

# Development of Integrated Information Systems for Doctor Consulting

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**Abstract**— *This research aims to develop an integrated information system for doctor consulting and implement the system into the programs in accordance with the design that have been made. Several doctors in each of the existing hospitals have established their own practice health services. This condition caused people difficult to finding doctor clinic when the people want to consulting to the doctor. In additions, the patients do not know the requirements needed to register for number of queue. Therefore information doctor clinic about location and Schedule consultation is very needed. Method of development a system that used is prototyping method. This method allows to make the program in accordance with the preliminary design and then testing to obtain feedback from users. After that researcher improves it in accordance with advice from users. This information system was designed using use case diagram modelling and technique testing system using black box testing. The result of the research is an integrated information system that have been tested and appropriate with the user requirements.)*

**Keywords** : doctor consulting, information system, website

## I. INTRODUCTION (HEADING 1)

The facility of healthy service is tool and place that using for the implementation of healthy service in promotif, preventively, curatively and rehabilitative conducted by the central government, regional government and community [1] (transcript of PP Ministry of Internal Affairs, 2016:2). The clinic is one of many health care facilities. But but not all of the existing clinics can be reached by the communities. The role of information technology becomes so important in this case.

Based on observations of researchers, some people have problems to find the doctor's clinic that is easily accessible from home and a doctor's clinic in accordance with the disease.

Some doctors at hospital that has set up his/hem own practice of health services. These conditions occur a little problem in lives of most of society cause the location where the doctor practices is hard to find at a time when the public wants to do the examination or when wanting to find a doctor that appropriate with the disease that suffered however the appropriate doctors practices are hard to find and the aspirant of new patients will register itself to the practice of the doctors don't know what requirements must be able to do examination. Therefore, the information about the practice of doctors either its location or the requirements for registration of new patients

on the doctor's practice is absolutely necessary. Based on these problems, then the writer is interested in taking a study titled "Development of Integrated Information Systems for Consulting Doctor". It's can be help satisfy the information and services that are more efficient also effective with regard to the practice of doctors as healthcare facilities for the society.

## II. LITERATUR REVIEW

### A. The Practice Of A Doctors

According to the Medical Council Indonesia based on RI law No. 29 (2004:13-17) [1] the practice of doctor is a series of activities conducted by doctors and dentists are against the patient in exercising health efforts. The practice of medicine is carried out based on Pancasila and is based on scientific value, merit, justice, humanity, the balance and the protection and safety of the patient.

Doctors have a practice that manage by themselves, and usually have hours of practice. Sometimes doctors are assisted by administrative personnel that manage patients, sometimes assisted by nurses, some are really alone in providing the service, so the doctor handling his/her own all procedure health care he/she gave.

A doctor will perform a standard medical practice in comply with a regulation feasibility and appropriateness, is supported by a structure of human resources, support, infrastructure, facility, equipment, systems and logistics optimal with the level and location of practice. Results or outcomes that expected from a good medical practice that is patient and doctor feel satisfied with all that done for within in scope of the practice of medical. The satisfaction include:

- a. safety of patient
- b. efficient utilization of resources.
- c. the care has been focused on the patient.
- d. Services and care in timely care.
- e. the care is clinically effective.
- f. fair treatment to the patients.

### B. Relevant of the Research

This study refers to several existing research. Such research as references in the research that will be done. The research that conducted by Dyah and Arsandy [2] from the University of Ahmad Dahlan in Yogyakarta with the title "Geographic Information Systems Specialist Practice Place in the province of Yogyakarta special region of Web-based".

This research discusses how to build geographic information systems specialist doctor practice place in the province of Yogyakarta special region of web-based, which can display and deliver information via the web to parties who require information about health news, health tips, profiles of doctors, and the location of doctor specialist practice, who list in the area of Yogyakarta. As well as being an information storage media as well as health information and publications place the practice of doctors specialist in the Yogyakarta region as dynamically and interactively.

The research conducted by Wicaksono [3] from the University of Jakarta Unggul titled "Designing Application Catalog Schedule Doctor's Practice-based on Mobile". This study discusses the problems occurred, namely patient difficulty in finding information about a doctor's practice schedule in real time who was working at the hospital with the many hospitals still use manual systems to doctors practice schedules in providing information to patients, so patients are often disappointed when they want to visit the doctors are not available.

The research conducted by Widodo & Purnomo [4] under the title "Designing Application-based Health Service Search HTML 5 Geolocation". This research discusses how to design a search system of health care in the town of Salatiga in Central Java province to be able to do a search of the nearest health services according to the needs of the user. Search health services in this research include location, distance and hours of service or practice.

