



## Design of Online Library Information System at Sei Kamah Village Hall I

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### ARTICLE INFO

### ABSTRACT

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The research results suggest that the collection of books available in Balai Desa Sei Kamah I Library is still insufficient. The book collection only has a ratio of 1:5 compared to the number of users. The utilization rate of book collection by sei kamah I villagers is also low. When in the library, the community, especially among students, is deficient in visits to the library. In one week, the community only 1 or 2 times came to the library and spent less than 1 hour. Library employees and staff have not played a full role in promoting how important a library is. Therefore, researchers created a new idea that the library system that is still manual is made into an Online-based system. The library service becomes better and more enjoyable.

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## 1. Introduction

Along with the development, the world today has entered the era of globalization. Human activity in all fields is also increasing. The increase in a human activity must be supported by supporting facilities that can increase efficiency and maximum effectiveness. One of the facilities supporting human activity is an online system. Moreover, along with developments, the online system must grow both in terms of quality and quantity to support all human activities that use it. According to experts, an online library is a place where library material is physically viewable because it is the essence of cyber work and connected to the internet network. While according to the author, the library itself is one source of learning that has a significant influence in the world of education. Especially the village library has an important role also in the development in the field of education. One of the roles of village libraries is to improve people's insight into science. With the library, it is hoped that the public can develop skills to find information for their needs independently[1]

Researchers see means of information in Sei Kamah I Village Hall is still from the people around, the community less interested in reading the books that in the library, the lack of facilities offer about books and still the manual of the loan service system that the resulting report is not well organized. If the system is appropriately computerized, then everyone can access book borrowing online, where and anytime. Then for library officers can facilitate the work in serving borrowing and book returns. The smooth process of borrowing and returning books can go well because the computerized process makes library employees work more comfortably.[2]

## 2. Method

This study uses descriptive methods, namely, methods that describe a situation or problem based on facts and data obtained and collected at the time of carrying out the research. Data collection by making direct observations of research objects, by recording essential matters related to the report's title, so that complete data is obtained.[3] The method of logic used to build this system is the *waterfall model*. This model is an approach to developing system software, with several stages: *System Engineering*, Analysis, Design, Coding, Testing, and Maintenance[4].

- SystemEngineering* is an early part of the work of a software project. We are starting by preparing everything necessary for the implementation of the project.
- The analysis* is the stage at which *System Engineering* analyzes everything in project creation or software development that aims to understand existing systems, identify problems, and find solutions.
- Design*, this stage is a translator stage of needs or data that has been analyzed into a form that is easy to understand by the user (*user*).



- d) *Coding*, i.e., translating designed data into a defined programming language. *Testing* is a test of the system or program after completion.
- e) *Maintenance*, namely the system's implementation, is accompanied by maintenance in structural changes, both in *software* and hardware.

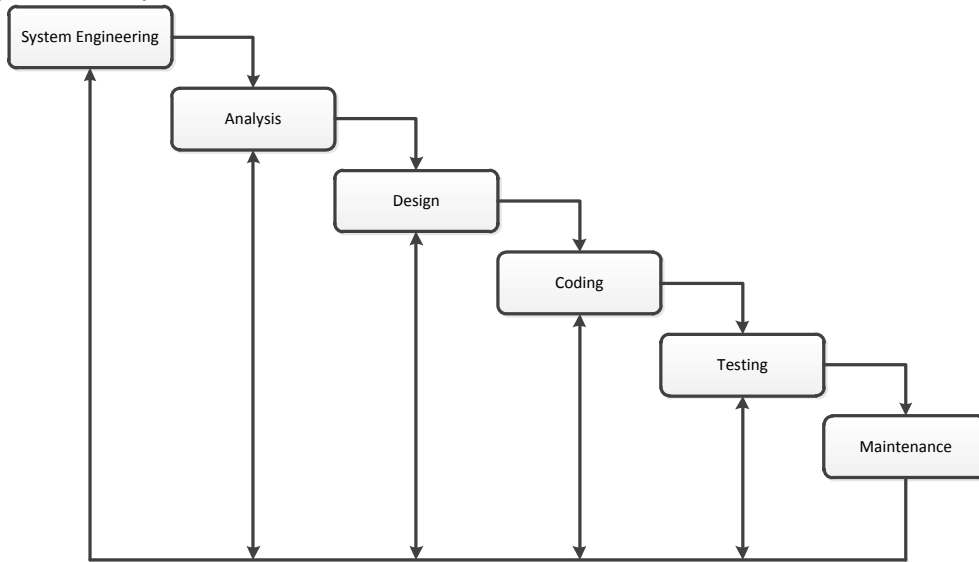


Fig 1. Paradigm Waterfall (Classic Life Cycle)

