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Visual Studio 2010-Based Medical Records Completeness Information System Design

Henawati Priatna[1], Adha Nur Alawiya Makmun[2], Yuda Syahidin[3], Meira Hidayati[4]
[1,2,3,4]Informatics Medical Record of Polytechnic Piksi Ganesha, Bandung
[1,2,3,4]Gatot Subroto Street No. 301 Bandung, Bandung City, West Java, Indonesia
E-Mail: hepriatna@piksi.ac.id[1], anamakmun@piksi.ac.id[2], yuda.syahidin@piksi.ac.id[3], meira.hidayati@piksi.ac.id[4]

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Abstract—This study aims to find out the design of information analysis system completeness of filling medical records sheets by using Microsoft Visual Studio.NET 2010 Hospital X. Research method used is qualitative method with descriptive approach, while the method of developing data collection techniques used is waterfall method. The results of the research conducted found problems that are standard operating procedures related to filling medical records that have been established but in the implementation has not gone well, The management of data analysis completeness of filling medical records sheet is still using manual, There are still unfilled and incomplete medical records. The advice given is to build an effective and integrated information system, Implement a complete information system filling medical records sheets, Give advice to doctors or health workers to always complete medical records. The research results conclude that the standard of operational procedures (SOP) related to the completeness of filling medical records already exists but the implementation has not gone well. Analysis of medical records is still done manually, as well as in the creation of a report recapitulating the completeness of medical records. By implementing a completeness analysis system following the SOP that has been established by the hospital and building the design of a computerized information system to facilitate the analysis of the completeness of medical records filling sheets in Hospital X.

Keywords: Design, Information system, the completeness medical record, Microsoft visual studio 2010.

I. INTRODUCTION

One of the factors of National Development is the development in the field of health which is human rights and one of the welfare factors that must be realized by the wishes of the Indonesian nation as referred to in Pancasila and the Constitution of the Republic of Indonesia (Health Law No. 36, 2009) [1].

Based on The Law of the Republic of Indonesia Number 44 of 2009 concerning Hospitals is a health service agency. who manage the health services of the individual in a plenary manner that prepares. inpatient, outpatient, and emergency services. Given the importance of the hospital and its role for the community, the quality, quality, and smoothness of the hospital must be improved to achieve orderly administration and comfort for users of health care services. One of them is to support the event, then held medical records.

Each medical record sheet must be filled in and always checked for completeness in filling out the medical records file. To avoid incomplete filling the medical records, hospitals must analyze the completeness of medical records, so that medical records become more accurate, clear, precise, and can be a source of information for the continuity of patient care. In addition, bias-related health workers are more responsible for filling out medical records and do not extend time in completing the filling of medical record files.

There are several completeness analyses to obtain optimal medical record quality results, including Quantitative Analysis is a review shown for medical records sheets, medical personnel, and other medical support according to the established method [3]. But there is a method that develops Qualitative Analysis focusing on integrated analysis is an analysis that not only focuses on the analysis of patient data and the completeness of various medical record sheets but must unite its activities together activities that affect the legal and managerial sections that can later be integrated by default Service.

In this study, the authors formulated the problem of how to design a complete analysis program for the filling of medical records sheets using Microsoft Visual Studio.Net 2010 in Hospital X. With the purpose of research as follows: To know the design of the completeness check system

of filling medical records sheets in Hospital X., to know the procedure in the examination of the completeness of filling medical records sheets in Hospital X, to know the problems that arise in the examination of the completeness of filling medical records sheets in Hospital X.

The benefit of this research is for reference to increase knowledge and insight about the examination of medical records completeness in assessing the quality of medical records in Hospital X and to be input for hospitals that can support the quality of medical record services, especially in the activities of checking the completeness of filling medical records sheets in Hospital X and can help overcome obstacles in managing data with the design of completeness information system filling medical records sheets.

