

Barcode-based filing information system in hospitals

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Abstract—Information technology plays a major role in the development of health care systems, one of which is in hospitals. Surakarta City's Central General Hospital (RSUP) continues to use a traditional filing system. Several barriers remain in the way of implementing these activities, including misfile media record documents and difficulty locating medical record documents. The research method used in this study is descriptive research with data collection methods of observation and interviews. The subjects of this study were medical record officers, and the instruments used in this study were observation guidelines and free guided interview guidelines. Primary and secondary data sources were used in this study. The method of data collection and processing at the Central General Hospital (RSUP) in Surakarta City is collected through the processes of drm data input, borrower data input, borrowing data input, return data input, and evaluation data input, and is then processed quantitatively. The records from the inpatient medical record are then saved to the drm table, borrower table, loan table, return table, and assessment table, and used to produce filing information system production, borrower reports, loan reports, return reports, and appraisal reports using the PHP programming language and the Dream weare application with a MySQL database.

Keywords—information systems, hospitals, filing systems

I. INTRODUCTION

Because of the critical nature of documentation regarding patient identity, examination, treatment, actions, and services related to patients, the medical record unit plays an important role in health care. This is because recording the patient's medical record data impacts subsequent patient care, as it serves as a source of reference for patient health tests, as well as recorded information regarding the patient's condition diagnosis and medical services received. Given the vital nature of keeping medical records, adequate storage is necessary. The section for storing medical records is referred to as the filing section.

Filing is an activity of organizing or storing medical record files to facilitate retrieval (Rustiyanto and Rahayu 2011). At the moment, most medical record filing in Indonesia is still performed manually, which is considered ineffective and inefficient. According to a survey of medical record officers, it was discovered that the filing section had problems, one of which was that the officers had trouble recovering (retrieval) medical record documents because of storage errors or medical record documents that were scattered or scattered in other sections. With such issues, a new breakthrough is

required; one way to accomplish this is to leverage technological advancements.

Barcode-based filing information system that will aid in the service phase in the filing medical record unit by scanning barcodes or QR codes on medical record documents and simplifying and speeding up the service process for patients, thus improving the efficiency of hospital management.

II. METHOD

The following stages of analysis were conducted in this study:

A. System Development Method

The following stages are needed when developing software:

1. System Survey

In the system survey stage, what is done is to identify the user's condition, by defining the scope of the system and preparing a feasibility study. So that it can be classified system requirements in order to operate in the work environment.

2. System Analysis

System analysis is a method for analyzing the requirements of an established system through an evaluation of the different processes involved in data processing and the related variables. So that it is understood and to pursue solutions to the issues that arise.

3. Design

The system design stage is a complete system design in building a software application.

4. System Creation

Making the system includes creating a database, application programs and technical manuals for the use of software that have been made.

5. System Implementation

System implementation is carried out by applying the results of improvements and evaluations of the system that has been made.

6. Maintenance

This stage is implemented after the software has been verified to be error-free and trouble-free; this stage is important because the new system must be maintained and users must be educated on how to use the system.

B. Data Processing Methods

Data processing in this study has the following stages:

1. Collecting

Collecting data in the quantitative analysis section of medical record documents includes drm data, borrower data, borrowing data, return data, appraisal data.

2. Editing

Fixing the collected data which still contains errors.

3. Classification

Namely the grouping of data collected according to their classification into drm tables, loaner tables, loaning tables, returns tables, assessment tables.

4. Data Presentation

Presenting data that has been entered and processed so as to produce information or output in the form

III. RESULT

The data filing processing software contained in this study was built using PHP programming and data processing with

mysql. The system developed in this research is composed of two main subsystems: database processing and interfaces. Database processing is a subsystem that processes the data needed by the data system, which is collected from medical record officers. This is accomplished through the preparation and identification of system requirements and their storage in the database.

