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Design of Medical Record Retention Information System Using Visual Studio 2010 at Datu Beru Takengon Hospital, Central Aceh Regency

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ABSTRACT

This research aims to design an information system for the retention of medical records at Datu Beru Takengon Hospital, Central Aceh Regency. The research method used is descriptive with a qualitative approach. The data collection techniques used are by means of interviews, observations and literature studies that are related to the problems faced. As for the software development method, it uses waterfall and uses visual studio 2010. The informant in this study is medical record staff. From the research conducted, it was found that problems such as information systems that are still manual so that they are not effective for report information, so it is necessary to design a database-based information system. The suggestion to overcome this problem is to design a medical record retention application that is able to process medical record data that is no longer used or inactive. So that it can optimize the time for the implementation of medical record retention.

INTRODUCTION

Currently, in the world of health, information technology cannot be separated. Information technology is developing rapidly in accordance with the times. With the advancement of information technology, access to available information can take place quickly, efficiently and accurately has become the main need for every human being. With the support of existing information technology, manual data processing can be changed computerized, so that the time used is more efficient and can create a more productive work environment. The demand for information services and integrated data processing is very important in every institution, including in health care facilities.

The definition of Information Technology itself is the study or use of electronic equipment, to store, analyze, and distribute information. One of the advances in information technology has penetrated into the health field such as medicine. Advances in the health sector are developing so rapidly, that many findings have been obtained with the help of information technology both in the field of hospital or health center organization, treatment, and research and development of health science itself. The combination of information technology with the activities of people who use the technology, to support operations and management is an information system. In a very broad sense, the term information system is often used to refer to the interaction between people, algorithmic processes, data, and technology. The development of science has improved the standard of living and the ease of human activities in various aspects of life. Likewise in various companies or agencies, both government and private. One of the most felt impacts of technology is in the field of data processing and data storage. With the increasing importance of data processing to bridge and introduce information between application users and information users.

Hospitals are service institutions that provide individual health services in a complete manner, by providing inpatient, outpatient, and emergency services, (Law No. 44 of 2009). Every hospital must make medical records, both outpatient and inpatient medical records, which are useful to protect the legal interests of the patient concerned, the hospital and doctors and other health workers, if in the future something unwanted happens regarding the medical record itself.

At this time, the need to produce an accurate information system, medical records must be managed properly and correctly. Therefore, data processing activities are one of the most important activities for

organizing medical records. This activity is urgently needed by patients, families, hospitals and other related parties such as insurance applications, research, legal interests, outbreak handling and others. Manual data processing has many disadvantages, in addition to taking a long time, accuracy is also less acceptable, because the possibility of errors is quite large. With the support of today's information technology, manual data management work can be replaced by an information system using a computer. In addition to being quick and easy, data management is also more accurate.

According to the Indonesian Minister of Health Regulation No. 269/Menkes/Per/III/2008 concerning Medical Records in article 1, medical records are files that contain records and documents about the patient's identity, examination, treatment, actions and other services that have been provided to patients. In all health services, it is mandatory to hold medical record services, medical records are useful as legal evidence in writing for the actions taken by doctors to their patients, this is to protect hospitals and doctors and other health workers if in the future unwanted things occur that cause the patient's family to sue.

According to the Director General of Yanmed No. HK.00.06.1.5.0.1160 of 1995 Medical records must be kept in accordance with regulations, for health service facilities in hospitals, patients' medical records must be kept for at least five years since the patient last received treatment or returned from treatment in the hospital. After five years, medical records can be destroyed except for discharge summary sheets, medical approvals and files that must be preserved. The retention system is an activity of separating or moving between medical record documents that are still active and medical record documents that are declared inactive in the storage room (filing). Medical record files must be kept in accordance with existing regulations. For health service facilities in hospitals, the patient's medical records must be kept for at least two years since the last patient received treatment or returned from treatment in the hospital. After two years, medical records can be destroyed except for a summary of discharge and approval of medical procedures, (Director General of Yanmed No. HK. 00.03.1.5.0.0.1160).

The destruction of medical records is one of the efforts made by the hospital with the aim of reducing the accumulation of record files in the storage room. Destruction is the activity of destroying archives that have ended their function and that have no use value (Barthos, 2007:45). The implementation of retention at Datu Beru Takengon Hospital, Central Aceh Regency began with the selection of medical record files from active storage shelves and looking at the last date of treatment. The medical record file that has not been treated for 10 years is separated from the medical record file that is still active, the file is moved to the storage shelf of inactive medical records. This is good enough, but not optimal because the medical records are sorted one by one from the storage shelves by officers. Thus this causes the delivery of information to be slow, difficult, ineffective and efficient and takes a long time to sort medical record files that have been inactive.