II. FOUNDATION OF THEORY

A. *Medical records*

Medical records are archives containing descriptions of both recorded and unrecorded about identity, anamnesis, physical examinations, laboratories, diagnoses with all services and medical measures provided to patients, and treatment either inpatient, outpatient or that provide health services directly to patients (Ministry of Health RI, 2006).

Medical records aren't just record-keeping activities. but medical records are an organization that starts from the data collection as long as the patient obtains medical services, followed by the completion of medical records that include storage activities and expenditure of medical records from the storage for request/borrowing if from the patient and for other needs (Ministry of Health RI, 2006).

In health care facilities, a doctor or health officer records and records various information obtained from patients during hospital treatment or other health care agencies written in a file known as the status of the patient, health records, and medical records.

According to PERMENKES RI No. 269/MENKES/PER/III/2008 the requirement on medical records has an accurate completeness value, precisely in medical records, on time in the data collection of medical records must be thorough and after the patient returns home must be returned to the medical record section on time per the existing regulations.

B. *Visual Studio 2010 Applications*

The design is performed by using Microsoft Visual Studio 2010 on. is a type of programming language. The explanation of programming language itself is an instruction understood by the computer to carry out certain work (Wiliani, Ninuk Zambi). Visual Studio 2010 makes it one of those programming languages that are fairly easy to learn but has many advantages.

Information is a supporting factor in running an organization. The development of information needs improvement by the expectations of the cosmonauts. The progress of the information system is growing more and more days until there needs to be a system that can support the process of analyzing the completeness of medical records files to facilitate officers in processing medical records files.

C. *Database (Microsoft Access)*

The database is in design using Microsoft Access. Microsoft Access is one of the most... Microsoft Office that can be used in managerial operations is a kind of inventory database worker in trading activities... or some kind of relational computer database application program used to design, create, and process various types of data with a large capacity.

III. RESEARCH METHOD

Device development using the waterfall method. The waterfall method of waterfall model is also often called a linear sequential model or classic life flow is the simplest SDLC model and suitable for software development along with unchanging specifications.

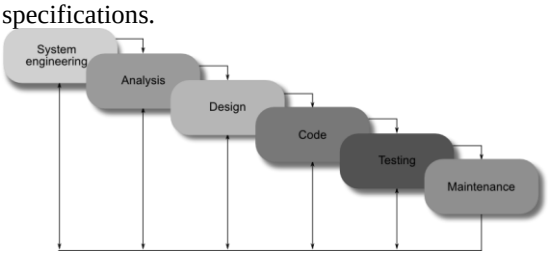

Figure 1. Waterfall Method

Software development methods according to (Bolung & Tampangela, 2017) waterfall cycle stage in Figure 1 namely:

1) System Analysis and Engineering
   This modeling starts by collecting the needs for all system elements to be presented. Analyzing how the medical records completeness information system works in Hospital X such as inputs, processes, outputs.
2) Qualification Analysis
   Collection of analysis of software from the hospital to find out the functions needed so that it is useful for the performance of programs that can be used by hospitals.
3) Design
   This design process turns the need into a characteristic form before coding begins writing. This design must be properly documented and be part of the composition of the software.

4) Coding
Implements design to a form that can be read by the machine using a programming language.
5) Testers
After coding is finished testing can be done. This test uses a black box method that focuses only on the function without an internal understanding of the program.
6) Maintenance
This stage is expected to correct new software defects, as well as update performance as needed, and always back up data periodically.

This type of research uses qualitative research methods with a descriptive approach. Qualitative research methods are research used to investigate, discover, disseminate, and explain quality or the privilege of influence can not be described or explained through a quantitative approach (Saryono, 2010). Furthermore, direct observations (observations) are made in the hospital to find out how to fill out medical records at Hospital X.

IV. DISCUSSION

A. System Design

The system built describes the design of the system used in Hospital X because previously Hospital X had not used the system. The design of this process is an overview of the system designed to facilitate the analysis of the completeness of filling medical records of computerized patients so that it is easier to use, integrated, maintain the quality of medical records will not take a long time to manage the completeness of data filling special medical records and in the creation of reports are expected to be faster, structured and more paperless.

a. Flow map

The following flow map contains the design of a completeness information system for filling medical records sheets which is an overview of the movement in the process flow of medical records completeness and describes the steps that unite each method using arrows.

