OUTSTANDING PATIENT SERVICE WITH WEB-BASED INFORMATION SYSTEM

Agung Suryadi[1]*, Syahril Anuar Idris[2], Rika Wulandari[1]
[1]Medical records and health information, Universitas Duta Bangsa Surakarta, Jl. K.H Samanhudi No.93, Sondakan, Kec. Laweyan, Kota Surakarta, Jawa Tengah 57147, Indonesia
[2]School of Nursing, Universiti Teknikal Malaysia Melaka, Jalan Hang Tuah Jaya, 76100 Durian Tunggal, Melaka, Malaysia
*agung_suraydi@udb.ac.id

ABSTRACT

Information technology in the health sector is very important, one of which is in health clinics that can support data and information services that are more efficient, accurate and safe. Clinics are providers of basic and specialist medical services in the treatment of early-stage diseases. Based on previous research surveys, an outpatient clinic information system has been built using the Microsoft Visual Studio 2008 programming language which has the disadvantage of only supporting the Windows operating system and is vulnerable to viruses and there is no diagnostic coding feature on the system. Efforts to overcome these shortcomings are by building a Web-Based Outpatient Clinic Information System. The type of research used is descriptive research with observation data collection methods and literature study using a cross-sectional approach, and secondary data sources. The research variables consisted of outpatient procedure flow, patient data, doctor data, polyclinic data, examination data, action data, diagnostic data, drug data, registration data, officer data, and outpatient information systems. The system development method used is the System Development Life Cycle (SDLC). The Web-Based Outpatient Clinic Information System is obtained from the patient data input process, doctor data input, polyclinic data input, action data input, diagnosis data input, drug data input, examination data input, registration data input, officer data input then processed by the registration process and the examination process to produce output in the form of patient data reports, doctor data reports, polyclinic data reports, officer data reports, diagnostic data reports, action data reports, drug data reports, registration data reports and examination data reports. The system is built using the PHP programming language with a MySQL database. The application of a web-based outpatient information system can simplify and speed up data processing and services to patients and the system is easy to develop.

Keywords: clinic; information system; outpatient; web

INTRODUCTION

With the development of information technology, many developers are developing information systems in the health sector in health care facilities. Information systems in health care facilities are designed to support data and information service activities that are more efficient, fast, accurate, and safe which can facilitate a health service facility to provide appropriate services according to the patient's condition. One of the health service facilities in Indonesia is the Clinic. Based on the Regulation of the Minister of Health of the Republic of Indonesia Number 9 of 2014 Clinics are providers of basic and specialist medical services in the treatment of early-stage diseases. In providing its services, the clinic is obliged to maintain medical records as a form of documentation.

According to medical records, medical records are files containing notes and documents regarding patient identity, examination, treatment, action, and other services that have been provided to patients. One of the facilities used to support the implementation of medical records is registration of outpatients, which is a unit whose activities are to accept registration of new patients and old patients who will undergo outpatient examinations. Based on the preliminary survey conducted in the study, the results showed that the clinic had problems with services, including the length of the

process of searching for patient data and medical record documents, medical record documents were not stored neatly, cost calculation errors, difficulty managing drug availability, making income reports slightly hampered. From the various problems above, it is necessary to have a web-based system that is integrated in patient care. The web-based system is considered more appropriate to be applied because this system has complete features from the user's side and easy access. From the description of the previous background the author took the research with the title Outstanding Patient Service With Web-Based Information System

METHOD

The research method used is descriptive by means of a survey that is used to make an assessment of a condition and implementation of a program in the present, then the results are used to develop a plan for improving the program. The research instrument used was observation and interviews with a cross sectional approach. This application requires tables that include patient tables, doctor tables, polyclinic tables, examination tables, action tables, diagnosis tables, drug tables, registration tables, staff tables. The stages in this research are: Collecting is collecting data from the object of research including related data and required by the system. Editing is correcting the data that has been collected before being processed. Presentation of data is data that has been inputted and processed using a programming language PHP and will be stored in a database, namely MySQL which will then be produce output in the form of reports needed by the clinic.