METHOD

In completing this study, the author uses a qualitative research method with a descriptive approach. The research process begins by compiling the basic assumptions or rules of thinking and then applying them systematically in data collection and processing to provide explanations and arguments. As for obtaining the data needed in this study, the author has carried out several steps or procedures for collection, namely: Interviews, Observations and Literature Studies. Stages of Prototyping Model: Requirements Gathering, Building Prototype, Prototype Evaluation, Coding System, Testing System, System Evaluation and Using System.

RESULTS AND DISCUSSION

Observation Results

Procedures for the Implementation of Medical Record Retention at Datu Beru Takengon Hospital, Central Aceh Regency

A procedure description is a method or procedure that is carried out regularly and repeatedly to describe the flow of work to achieve a certain goal. Based on observations at Datu Beru Takengon Hospital,

Central Aceh Regency, it is known that retention activities still use a manual system. Medical records that are more than 10 years old and no longer active are then sorted and stored in inactive storage.

Active Medical Record Storage Procedure

1. Medical record officer conducts active medical record storage for the last 10 years.
2. Active medical records are arranged based on the order of the Final Digit (Terminal Digit Filling System).
3. Active medical records are stored on the storage rack located in the filing room.

Inactive Medical Record Storage Procedure

a. Medical record officers conduct the selection of inactive medical records every year.
b. Inactive medical records are grouped based on the retention or storage period of inactive medical records.
c. Inactive medical records are stored on the storage rack in the inactive room.

Input Analysis

Input is the beginning of a process in making information. The raw material of information is patient data. The input data from this retention information system is as follows:

Table 1. Medical Record Data Input

Input Name	Medical Record Data
Description	It is a form filled out by an officer.
Function	For recording patient data.
Source	File storage space.
Document Form	Form.
Data Elements	Medical record number, register number, patient name, address, date of treatment, patient status, polyclinic, date of treatment.

Output Analysis

Output analysis contains an overview of the output produced by the analyzed system. Here are the results:

Table 2. Medical Record Data Output

Input Name	Medical Record Data
Description	Data obtained from the patient's medical record file.
Function	To determine the files to be retained.
Source	Medical Record Files.
Document Form	Form.
Data Elements	Medical record number, patient's name, date of last treatment.

Process Analysis

From the information system for the destruction of medical record files that has been running at the medical record institution at Datu Beru Takengon Hospital, Central Aceh Regency, it can be described as follows.