### 3. Results and Discussion

#### 3.1 System Testing

The testing program is *Black Box Testing*. *Black Box testing* is a data design testing method based on software specifications. Test data is generated, executed on the software. Then the software's output is checked whether it has been as expected [5]. The test plan is done by testing the system, whether it is worth using or not. The online library information *system testing* of Sei Kamah I Village Hall Office uses test data in the form of input from the library and the office. The test plan performed on this information system will be described in the following table:

Table 1.  
Testing Plan

| Test Class  | Test Details  | Test Type |
|---|---|-----------|
| Login testing   | Verify <i>login</i> data by entering username and password  | Black Box |
| Menu testing  | Testing menu functions and contents such as <i>a home</i> menu, office profile menu, member list menu, book menu, login menu, return menu, and report menu. | Black Box |
| Member <i>data entry</i> testing and book data                | Testing in the form of a save, delete, cancel, and search process test.   | Black Box |
| Testing of book data reports, member data, and borrowing data | View the results of book data reports, member data, and borrowing data.   | Black Box |
| Login testing   | Password change <i>process</i> on officer data.   | Black Box |

#### a) Testing Login

Tabel 2.  
Login Testing

| Login Case and Test Results (Correct Data) |  |   |             |
|--|--|---|-------------|
| Input Data                                 | What to Expect                           | What are you get                                    | Description |
| Select the admin button                    | The user is already registered and login | Can sign <i>in</i> and log in to system admin data. | Success     |
| Select a common button                     | Can go to the main menu                  | Display the main menu form                          | Success     |



b) **Member List Testing**

**Table 3.**  
Member List Testing

| <b>Case and Member List Test Results (Correct Data)</b>     |   |                             |                    |
|---|---|-----------------------------|--------------------|
| <b>Input Data</b>   | <b>What to Expect</b>                                   | <b>What are you get</b>     | <b>Description</b> |
| Click the member's list menu                                | Can go to the member's list page to input members' data | View the member's list page | Success            |
| Click the Process   | Data is expected to register as a member successfully.  | View data.                  | Success            |
| <b>Member List Cases and Test Results (Incomplete Data)</b> |   |                             |                    |
| <b>Input Data</b>   | <b>What to Expect</b>                                   | <b>What are you get</b>     | <b>Description</b> |
| Click the Process   | Data is not stored in the database                      | Data failed to be saved     | Failed             |

c) **Book Loan Testing**

**Table 4.**  
Book Loan Testing

| <b>Kasus dan Hasil Peminjaman Buku (Data Benar)</b>      |  |                                   |                    |
|--|--|-----------------------------------|--------------------|
| <b>Input Data</b>  | <b>What to Expect</b>                            | <b>What are you get</b>           | <b>Description</b> |
| Click the book menu                                      | Can go to the <i>book form</i> page              | View <i>book form</i> pages.      | Success            |
| Click the Next   | Can continue borrowing different books.          | View back book data.              | Success            |
| Click the Finished                                       | Can save selected book data.                     | View borrowed book data           | Success            |
| Click the login button                                   | Can enter the member's data before making a loan | View member data before borrowing | Success            |
| Click the process button                                 | Can get into the loan process results            | View Borrowing Data               | Success            |
| <b>Case and Loan Book Test Results (Incomplete Data)</b> |  |                                   |                    |
| <b>Input Data</b>  | <b>What to Expect</b>                            | <b>What are you get</b>           | <b>Description</b> |
| Click the Borrow   | Book data is not stored in the database          | Display a page of borrowed books  | Failed             |
| Click Next   | Book data does not reappear.                     | Display a list of books           | Failed             |
| Click Finish   | Book data is not stored in the database          | Display a page of borrowed books  | Failed             |