The system development method uses SDLC which includes the following stages: Project Identification and Selection: At this stage the researchers conducted a preliminary survey to determine the flow and procedures of outpatients and identify problems with existing information systems. Project Initiation and Planning: At this stage, potential information systems projects are described and arguments for continuing the project are presented. Based on the results of the preliminary survey, the researchers planned to build a web-based outpatient clinic information system. Analysis Stage: The analysis stage is the stage where the current system is studied and a replacement system is proposed. At this stage, researchers study the old system by collecting information and defining system requirements. Design: The design stage is the stage of changing the needs that are still in the form of a concept into a real system. At this stage the researchers designed the system specifications to be built including designing and integrating tables, designing user interfaces, designing interface systems, designing and creating a web-based outpatient clinic information system. Implementation: At this implementation stage, it is to ensure that the program code created is free from syntax and logical errors and must be able to solve problems with clients and the new system must be easy to run and understand by users. After the program passes the test, the software and hardware will be installed. Maintenance: The last step is system maintenance where the system is systematically improved and improved. The result of this stage is a new version of the software that has been created.

RESULTS AND DISCUSSION

The system built is a development of the system that is currently running. The difference from the system that is currently running with the system developed lies in the data processing process using information technology, namely by utilizing PHP storage programming and as data storage media.

1. The system built
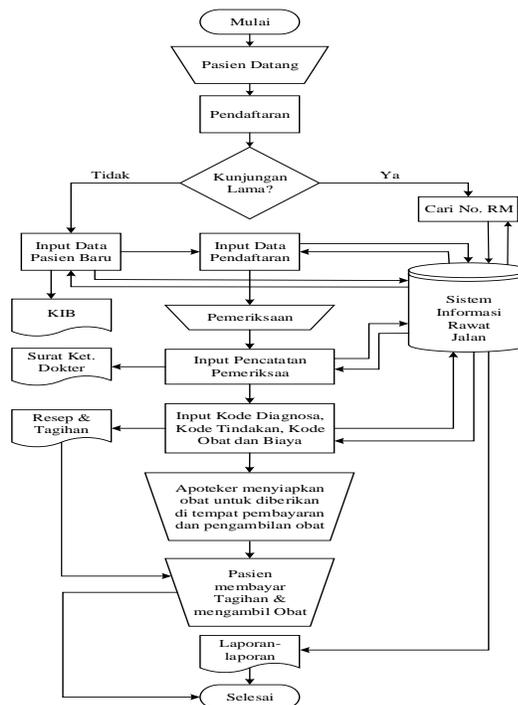
From Figure above, it can be conveyed that the data processing in the system that has been built has been integrated with storage media that can store all data in the system, besides that, to produce the information needed in the system, it can be obtained from a previously stored database. By using a centrally stored database, it will be easier for officers to process data.

2. Design of Data Flow Diagram System developed
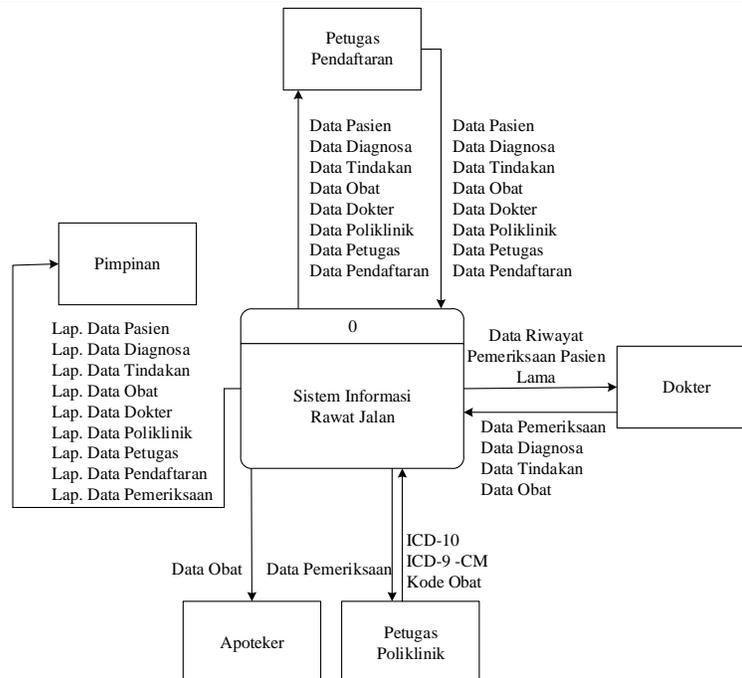
The registration officer inputs master registration data, patient data, diagnostic data, action data, drug data, polyclinic data, doctor data, officer data. Doctors receive examination history data of old patients and input patient examination data, diagnostic data, action data and drug data. Polyclinic officers can view examination data and input diagnostic data, action data, drug data in the form of a diagnostic code according to ICD-10, an action code according to ICD-9-CM and a drug code according to the results of the examination, then the pharmacist will receive drug data.