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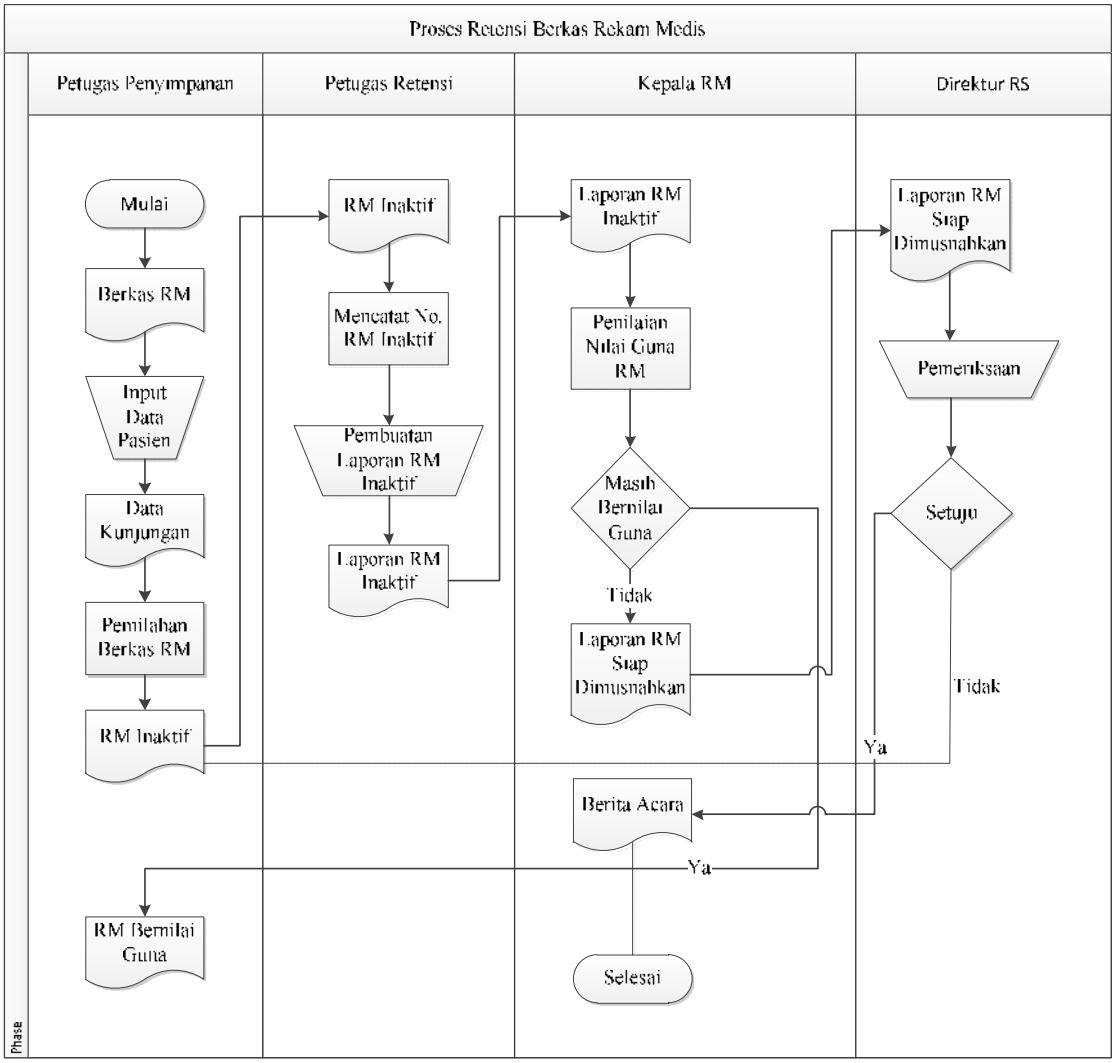