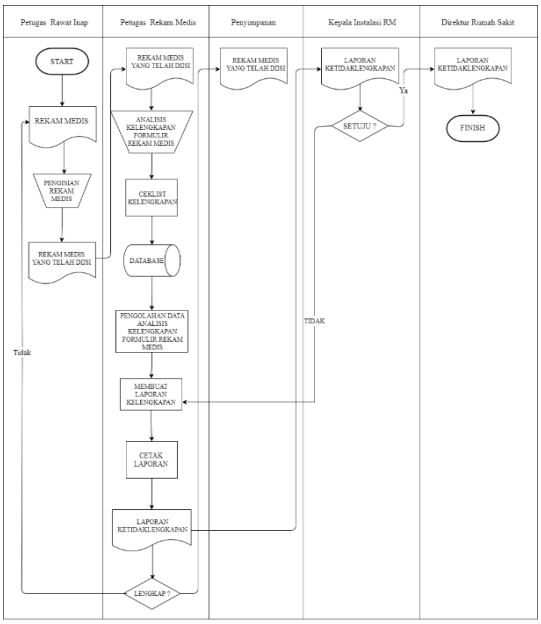

Figure 2. Flow map Medical Records Completeness Flow

b. Context Diagram

Establish an analytical structure that describes the system in general. The information system created will generate information following the purposes for which information is needed.

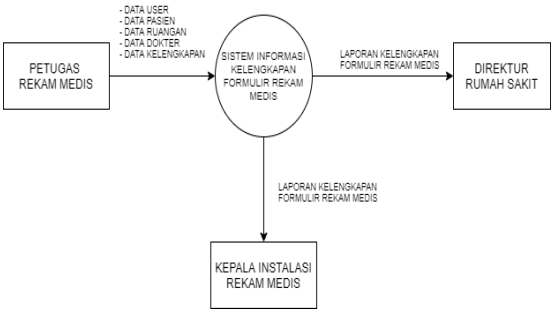

Figure 3. Context Diagram

c. Data Flow Diagram (DFD)

A Data Flow Diagram (DFD) is an overview of a system's flow. By using Data Flow Diagram, it can describe the design of the structure making it easier to analyze.

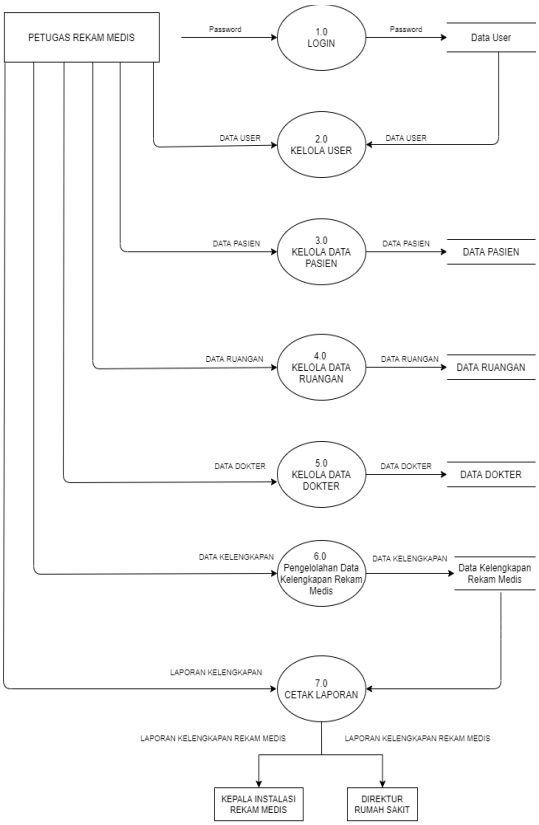

Figure 4. Data Flow Diagram Level 0

B. Entity Relationship Diagram (ERD)

Entity Relationship Diagram (ERD) is the earliest format in database design with an overview of the relationship between entities.