The interface is a subsystem that connects the device to the user, allowing users to communicate with and command the software that has been built. This interface sub-system receives data input from users, storing and displaying input and output data, and allowing users to communicate with the data processing sub-system. Thus, this interface subsystem will facilitate the user's implementation of the application that was created. The following figure summarizes the application being developed:

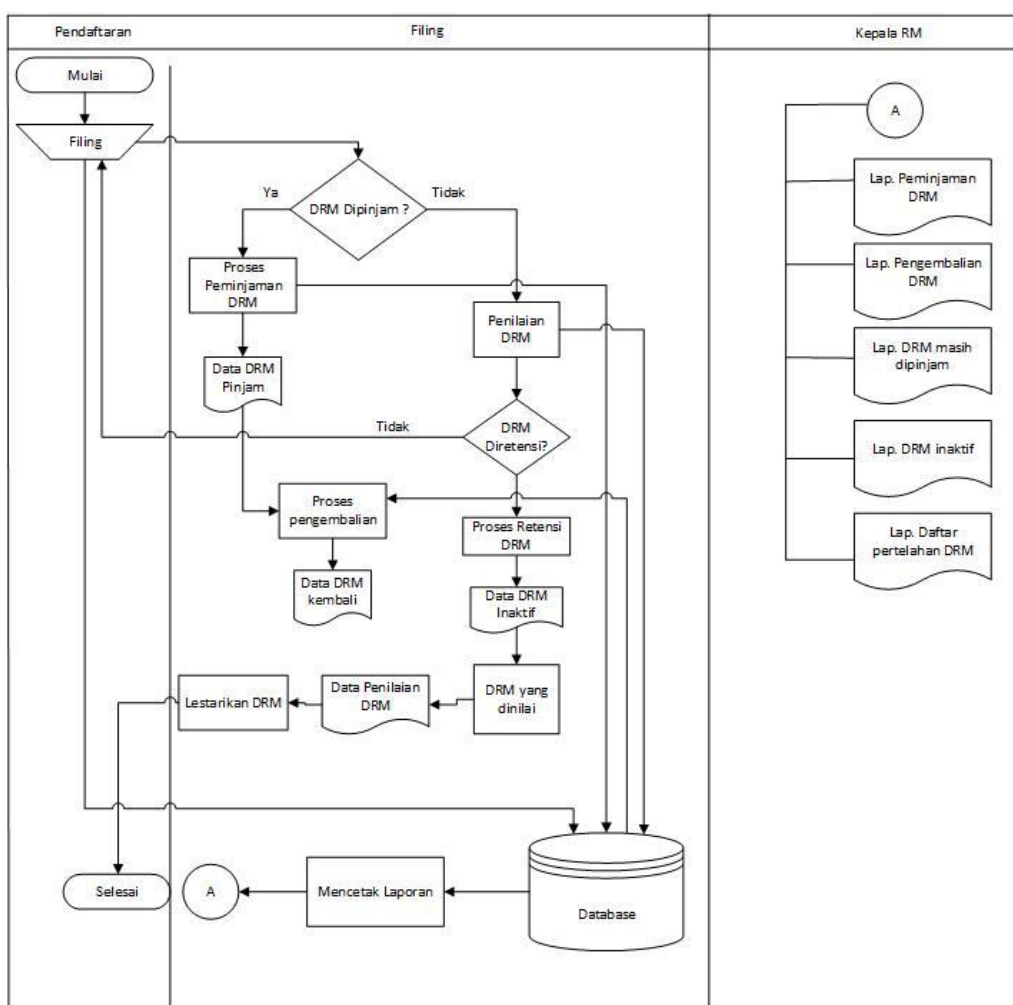


Figure 1. developed system

Database design (database)

Database design (data base) is used as a media for designing the needs of various tables that will be used to store data on the system, the table structure used in this system is built using the xampp application with the following table structure:

1) Medical Record Document Table (tbdrm)

Table 1 drm desain table

No	Nama Field	Type	Width	information
1.	No_rm	Varchar	6	Medical record number
2.	Nama_pas	Varchar	25	Patient name
3.	Alamat	Varchar	20	Gander
4.	Tgl lahir	Date	8	Bird date
5.	Tgl kunjung	Date	8	Visit date
6.	Status	Varchar	20	Drm status
Jumlah			87	

2) Loaning Table (tbpinjam)