Figure 1. Flowmap of running systems

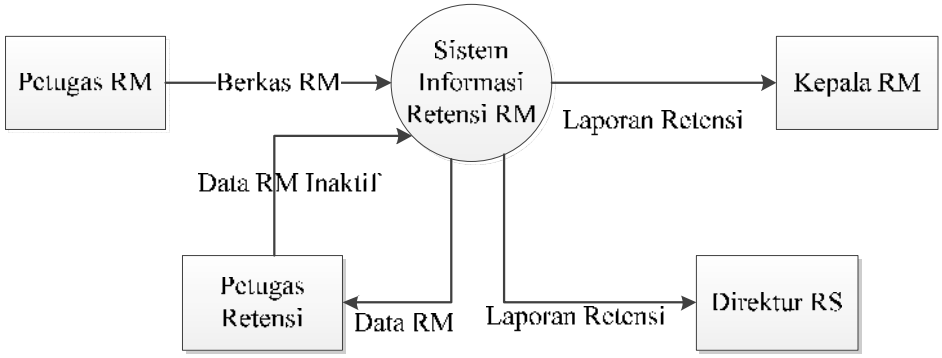

Figure 2. Digram of the context of the running system

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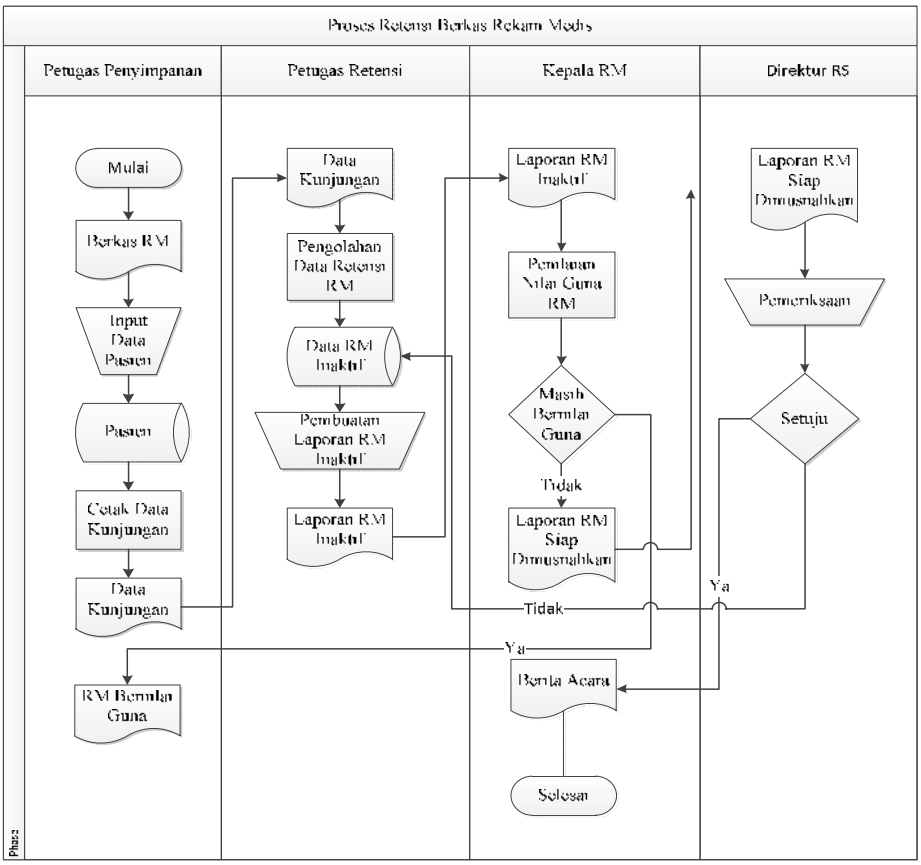

Figure 3. Designed Flowmaps

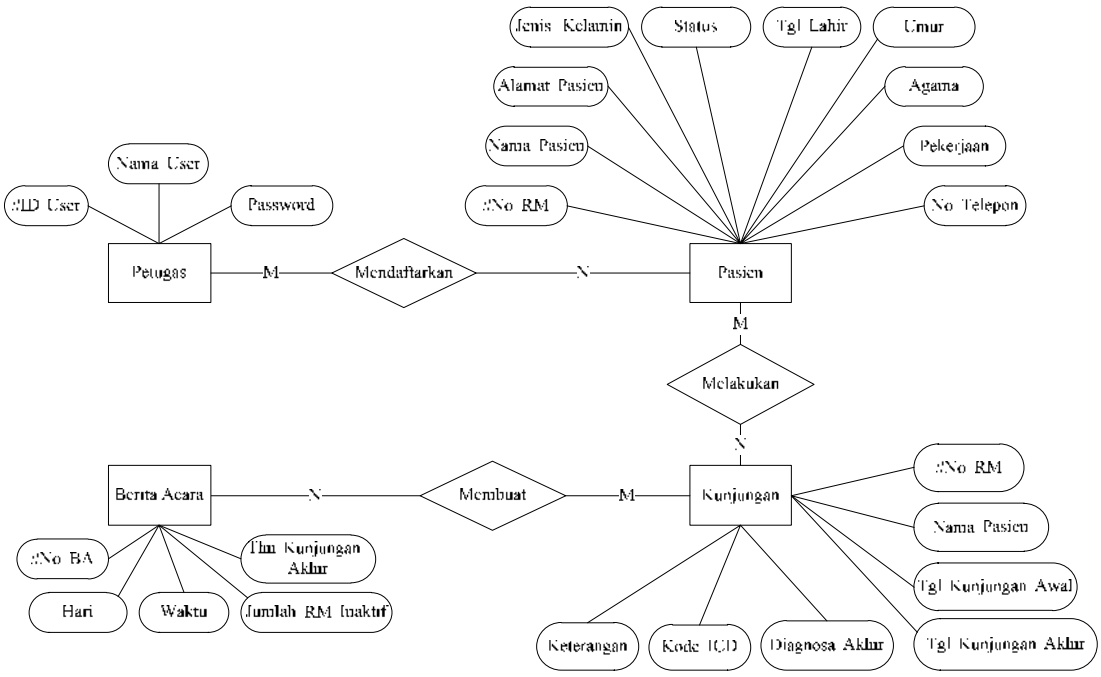

Figure 4. Entity Relationship Diagram Designed

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Table 1. Structure of Officer Table

No	*Field Name*	Data Type	Total	Information
1	#ID_*User*	*Varchar*	10	Contains Officer ID
2	Nama_*User*	*Varchar*	20	Contains the Officer's Name
3	*Password*	*Varchar*	10	Contains *Officer* Password