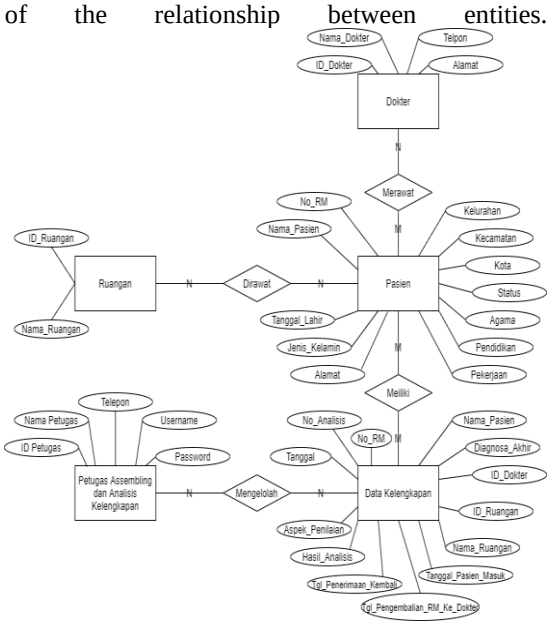

Figure 5. Entity Relationship Diagram

C. Implementation of Information Systems

Implementation is the stages or methods performed in working on the design of an approved system, to check then use the program that has been created. In the implementation or implementation of this new system using the programming language Microsoft Visual Studio.Net 2010 with the database used is Microsoft Access 2010 applied to the computer used for the implementation stage of the system.

1. Login Form

The login form is tasked with entering the username and password before accessing the main menu of the medical records completeness information system for the recorded officer. Login form display :

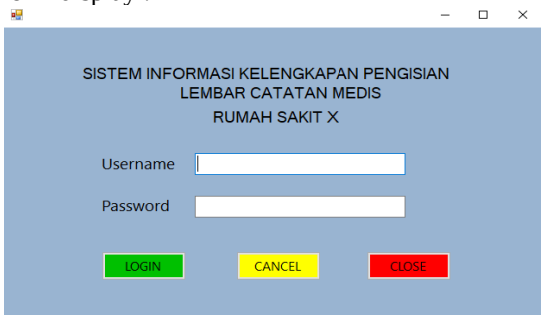

Figure 6. Form Login

2. Main Menu

The Main Menu page displays menus that can be accessed by the officer according to the user's access. Main Menu View :

Figure 7. Main Menu

3. Patient Form

The patient form aims to include patient data for the recording and management of patient data stored in the database and will automatically appear on the data grid view. Patient Form Display :

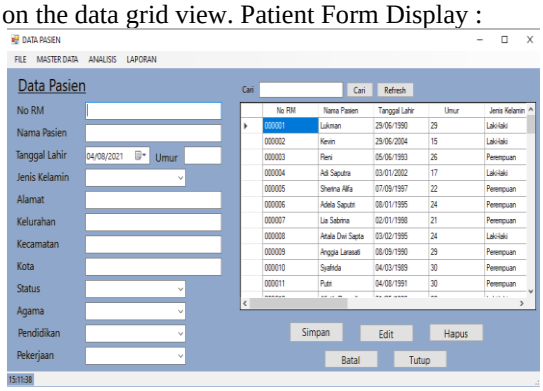

Figure 8. Patient Form

4. Room Form

This Room form displays the room data that has already been created in the database and will be displayed in the data grid view. Room Form View:

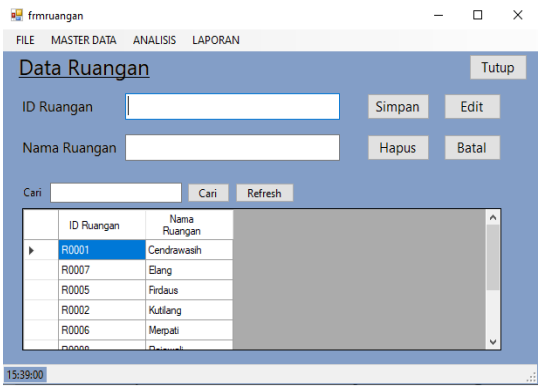

Figure 9. Room Form

4. Doctor Form

This Doctor Form page for doctor data has been created in the database and will be displayed in the data grid view. Doctor Form View:

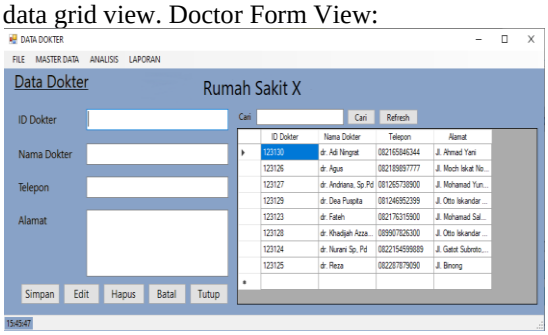

Figure 10. Doctor Form

4. Completeness Form

This Completeness Form aims to include patient data and complete medical records that can be stored in the database. Completeness Form Display :

Figure 11. Completeness Form

6. Report Results View

The Report Results page serves to surface related screeching reports per date, per doctor, per room, and percentage. Completeness Report View:

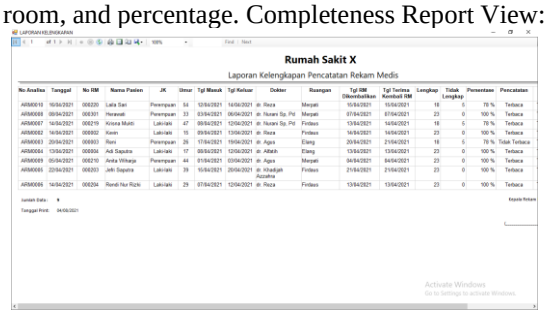

Figure 12. Report Results View

7. System Testing

System checking is the most important thing that aims to detect errors or flaws in the software tested. The method of checking is black box-checking. The software engineering testing report the completeness of the medical records filling sheet as follows:

Table 1. System Testing

No	Process Design	Expected results	result	information
1	Fill out the login form	Can go to the main menu of klpcm information system	appropriate	OK
2	Fill out the doctor form	Can add save and edit doctor form how to click the add button, save, and edit	appropriate	OK
3	Fill out the room form	Can add save and edit patient forms how to click the add, save, and edit buttons.	appropriate	OK
4	Fill out the patient form	Can add save and edit patient forms how to click the add, save, and edit buttons.	appropriate	OK
5	Fill out the completeness form	Can add save and edit completeness form by clicking the add button, save and edit.	appropriate	OK
6	Testing the Completeness Report Output	Can surface full, incomplete, monthly, per doctor, and per room reports	appropriate	OK

From checking using black-box testing (table 1), the results of the checks obtained, all successful, by the expected results include login form, doctor form, room form, patient form, completeness form, completeness report.

V. CONCLUSION

From the results of the study, it was obtained that standard operational procedures (SOP) related to the completeness of filling medical records already exist but the implementation has not gone well. Analysis of medical records is still done manually, as well as in the creation of a report recapitulating the completeness of medical records. The lack of a computerized system so slows down the process of analyzing the completeness of medical records. The analysis process is still done manually by filling out the form so that it is considered less effective because the media is easily damaged or lost and does not save paper (paperless). There are still medical records that are not filled and incomplete, there is easy advice to remind and medical records officers always remind doctors and other medical personnel to pay attention to the filling of medical records. Implementing a completeness analysis system following the SOP that has been established by the hospital and building the design of a computerized information system to facilitate the analysis of the completeness of medical records filling sheets in Hospital X. Implementing a completeness analysis system following the SOP that has been established by the hospital and building the design of a computerized information system to facilitate the analysis of the completeness of medical records filling sheets in Hospital X.

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