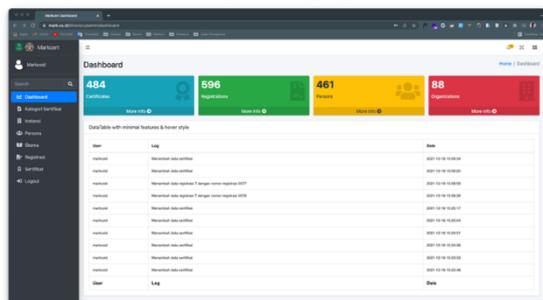


Figure 11 Dashboard Display

Figure 11 is a user interface dashboard display, serves to display general information about the amount of data that already exists in the database.

2. Manage Certificate Categories

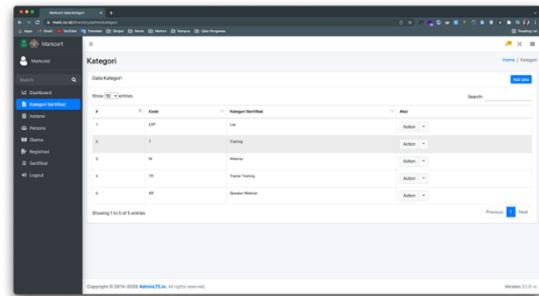


Figure 12 Certificate Category Menu Display

Figure 12 is a user interface display for the category management menu, which functions to manage certificate categories.

3. Manage Agencies

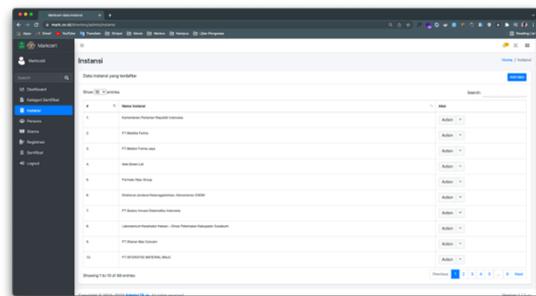


Figure 13 Agency Menu Display

Figure 13 is a user interface display for the management of the institution, serves to manage agency data

4. Manage Person

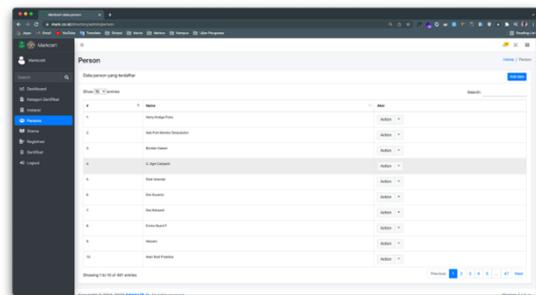


Figure 14 Display Menu Person

Figure 14 is the user interface display for the manage person menu, which functions to manage the person data.

5. Manage Registration

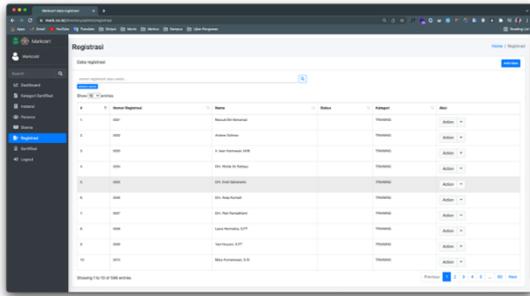


Figure 15 Display of the Registration Menu

Figure 15 is a user interface menu display manage registration, serves to manage registration data.

6. Manage Certificates

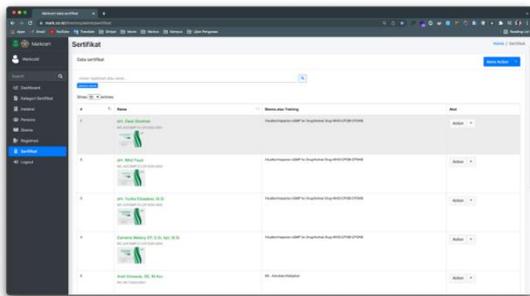


Figure 16 Certificate Menu Display

Figure 16 is a user interface display for the certificate management menu, which functions to manage certificate data

Testing

Blackbox testing is carried out to ensure whether all the performance of the system is running well.

Table 1 Testing the Login Menu

| No | Test scenario | test case | Expected results | Test result | Concl usion |
|----|--|--|---|-----------------------------|-------------|
| 1 | Clear all login forms then click login | Username : (blank) Password : (blank) | Access is denied by the system, a notification appears " Username and password required " | Accord ing to expect ations | Valid |
| 2 | Fill in the Username while the password is empty | Username: (admin) Password: (blank) | Access is denied by the system, a message " password required " | Accord ing to expect ations | Valid |
| 3 | Fill in the password while the Username is empty | Username: (blank) Password: | Access is denied system, a notification appears " | Accord ing to expect ations | Valid |

| | | | | | |
|---|---|---|--|-----------------------------|-------|
| 4 | Fill out the form completely but the password entered does not match | Username: (admin) Password: (wrong) | Access is denied by the system, a notification " wrong password " appears | Accord ing to expect ations | Valid |
| 5 | Fill out the form completely but the User name entered does not match | Username: (wrong) Password: (123456) | Access is denied by the system, a notification " User not found " appears. | Accord ing to expect ations | Valid |
| 6 | Fill out the form completely, the User name and password are entered according ly | Username: (admin) Password: (123456) | Access is accepted by the system, the user is redirected to the dashboard page | Accord ing to expect ations | Valid |

Table 2 Testing the Registration Menu

| No | Test scenario | Test case | Expected results | Test result | Concl usion |
|----|--|---|---|-----------------------------|-------------|
| 1 | Empty all forms add registration then click submit | Registration category: (Empty) Full Name : (Empty) Scheme or Training: (Empty) Batch : (Empty) Title of training: (Empty) Level : (Empty) Status: (Empty) Authority: (Empty) | Access is denied system, a notification appears "(Each field is empty) is required" | Accord ing to expect ations | Valid |
| 2 | Filling Field batch with letters not with numbers | Batch: (two) | Access is denied by the system, a notification " Batch should be numeric " appears. | Accord ing to expect ations | Valid |
| 3 | Fill in the registration form completely | Registration category: LSP Full Name: | Access is accepted by the system, a notification | Accord ing to expect ations | Valid |

y and
 correctly

Agung
 Scheme
 or
 Training:
 BRCGS
 Batch: 1
 Title of
 training:
 (Blank)
 Level:
 Interme
 diate
 Status:
 Passed
 Authorit
 y:
 Auditor

Table 3 Testing the Certificate Menu

| No | Test scenario | Test case | Expected results | Test result | Conclusion |
|----|--|---|---|---------------------------|------------|
| 1 | Clear all the add certificate forms then click submit | Category: (blank) Registration Number: (blank) Date of issue: (Blank) | Access is denied system, a notification appears "(Each field is empty) is required" | According to expectations | Valid |
| 2 | Fill in an unregistered registration number | Registration Number: LSP0192 | Access denied system, pop up notification "Number not found" | According to expectations | Valid |
| 3 | Fill in the registration form completely and correctly | Category: LSP Registration Number: LSP1928 Release date: 14/12/2021 Expiration date: 15/12/2023 Status: Competent Business card: name.jpg | Access is accepted by the system, a notification appears "Certificate added successfully" | According to expectations | Valid |

CONCLUSION

Based on the results of the discussion in this study, it can be concluded that the existence of a website-based certificate management information system can provide convenience for employees in managing data related to certificate issuance so that the process becomes more effective and efficient and the existing data can be backed up neatly and efficiently. systemized.

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