Contrast of previous research, this study will be produced a system that web-based and allows the users easily access the system through the website have been made whenever and wherever they are if we want to checks on the nearest doctors practice or service corresponding to the doctor want. Additionally, on the system of the society also can register directly through the application as a new patient who had never done an checkup in place of the doctor practice by filling out the form provided and see the regulation that must be filled when will sign in and checkup, so the patients who had signed up just come to pick up the last queue number then checks in accordance with doctors practice services such in hours.

In spite of some of the above studies using different methods in designing and making system, but the purpose and benefits such of research is not much different namely created a system of information about health care facilities in particular the place of practice doctors search the nearest doctor services health although doctor specialist who agree with the disease being suffered, showing information about the schedule practice of every doctor's and may register directly through the system

### III. RESEARCH METHOD

The method of system development that use is the prototype method. The collection started with prototyping needs, involving the developers and users of the system to determine the objectives, functions and operational needs of the system. Steps in prototyping are as follows:

1. Requirement analysis.
2. Rapidity of design process.
3. Build the prototype.
4. Evaluation and Improvement

### IV. RESULT AND DISCUSS

The design of the research results developed systems described in the form of a use case diagram, then the results of the design implemented in the source code of the program resulting in an information system.

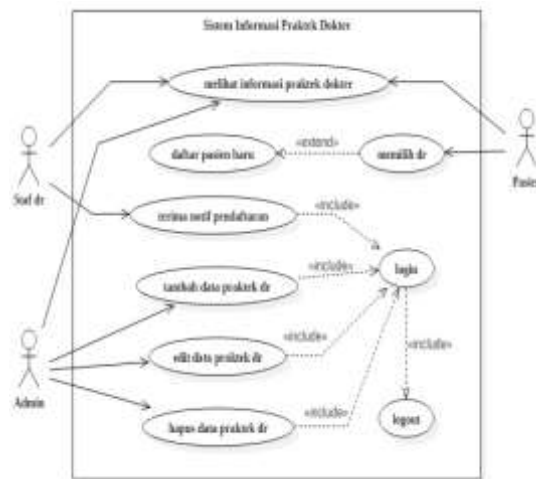


Fig 1. Use Case digram

Figure 1 explains that in the system there are three actors namely admin, medical staff and patients. The actors had different cast in the system but have the same cast that they can see a doctor's practice information directly when accessing the web.

Admin is an actor that made the system so that it can perform the data processing practices of doctors in the system such as add, edit and delete data doctor's practices however have to login first. The patient is a person who can access the web and view the information practices of doctors. In addition to viewing the information practices of doctors, patients are also able to register itself as a new patient or make an appointment at the doctor's practice that selected with input self data on the form provided by the system if that person wants to check up. Doctor staff is worker on the practice of doctors who cultivate administration and enrolment that play within the system be able to receive every notice of the registration of new patients that entering but must first login with the access rights granted by admin so that the new registration can be seen.

The database used in the design of information systems doctor practice these are composed of:

Table 1

User login data dictionary		
No	Kolom	Tipe data/Length
1	Id_login	INT(11)
2	Username	Varchar (15)
3	Password	Varchar (10)

4	Level	Varchar (10)
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Table 2  
Doctors' Data Dictionary

No	Kolom	Jenis
1	Id_dokter	INT (11)
2	Id_login	INT (11)
3	Id_kategori	INT (11)
4	Nama_dokter	Char (50)
5	Alamat	Varchar (100)
6	Jadwal	Varchar (50)
7	Foto	Varchar (30)
8	Maps	Text ()

Table 3  
DATA DICTIONARY CATEGORY

No	Kolom	Jenis
1	Id_kategori	INT (11)
2	Nama_kategori	Varchar (25)

Table 4  
THE LOGIN DATA DICTIONARY

No	Kolom	Jenis
1	Id_konsultasi	INT (11)
2	Id_dokter	INT (11)
3	Nama_lengkap	Char (50)
4	Usia	Varchar (10)
5	Alamat	Varchar (100)
6	Telp	Int (15)
7	Keluhan	Varchar (200)

Based on the results of the design that has been made so the next is apply any proceeds of the draft into the shape of the program by entering the source code of the program using the PHP programming language. The result of the application of each design can be seen in Figure 2 to Figure 6 on the following:

Main web page display is the display will appear at the first time when the user accesses the web. The main web page can be seen in Figure 2



Fig 2. Main Web Page Display

1. Display a Menu page for Doctors

Display page menu doctor is a doctor display that list includes a number based on the doctor's menu. The display of doctor menu page can be seen in Figure 3



Fig 3. Menu Page Display Doctor

2. The doctor see details page views

See details page display is the display that contains the data of doctor by detail that can be seen in web users such as doctors practice schedule, address and location of the doctor's practice. See details on page display Figure 4



Fig 4. See Details Page Display Doctor

3. The Page Display of Registration New patient

The page display of registration new patient is the display that contains the registration form that will be filled by web user if want to register as a new patient and perform the check up. The page display of registration new patient can be seen in Figure 5



Fig 5. The Page display of registration new patients

4. Display the Menu appointment patients with Doctors

Display the menu appointment patients is the display containing of list all new patients who have signed up as a new patient or who has made an appointment. Display the menu appointment a patient can be seen in Figure 6.