Table 2. Patient Table Structure

No	*Field Name*	Data Type	Total	Information
1	#No_RM	*Varchar*	6	Contains the patient's RM Number
2	Nama_Pasien	*Varchar*	20	Contains the patient's name
3	Alamat	*Varchar*	50	Contains the patient's address
4	Jenis_Kelamin	*Varchar*	10	Contains the patient's gender
5	Tgl_Lahir	*Varchar*	8	Contains the patient's date of birth
6	Umur	*Int*		Contains the patient's age
7	Agama	*Varchar*	20	Contains the patient's religion
8	Pekerjaan	*Varchar*	15	Contains patient work
9	No_Telepon	*Varchar*	15	Contains the patient's phone number
10	Status	*Varchar*	20	Contains patient status

Table 3. Visit Data Structure

No	*Field Name*	Data Type	Total	Information
1	#No_RM	*Varchar*	6	Contains the patient's RM number
2	Nama_Pasien	*Varchar*	20	Contains the patient's name
3	Tgl_Kunjungan_Awal	*Date time*	8	Contains the beginning of the patient's visit
4	Tgl_Kunjungan_Akhir	*Date time*	8	Contains the patient's last visit
5	Diagnosa_Akhir	*Varchar*	50	Contains the patient's last diagnosis
6	Kode_ICD	*Varchar*	10	Contains Disease code
7	Keterangan	*Varchar*	20	Contains the patient's religion

Table 4. Structure of the Minutes Table

No	*Field Name*	Data Type	Total	Information
1	#No_BA	*Varchar*	15	Contains the minutes number
2	Hari	*Varchar*	10	Contains the implementation day
3	Waktu	*Date time*	8	Contains the implementation time
4	Jumlah_RM_Inaktif	*Varchar*	15	Contains the number of inactive medical records
5	Tahun_Kunjungan_Akhir	*Varchar*	15	Contains the year of the last visit

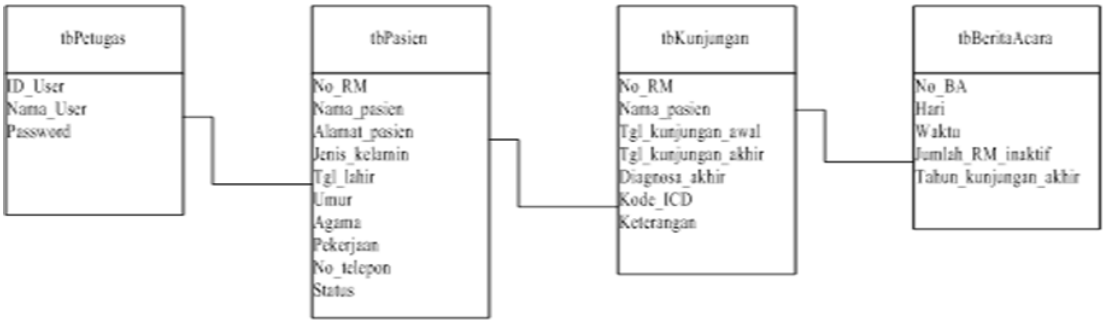

Figure 5. Table Relationship Schema

The input design on this retention information system is in the form of input from data sources contained in the hospital.

Table 5. Input Plan

Input Name	Patient Data
Function	As the main data in system processing
Source	Patient
Media	Computer
Frequency	Every day
Format	In the form of a computer application

The output design of this information system is an inactive medical record report and retention minutes designed to determine the morbidity data contained in the hospital. This report is submitted to the Area Manager.

Table 6. Release Plan

Output Name	Retention Reports
Function	Producing inactive medical record reports and minutes at Datu Beru Takengon Hospital, Central Aceh Regency
Source	Medical Records Officer
Media	Computer
Frequency	2 years
Format	2 exp
Function	In the form of paper that already contains inactive medical record data that has been *printed out* along with the minutes of retention and the data is also stored in the *database*.