d) **Book Return Testing**

**Table 5.**  
Book Return Testing

| <b>Case and Book Return Results (Correct Data)</b>    |  |  |                    |
|---|--|--|--------------------|
| <b>Input Data</b>                                     | <b>What to Expect</b>                            | <b>What are you get</b>                | <b>Description</b> |
| Click the return menu                                 | Can go to the <i>book return form</i> page       | View the <i>book return form</i> page. | Success            |
| Click the Next  | Can continue borrowing different books.          | View back book data.                   | Success            |
| Click the Finished                                    | Can save selected book data.                     | View borrowed book data                | Success            |
| Click the login button                                | Can enter the member's data before making a loan | View member data before borrowing      | Success            |
| Click the process button                              | Can get into the loan process results            | View borrowing data                    | Success            |
| <b>Case and Return Test Results (Incomplete Data)</b> |  |  |                    |
| <b>Input Data</b>                                     | <b>What to Expect</b>                            | <b>What are you get</b>                | <b>Description</b> |
| Click the Borrow                                      | Book data is not stored in the database          | Display a page of borrowed books       | Failed             |
| Click Next  | Book data does not reappear.                     | Display a list of books                | Failed             |
| Click Finish  | Book data is not stored in the database          | Display a page of borrowed books       | Failed             |

e) Book Data Report Testing

**Table 6.**  
Book Data Report Testing

| Kasus dan Hasil Pengembalian Buku (Data Benar) |  |  |             |
|--|--|--|-------------|
| Input Data                                     | What to Expect                                   | What are you get                       | Description |
| Click the return menu                          | Can go to the book <i>return form</i> page       | View the <i>book return form</i> page. | Success     |
| Click the Next                                 | Can continue borrowing different books.          | View back book data.                   | Success     |
| Click the Finished                             | Can save selected book data.                     | View borrowed book data                | Success     |
| Click the login button                         | Can enter the member's data before making a loan | View member data before borrowing      | Success     |
| Click the process button                       | Can get into the loan process results            | View borrowing data                    | Success     |
| Case and Return Test Results (Incomplete Data) |  |  |             |
| Input Data                                     | What to Expect                                   | What are you get                       | Description |
| Click the Borrow                               | Book data is not stored in the database          | Display a page of borrowed books       | Failed      |
| Click Next                                     | Book data does not reappear.                     | Display a list of books                | Failed      |
| Click Finish                                   | Book data is not stored in the database          | Show Selection Of Borrowed Books       | Failed      |

3.2 Test Results

The test results are a view of the completed program. The following is the result of the Sei Kamah I Online Library application program. If you want to sign in to the library app, you are expected to *sign* in first. *The login form* is the first step to open the online *library application* of Sei Kamah I Village Hall Office. *The login form* contains admin and general menu options. The admin menu is devoted to the library attendant. When you want to log in, you must fill in the *username* and password. The following is the login form display on the online library application of Sei Kamah I Village Hall Office.[6]



Fig 2. Login Form View

to do the loan process must fill out the *Member List Form*. It requires that everyone who wants to borrow a book must register themselves as members. Then the person can only borrow the book. The following is a view of the member list *form* on the online application of Sei Kamah I Village Hall Office.



Fig 3. Member List Form View



After registering a member, the member can do the book loan process that *displays* the entire list of books. If the member wants to do the borrower's book must select the loan form's button. Each member must do several stages in the loan book. Here is a look at the book loan *form* and its stages.



**Fig 4.** Book Loan Form View

Library members who have completed a book loan can return the book on the *Return form* that displays the book's return. Each member is required to return the book according to the specified limit. The following is a view of the book return form.



**Fig 5.** Book Return form view

#### 4. Conclusion

Based on a researcher's review of the method in the Village Hall Office sei Kamah I District Sei Dadap Asahan, the researcher concluded that the system suggested by the researcher would speed up the procedure in the Sei Kamah Village Hall I Library. Data protection would be assured that the data processed will be used in a computerized system. More cost-effective and time-efficient.

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