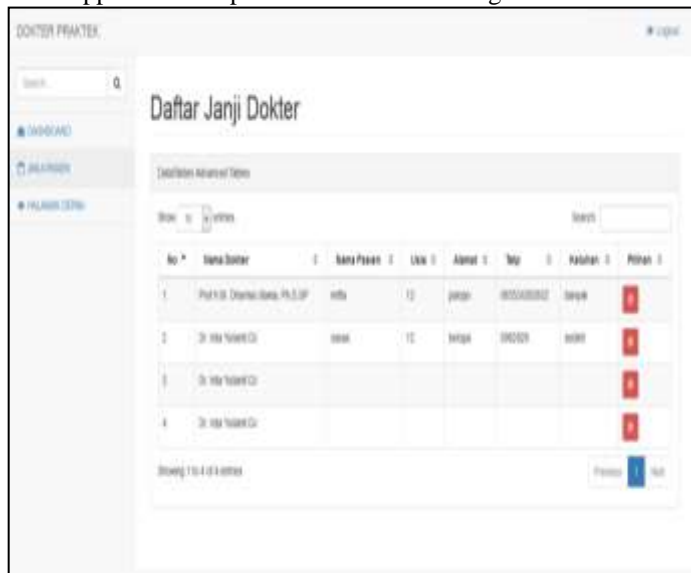


Fig. 7 the menu display of appointment patients with doctors

The research conducted has been through several stages which have been specified by the writer based on the type of research that used it consists of stages of the analysis, the study of literature, research planning, development of design and the last is implemented all designs that have been created in the design development stage into the shape of a program by entering the respective source code each component so that the program can be run in accordance with the groove that has been planned.

The advantages of the doctors practice information system that created by the research results that performed manely the system can display information doctors practice

such as the name of the doctors, a specialist doctor, a doctor practices address that display with a map of the location and the society also be aware of any doctors's practice schedule of each doctor in the system. The society may also register as a new patient if they want to checkup at the place of the doctor practice that they want by filling out the complete data by the form that provided and the society can find out directly what are the requirements that must be fulfilled if they want to checkup by looking the requirements of the respective practice doctors that have been displayed by the system.

But also there is a lack of or weakness of the system have been made, namely the system cannot provide a feature that provide information confirming the approval or rejection directly through the system of the a doctors practice that concerned about the enrollment of patients done. The society can only do registration then waiting the confirmation from the doctor's practice but in ways that are still manual.

Some of researchers previously have also been doing the same research by creating a system that display information services of public health especially the practice of doctors and one of them is research done by Widodo & Purnomo in 2016 in the town of Salatiga in Central Java province. The research that they do use different methods and systems made based of HTML it making harder to be developed because of its static. Different to previous research, the information system doctors practice this created by using the PHP programming language and uses a database from MySQL so that this system can be developed continuously easily because its dynamic and open source.

Based on the research results that have been obtained by applying each the design and groove of the process that has been designed into the shape of a program then the next is testing every components of programs that have been created using the technique of Black Box testing. The elaboration of any testing done for each components in the system that have been created can be seen in table 5 to table 11 am part attachments.

Based on the results of testing that performed by using Black Box testing techniques namely every components that in systems such as the main page, the menu of doctor page, the page displays information from the docteoers' practice then a page that displays a form to register as a new patient when society want to checkup to the doctors practices place that their have been chose in the system. Admin page with menus in that page and the page of doctor along with menus in the page. All these components have been tested and the result can function properly appropriate with the design that was created previously.

REFERENCES

[1] The Ministry Of The Interior. 2016. The Government Of The Republic Of Indonesia Number 47 Year 2016 On Healthcare Facilities. Jakarta: Ministry Of The Interior  
 [2] The Medical Council, Indonesia. 2016. Guidelines For Doctors And Dentists Practice In Indonesia. Jakarta: Indonesia Medical Council.

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- [3] Nur Rochmah Dyah "Geographic Information System Specialist In The Practice Place Of DIY Web-Based" 2016, <https://www.researchgate.net>, Retrieved 7 December 2017 Ladder
- [4] Wicaksono, K "Designing Application Catalog Schedule-Based Mobile Doctorss Practice" Thesis Unggul University, Jakarta, 2015
- [5] Widodo, B. P., Purnomo, H. D., "Design Of An Application-Based Health Service Search HTML 5 Geolocation TESIS Satya Wacana Christian University, 2016