Table 2 tbpinjam desain table

No	Nama Field	Type	Width	information
1.	Noreg_pinjam	Varchar	8	Registration number
2.	No_rm	Varchar	6	Medical record number
3.	Tgl_pinjam	Date	8	Loaning date
4.	Kd_pinjam	Varchar	5	Loaning code
5.	Nama_pinjam	Varchar	25	Loaner's name
Jumlah			52	

3) Loaning Table (tbpeminjam)

Table 3 tbpeminjam desain table

No	Field	Type	Width	Information
1.	Kd_pinjasm	Varchart	5	Loaner Id Number
2.	Id_pinjam	Int	11	Loaner Code
3.	Nama_pinjam	Varchar	25	Loaner Name
Jumlah			41	

4) Loaning Table (tbkembali)

Table 4 tbkembali desain table

No	Nama Field	Type	Width	Information
1.	Noreg_kembali	Varchar	8	Return registration number
2.	No_rm	Varchar	6	Medical record number
3.	Tgl_pinjam	Date	8	Loaning date
4.	Kd_pinjam	Varchar	5	Loaning code
5.	Nama_pinjam	Varchar	25	Loaner's name
6.	Tgl_kembali	Date	8	Date of return
Jumlah			20	

5) DRM Assessment Table (tbnilai)

Table 5 tbnilai desain table

No	Nama Field	Type	Width	Keterangan
1.	Noreg_nilai	Varchar	8	Assessment registration number
2.	No_rm	Varchar	6	Medical record number
3.	Ringkasan	Varchar	20	Summary of patients treated
4.	Resume	Varchar	20	Patient medical resume
5.	Lap_op	Varchar	20	Operation report sheet
6.	Lap_kematian	Varchar	20	Death report sheet
7.	id_bayi	Varchar	20	Birth identity sheet
8.	Inform_consent	Varchar	20	Informed consent
10.	Form_lain	Varchar	20	Additional other forms
11.	Ket	Varchar	25	Information
Jumlah			179	

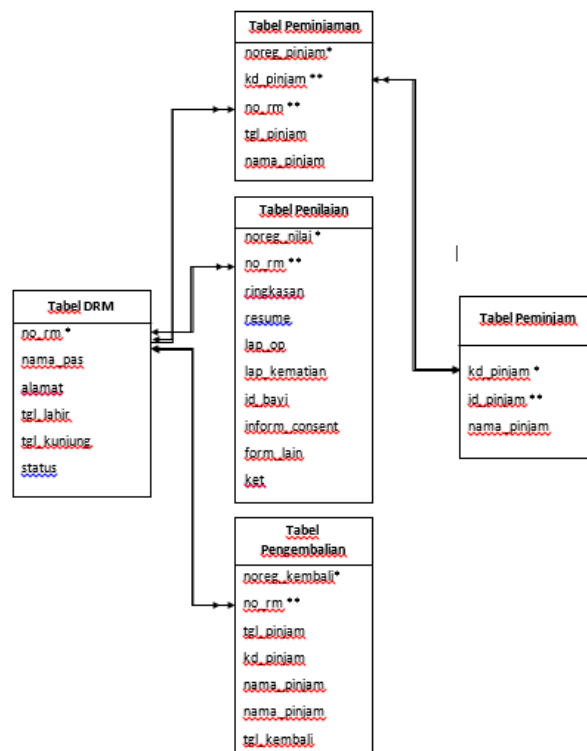


Figure 2. relation database

Interface design (interface)

This software is designed using the PHP language with Macromedia design applications and notepad ++. The software menu interface that is built in outline comprises the following interfaces:



Figure 3. login form

The login form above is used to enter the username and password. If the username and password are valid, the device will accept them and display the main menu as follows:

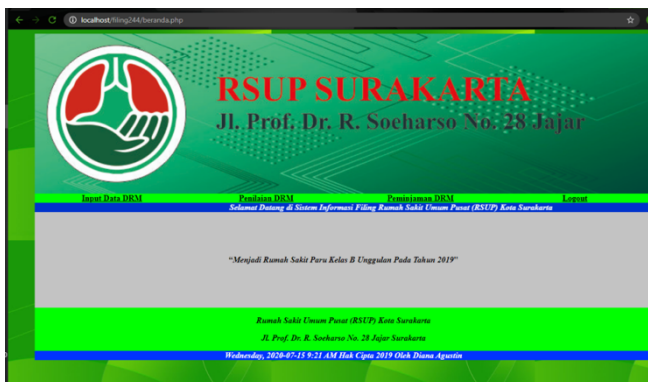


Figure 4. main menu

On the main menu display, there are sub menus, namely data input, DRM assessment, DMR closure and log out. At this stage the system can provide information related to medical record document data, after selecting the medical data input button, a form display will appear as follows:

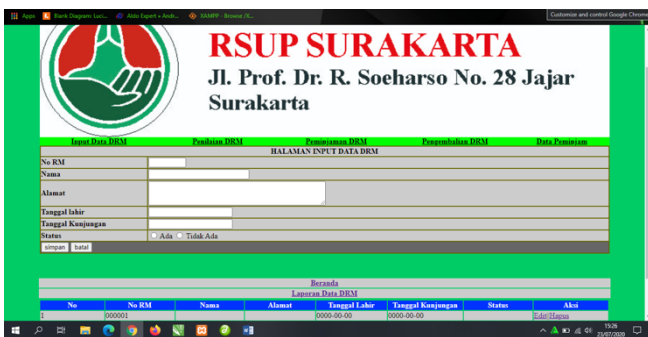


Figure 5. input form

The DRM data input form is used to process medical record document data, including input, save, change and display. Through this form it will process the data to be assessed for validity in the system, by selecting the document assessment button, following the medical record document assessment display:



Figure 7. borrowing form

Fill in the data in the input field; once the data has been entered correctly, click the save button to save the data. The cancel button is used to prevent data from being stored after it has been entered. Click the edit button to change the results. To delete ward data, select the data to be deleted then click the delete button.

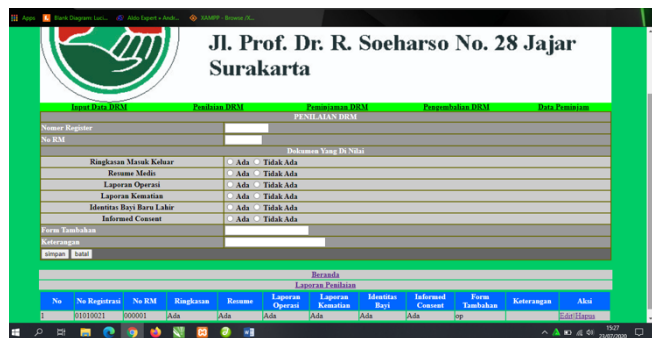


Figure 6. assesment form

To fill in the data, select the data that will be inputted; once the data has been entered correctly, press the save button to save the data. The cancel button is used to cancel the storage of previously entered data. Click the edit button to change the results. To delete a doctor’s data, press the delete button after selecting the data to be deleted.

The sub menu for borrowing medical record documents’ aim is to provide access to borrowing medical record documents; when this button is pressed, the following display appears:

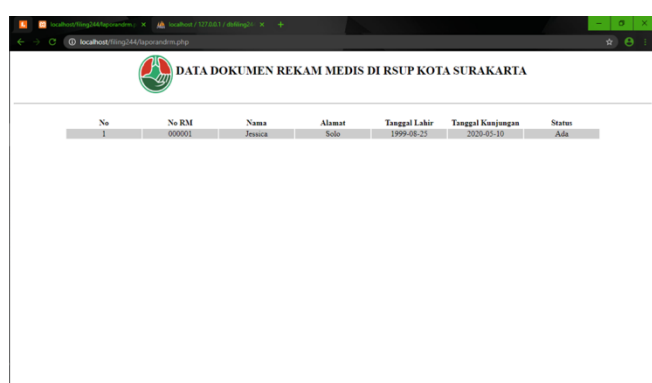


Figure 8. report form

To display the results of data filing processing, select the DRM Data report menu and then click Reports on the DRM input menu. A screen similar to the one below will appear:



Figure 9. assesment report

IV. CONCLUSION

The conclusions that can be conveyed in this study are: 1) the information system is built using the PHP programming language using the MySQL database, 2) The application of information technology in helping the medical record filing section in managing data filing can run effectively. So that the service can perform well.

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