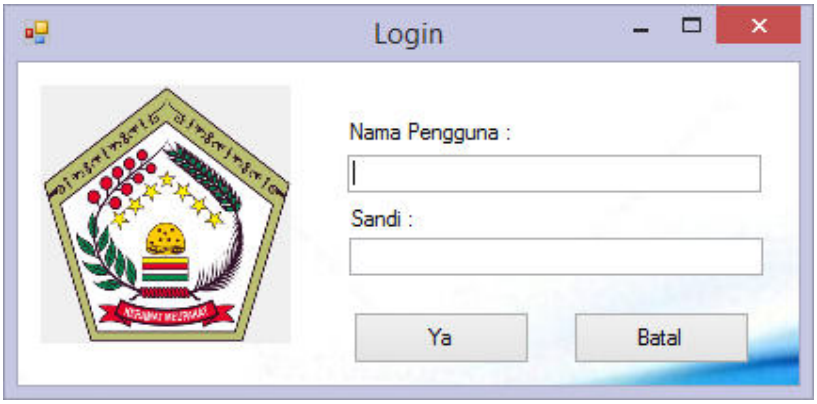

Figure 6. Login Form Display

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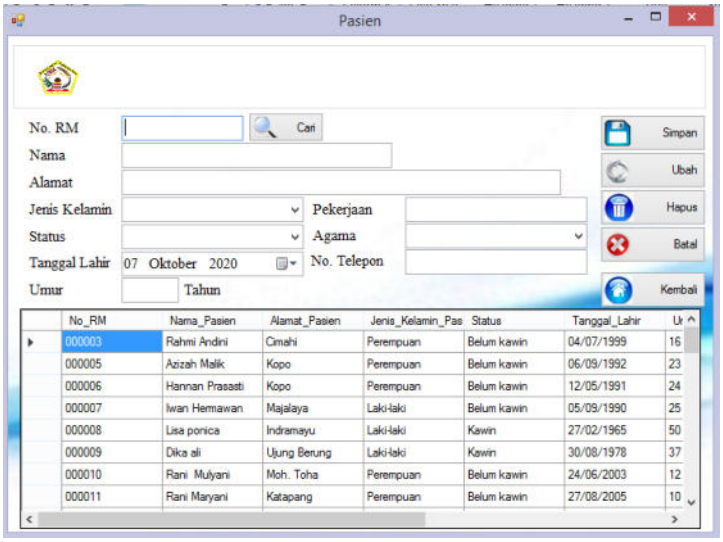