3. Database design
The database design aims to make it easier to implement the data at the time of making tables and the related relations from each table needed in the information system that is built. The following is the design of the database in the built information system:

a. Patient table

No	Nama *Field*	*Type*	*Width*
1	no_rm	Varchar	15
2	nama_pas	Varchar	32
3	jkel_pas	Enum	'Laki-laki', 'Perempuan'
4	tgl_lahir	Date	-
5	tp_lahir	Varchar	32
6	agama	Enum	'Islam','Kristen', 'Katolik','Hindu', 'Budha', 'Konghucu'
7	pend_pas	Enum	'-','SD','SMP', 'SMA', 'Perguruan Tinggi'
8	pkj_pas	Enum	'Ibu Rumah Tangga', 'Pegawai Swasta', 'Wiraswasta','Pegawai Negeri' , 'Pelajar'
9	alamat_pas	Varchar	120
10	nik	Varchar	16
11	no_bpjs	Varchar	16

12	no_telppas	Varchar	15

b. Doctor's Table

No	Nama *Field*	*Type*	*Width*
1	id_dok	Varchar	15
2	nama_dok	Varchar	32
3	jkel_dok	Enum	'Laki-laki', 'Perempuan'
4	kd_poli	Varchar	6
5	alamat_dok	Varchar	120
6	no_telpdok	Varchar	15
7	username	Varchar	15

c. Poliklinik Table

No	Nama *Field*	*Type*	*Width*
1	kd_poli	Varchar	6
2	nama_poli	Varchar	32

d. Diagnose table

No	Nama *Field*	*Type*	*Width*
1	kd_diag	Varchar	6
2	nama_diag	Varchar	300

e. Service tables

No	Nama *Field*	*Type*	*Width*
1	no_regdaftar	Varchar	10
2	no_rm	Varchar	15
3	id_dok	Varchar	32
4	tgl_daf	Date	-
5	jam_daf	Varchar	8
6	kd_poli	Varchar	6
7	jenis_pas	Enum	'UMUM', 'BPJS'
8	status	Enum	'Tunggu', 'Riwayat', 'Periksa', 'Selesai', 'Batal'

.
The first step to run a Web-Based Information System program is to access the information system through a web browser. Access the system by entering the program link and wait a few moments until the login field is available as follows:

After the display appears as above, then enter the username and password. If the username and password are recognized, the main menu will appear as shown below:

a. Implementation of the Master Menu
Click on the Patient Data Menu, for open patien view the patient data display will appear as shown below:

To perform a search, enter the name of the patient you are looking for in the search field. In the patient data table, the search data for patients that have been found will appear. To change patient data, click the edit button which serves to change the patient data that has been saved. While the delete button serves to delete the data that has been saved. To add patient data, click the add patient data button, a form will appear as shown below:

Fill in according to the patient's identity and if it is filled correctly click the save button to save the data. Cancel button is used to cancel charging. The following is an example of a printed patient data report per visit with a date, month and year period. Click on the Patient Data Report menu, to see the results of the patient data report and can be printed by selecting the print button on the print form:

to see the doctor's master view Click on the Doctor Data Menu then a doctor's data display will appear as shown below:
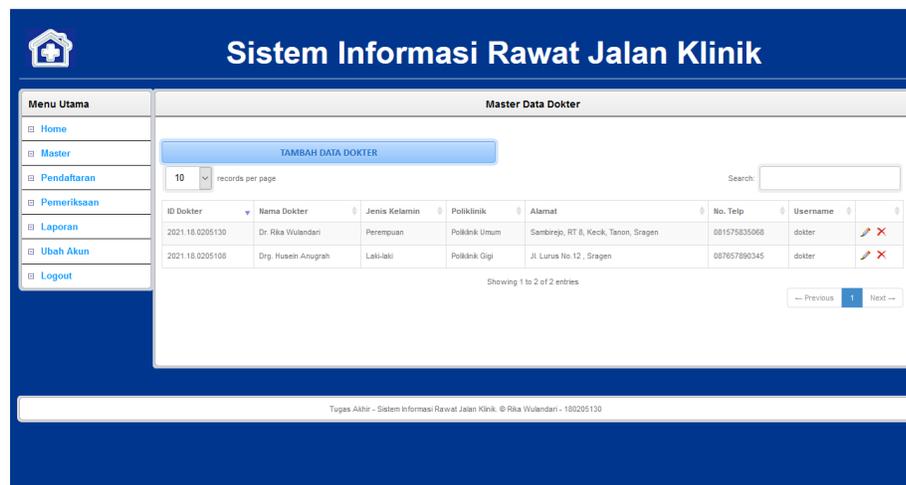
To perform a search, enter the name of the doctor you are looking for in the search field. In the patient data table, the search data for doctors that have been found will appear. To change the doctor's data, click the edit button which serves to change the doctor's data that has been saved. While the delete button serves to delete the data that has been saved. To add doctor

data, click the add doctor data button, a form will appear as shown below:

Fill in according to the doctor's identity and if it is filled correctly click the save button to save the data. Cancel button is used to cancel charging. The following is an example of a printed doctor's data report with a date, month and year period. Click on the Doctor Data Report menu, to see the results of the doctor data report and can be printed by selecting the print button on the print form:

The above steps apply to all master data processing contained in the system.

b. Implementation of the Transaction Menu
    The registration menu is used to register patients at the polyclinic by entering the name or medical record number by the registration officer. The display on the registration menu is as follows:

After the patient registers, the patient then performs an examination. The doctor will fill in the examination history on the History menu in the form of results of blood pressure, pulse, temperature, respiration, diagnosis, action and drug results then click save, it looks like this:

After the doctor fills in the results of the examination, on the check menu there are 3 detail button options to view the detailed data that has been entered. To enter a diagnostic code, click on the diagnosis button, then enter the diagnostic code or name in the diagnosis column and select save to save the diagnostic code, select cancel to cancel filling out the diagnostic code. To enter an action code, click on the action button, then enter the code or action name in the action column and select save to save the action code, select cancel to cancel filling the action code. To enter the drug code, click on the drug button, then enter the code or drug name in the drug column and select save to save the drug code, select cancel to cancel filling in the drug code. To enter the cost, click on the cost button, then enter the total cost in the total cost column and select save to save the total cost, select cancel to cancel filling the total cost. Below the save and cancel buttons there is a table containing the data we just saved. In the table column there is a delete button to delete the data that we have saved. Select the Done button to be able to print recipes and invoices

CONCLUSION
A Web-Based Clinical Information System designed and applied computerized using the System Development Life Cycle (SDLC) method with features for diagnostic codes consisting of patient tables, doctor tables, staff tables, polyclinic tables, diagnosis tables, diagnostic results tables, action tables, action result table, drug table, drug result table, registration table, examination table. The system is built using the PHP programming language and SQL database, which will produce information in the form of reports that are easy to give to the leadership for evaluation and decision making.

REFERENCES
Fatimah, A. N., & Suryadi, L. (2018). Rancangan Sistem Informasi Rawat Jalan Pada Klinik Medis Al-Mira. *Jurnal IDEALIS, I*(1), 25-30.

Fatta, Hanif Al. 2007. *Analisis dan Perancangan Sistem Informasi.* Yogyakarta: C.V Andi Offset.

Fuad, A. B., & Suryadi, L. (2019). Perancangan Sistem Informasi Rawat Jalan Pada Klinik Asia Fasifik Berbasis Object Oriented. *Jurnal IDEALIS, II*(3), 42-49.

Madcoms. (2013). Adobe Illustrator CS6 untuk Pemula. Yogyakarta : CV Andi   Offset

Menkes RI. (2008). Peraturan Menteri Kesehatan RI No.   269/Menkes/Per/III/2008.   *Tentang Rekam Medis*. Jakarta: Depkes RI

Menkes RI. (2014). Peraturan Menteri Kesehatan RI No. 9 Tahun 2014. *Tentang   Klinik*. Jakarta: Depkes RI

Rozaqi, R., & Suryadi, L. (2018). Rancangan Sistem Informasi Rawat Jalan Pada Klinik Fasyfini Donomulyo. *Jurnal IDEALIS, I*(3), 53-57.

Setiawan, Didik. (2017). *Buku Sakti Pemrograman Web HTML, CSS, PHP, MySQL & JavaScript.* Yogyakarta: Start Up.

Sudra, Rano Indradi. (2017). *Rekam Medis.* Tangerang Selatan: Universitas Terbuka.

Sutanta, Edhy. (2011). *Basis Data dalam Tinjauan Konseptual.* Yogyakarta: C.V Andi Offset.

Wahana. (2014). *Sistem Informasi Penjualan Online Tugas Akhir.* Semarang: CV Andi Offset.

Yakub. (2012). *Pengantar Sistem Informasi.* Yogyakarta: Graha Ilmu.