Figure 7. Patient Data Form Display Design

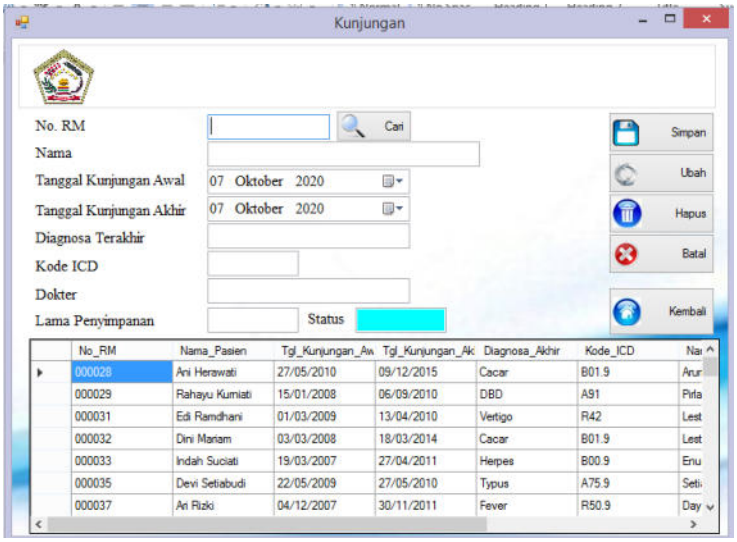

Figure 8. Visit Data Form Display

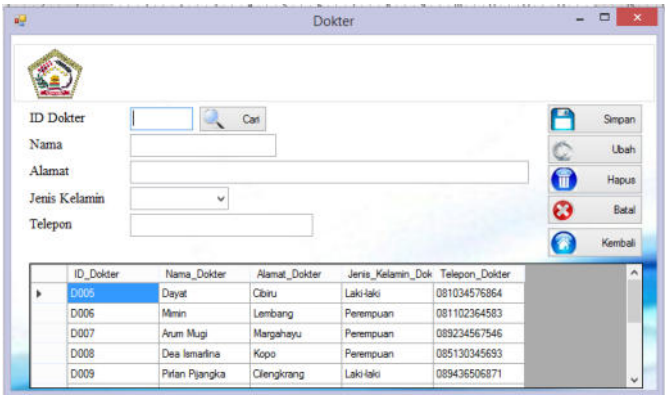

Figure 9. Doctor Data Form Display Design

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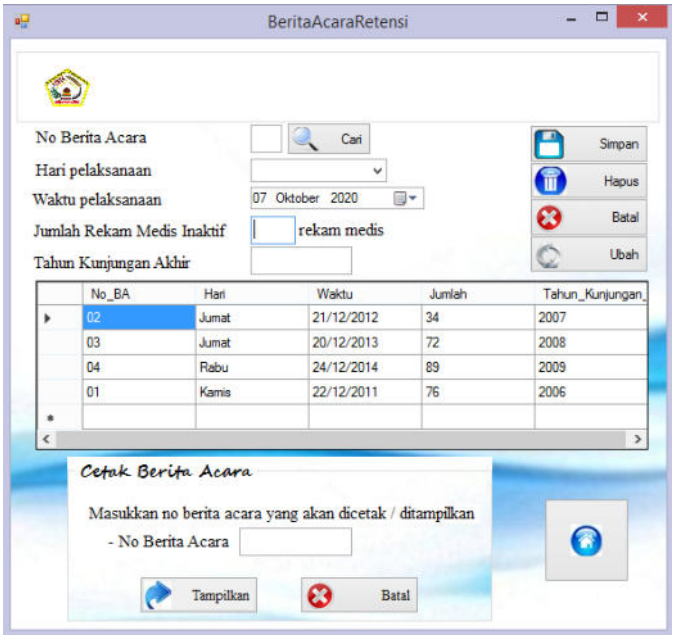
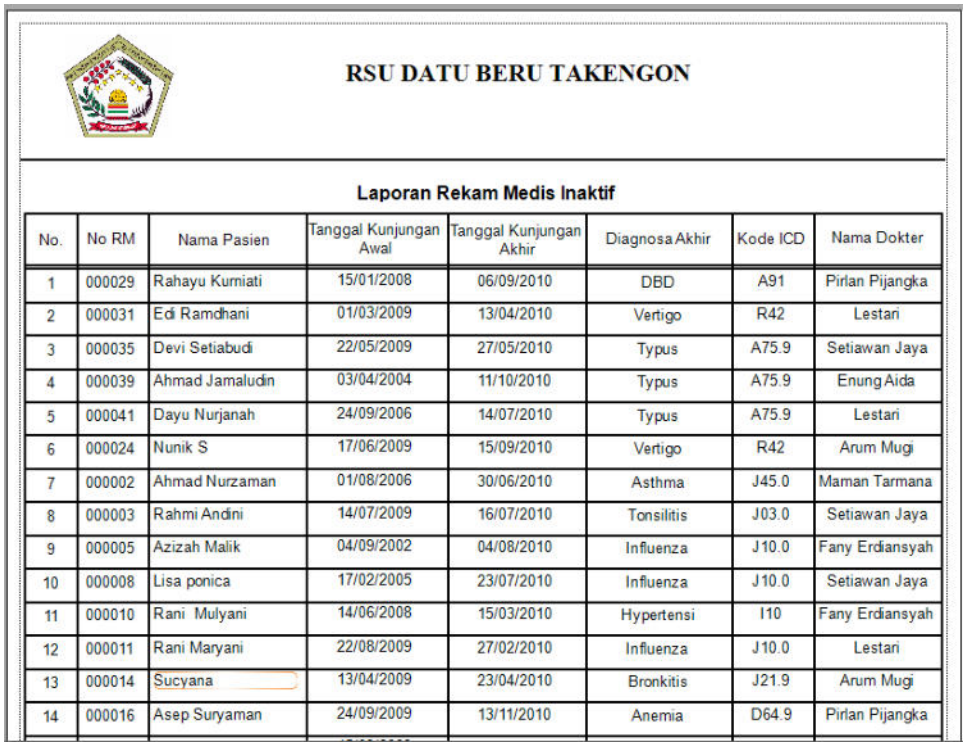


Figure 10. Display of the Retention Minutes Form



RSU DATU BERU TAKENGON

Laporan Rekam Medis Inaktif

No.	No RM	Nama Pasien	Tanggal Kunjungan Awal	Tanggal Kunjungan Akhir	Diagnosa Akhir	Kode ICD	Nama Dokter
1	000029	Rahayu Kurniati	15/01/2008	06/09/2010	DBD	A91	Pirlan Pijangka
2	000031	Edi Ramdhani	01/03/2009	13/04/2010	Vertigo	R42	Lestari
3	000035	Devi Setiabudi	22/05/2009	27/05/2010	Typus	A75.9	Setiawan Jaya
4	000039	Ahmad Jamaludin	03/04/2004	11/10/2010	Typus	A75.9	Enung Aida
5	000041	Dayu Nurjanah	24/09/2006	14/07/2010	Typus	A75.9	Lestari
6	000024	Nunik S	17/06/2009	15/09/2010	Vertigo	R42	Arum Mugi
7	000002	Ahmad Nurzaman	01/08/2006	30/06/2010	Asthma	J45.0	Maman Tarmana
8	000003	Rahmi Andini	14/07/2009	16/07/2010	Tonsilitis	J03.0	Setiawan Jaya
9	000005	Azizah Malik	04/09/2002	04/08/2010	Influenza	J10.0	Fany Erdiansyah
10	000008	Lisa ponica	17/02/2005	23/07/2010	Influenza	J10.0	Setiawan Jaya
11	000010	Rani Mulyani	14/06/2008	15/03/2010	Hypertensi	I10	Fany Erdiansyah
12	000011	Rani Maryani	22/08/2009	27/02/2010	Influenza	J10.0	Lestari
13	000014	Sucyana	13/04/2009	23/04/2010	Bronkitis	J21.9	Arum Mugi
14	000016	Asep Suryaman	24/09/2009	13/11/2010	Anemia	D64.9	Pirlan Pijangka

Figure 11. Inactive Medical Record Report Display

Testing the retention information system of the medical rekem uses test data in the form of data processing from users that has been made to support the creation of retention reports. The following is the test plan of the information system that has been built.

Table 7. Exam Plan

No	Tester Items	Description	Types of Testing
1	*Login*	Log *in* to the system	*Black Box*
2	User Form	Processing system user data	*Black Box*
3	Patient Form	Processing patient data	*Black Box*
4	Visit Data Form	Processing visit data	*Black Box*
5	Retention Report Form	Processing patient visit data	*Black Box*
6	Minutes Form	Processing event minutes data	*Black Box*

In this section, it is explained about the test cases and the results of the test, so that the test results can be more described.

Table 8. Test Results

No	Module Name	Testing	Purpose	Information
1	*Login*	*Login*	*User Login*	Succeed
		Logout	Back to *User Login*	Succeed
		Exit	Keluar dari Sistem	Succeed
2	*Input* Data *User*	Save	Storing *user data* in the *user database*	Succeed
		Delete	Deleting data in the *user database*	Succeed
		Refresh	Cleaning up data in *the user column*	Succeed
		Close	Exit the *user* data *input form*	Succeed
3	*Patient Data* Input	Save	Storing patient data in patient *databases*	Succeed
		Edit	Change patient data in patient *database*	Succeed
		Delete	Deleting data in a *patient* database	Succeed
		Refresh	Cleaning data in patient columns	Succeed
		Close	Log out of *the patient data* input form	Succeed
4	Data Input Minutes	Save	Storing patient data in the *event minutes* database	Succeed
		Edit	Change the minutes data in the *minutes* database	Succeed
		Delete	Delete data on the *event minutes* database	Succeed
		Refresh	Cleaning the data in the minutes column	Succeed
		Close	Exit the *minutes data* input form	Succeed
5	Visit Data Input	Save	Storing visit data in the *visit* database	Succeed
		Edit	Changing the visit data in the *visit* database	Succeed
		Delete	Delete data on the *visit* database	Succeed
		Refresh	Cleaning the data in the visit column	Succeed
		Close	Exit the *visit data* input form	Succeed
6	Input Data Retention	Save	Storing retention data in *a retention* database	Succeed
		Edit	Change retention data in *a retention* database	Succeed
		Delete	Delete data on a *retention* database	Succeed
		Refresh	Clean up data in retention columns	Succeed
		Close	Exit *the retention data* input form	Succeed
7	Report	Cheque	View report data	Succeed

CONCLUSION

The process of selecting inactive medical records is carried out by removing medical records first from one shelf, then the active medical records are sorted by looking at them one by one based on the date of their last visit to the hospital and then separated and stored in different places. This makes the process of searching and sorting inactive medical records quite difficult. So that the election process becomes longer and the possibility of human error is very large. The obstacles found during this study include, the lack of medical record officers during the retention process so that the time needed in the retention process becomes very long. The limitation of inactive medical record storage facilities, so that inactive medical records are stacked,

affects the support of health services and the efficiency of medical record storage. There is no routine schedule of retention activities for medical records, as a result of which there is often an overload in the medical record storage room, making it difficult to find medical records if needed. Some of the problem-solving efforts that the author suggests are: It is better to optimize the computerized medical record retention information system so that the implementation of the selection of inactive medical records becomes easier. The addition of medical record officers at the time of medical record retention. Addition of active and inactive medical record storage racks. A schedule for the retention of medical records is made periodically.

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