



Designing Mobile and Web-Based Damage Complaint Applications at XYZ Hospital

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Abstract

A hospital is a health service place providing comprehensive individual medical services that provide inpatient, outpatient, and emergency services. Various facilities are used to support better hospital services. Facilities that are often used in hospitals are computers, laptops, printers, internet networks, and LAN networks. However, these facilities sometimes experience damage at any time, which can interfere with various activities in the hospital. In XYZ Hospital itself, damage complaints still use manual methods to make damage complaints Employees must go directly to the hospital information system division, which can cause ineffectiveness, and technicians need help handling damage complaints due to the absence of written data. This study aims to build a mobile and web-based XYZ home damage complaint application. It is expected to increase efficiency in making complaints, and technicians can more easily conduct damage complaints at XYZ Hospital.

Keywords: *Damage Complaint, Hospital, Model Prototyping*

Abstrak

Rumah sakit adalah tempat pelayanan kesehatan yang menyediakan pelayanan medis individu komprehensif yang memberikan pelayanan rawat inap, rawat jalan, dan gawat darurat. Berbagai fasilitas digunakan untuk mendukung pelayanan rumah sakit yang lebih baik. Fasilitas yang sering digunakan di rumah sakit adalah komputer, laptop, printer, jaringan internet, dan jaringan LAN. Namun, fasilitas tersebut terkadang mengalami kerusakan sewaktu-waktu, yang dapat mengganggu berbagai aktivitas di rumah sakit. Di Rumah Sakit XYZ sendiri, pengaduan kerusakan masih menggunakan cara manual untuk melakukan pengaduan kerusakan Karyawan harus mendatangi divisi sistem informasi rumah sakit, hal itu menyebabkan ketidakefektifan, serta teknisi kesulitan dalam menangani keluhan kerusakan karena tidak adanya data tertulis. Penelitian ini bertujuan untuk membangun aplikasi pengaduan kerusakan di rumah sakit XYZ berbasis mobile dan web. Hal ini diharapkan dapat meningkatkan efisiensi dalam melakukan komplain, dan teknisi dapat lebih mudah melakukan pengaduan kerusakan di Rumah Sakit XYZ.

Kata-kata kunci: *Pengaduan Kerusakan, Rumah Sakit, Model Prototyping*



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1. Introduction

According to the Regulation of the Minister of Health of the Republic of Indonesia, Number 4 of 2018, a hospital is a health service place providing comprehensive individual medical and inpatient, outpatient, and emergency services. One of the hospital's obligations is to provide safe, quality, non-discriminatory, and effective health services that prioritize the interests of patients by hospital service standards.

Various supporting facilities have been used in multiple hospitals to provide good service and increase patient satisfaction. One of the facilities that are often used in hospitals is such as computers, laptops, printers, as well as internet networks and LAN networks. However, these supporting facilities can be damaged at any time, interfering with various activities in the hospital. The computer is an electronic device that can receive data and process documents to produce data useful for computers and users. [1]. Laptop is a small computer that can be used on a lap [2]. Printer is a tool that can be used to print images and write through paper media [3]. LAN Network or Local Area Network is a network that can be used only on a limited scale in the scope of space, buildings with a maximum distance of one kilometer, and work intranet [4]. Internet network or interconnection networking is an open global communication network connecting millions or billions of computer networks [5].

XYZ Hospital is a private hospital in Bandung City, West Java Province. This hospital has 159 computers, 38 laptops, 120 printers and uses the internet and LAN networks to connect to the server. However, if there is damage or constraints to the facility, the complaint system still uses a manual method. Namely, employees must come to the hospital management Information System. It becomes ineffective because there are 54 different divisions in this hospital, and not all divisions are close to the hospital management Information System division.

Moreover, technicians will find it challenging to manage complaints with this manual method because there needs to be written data regarding damage complaints. Based on these problems, an application is needed to make it easier for employees to submit damage complaints that can increase efficiency so that only a little time is wasted. Moreover, it can help technicians and admins manage complaint data because the recording of complaints has been computerized. This application is a complaint of damage to laptops, computers, printers and Android-based networks, and websites connected using the internet. This application is expected to overcome the problem of damage complaints that still use manual methods.

Research conducted by Ultach Enri and Chaerur Rozikin in 2019 with the title Android-Based Classroom Facility Damage Complaint System. The study aims to develop an Android-based application to report any damage to existing facilities in the classroom [6]. Research conducted by Adi Saputra and Yono Cahyono in 2022 with the title of designing a web-based ODC device damage complaint information system with the waterfall method at PT. Telkom Access South Jakarta. The research aims to produce an application to record all damage reporting data so that damage reporting is not missed, speed up the repair process and make it easier for admins to find data [7]. The difference between the previous research is that the object of research is different namely, this study focuses on the damage that occurs to computers, laptops, printers, LAN networks, and internet networks in XYZ Hospital.

2. Method

The system development method to be used is model prototyping. A prototype model is a technique used to gather specific information about a user's information needs quickly. Focus on presenting areas of the software that are visible to customers or users. The customer or user will evaluate the software prototype to select development needs [8]. Stages of the prototyping model are the Stages of the Prototype Method, or the prototyping model consists of several stages, namely [9]:

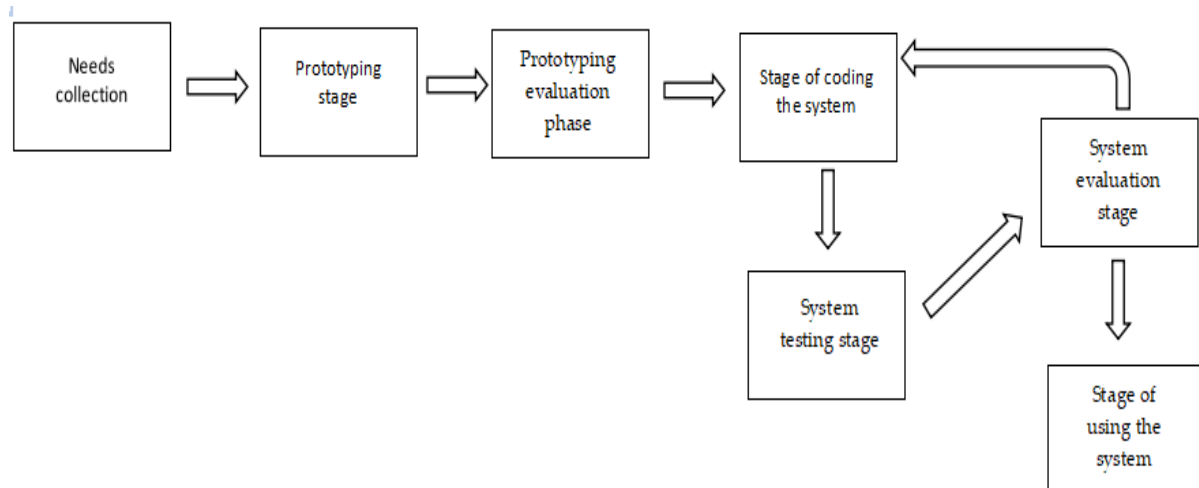


Figure 1. Model Prototyping

a. Needs Collection Stage

The requirements collection stage is the stage to define the software format with the client to identify what needs the system needs to be built. In this study, the collection of needs was carried out by direct observation and conducting interviews with several related parties.

b. Prototyping Stage

The prototyping stage makes temporary designs according to customer or client requests, such as making inputs and outputs needed.

c. Prototyping Evaluation Phase

Carried out to check by customers or clients on the prototype built to ensure that the designed system is as expected.

d. Stage of coding the system

The stage of coding the system is where translating the prototype set in the form of coding is chosen according to needs.

e. System Testing Phase

The system testing stage tests the system to ensure that the system produces an error to a minimum. Testing can be done using Black Box, White box, Architecture testing, Basis path, and others.

f. System Evaluation Stage

The system evaluation stage is carried out to ensure the system has been built following the customers or client's wishes. If the system is appropriate, the system can be used. However, if any system does not match what is desired, it must return to the system coding stage to correct the incompatibility.

g. Stage of Using the System

The stage of using the system is the stage where the system that has been built has successfully passed the evaluation stage. The system has been implemented and used.

3. Results and Discussion

The stages in this study follow the prototyping model to make it easier to understand the processes that occur from design to system implementation.

a. Needs Collection Stage

At this stage, the collection of what the system needs is carried out according to requests from clients or customers. The system needs analysis is divided into functional and non-functional needs analysis. Functional needs include what processes the system does and what information must be produced by the system. Non-functional needs are not directly related to the system [10].

1) Functional needs analysis

The functional needs at XYZ Hospital consist of four actors: admin, section head, technician, and user. Activities carried out by actors are admins can log in, manage complaint data, manage user data, manage repair data, manage repair letter data, manage complaint report data, repair reports, and repair letter reports. Section heads can log in, consent to rectification, view user data, and view repair data. Engineering can log in, change complaint status, and fill in repair data. Users can register, log in, and send complaints

2) Non-functional needs analysis

In conducting this research, hardware specifications on a laptop or computer the minimum required is an Intel Core i3 processor and 4 GB RAM. The software used in this study is the android studio and Sublime Text.

b. Build a prototype

Building a prototype consists of system planning and interface design. System design is a drawing or sketch used to illustrate the flow of a system [13]. Interface design is the design of a system's appearance that aims to make the application look attractive and more to use [14] [15].

c. System design

1) Use case diagram

Use case diagrams are methods of modelling information system behavior created by describing typical interactions between system users and the system itself through system usage stories [16]. In the use case below, the admin can access the complaint data page, repair data, complaint letter data, user data, repair reports, letter data reports, and complaint reports. Engineering can access the complaint data page, correction data, and submission letter data. While the section head can only access the repair data page, complaint letter data, and user data.

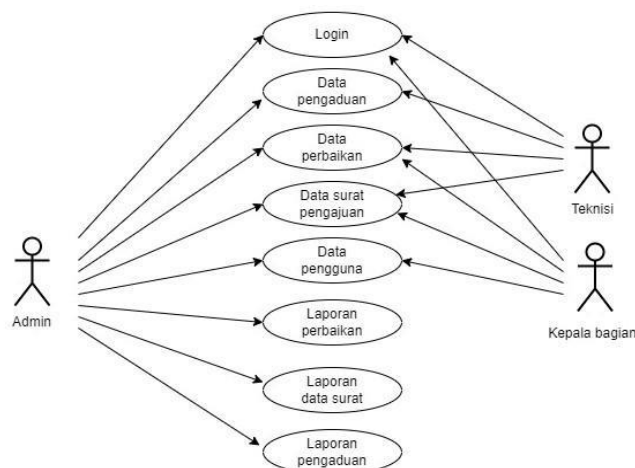


Figure 1. Use Case Diagram Website

2) Class diagram

Class diagrams are visual representations of the structure of a programming system based on the type formed. In addition, the class diagram is a flow of the database on the system to be built [17]. In the class diagram below, the user class consists of the attributes of user id, full name, username, password, and division and has input operations. The complaint class consists of attributes of complaint ID, user ID, complaint ID, full name, division, type of tool, type of damage, and details of the damage and has input, edit, delete, and view operations. The letter class consists of attributes of letter number, complaint id, date of submission, letter destination, subject, letter content, and status and has input, edit, view, and delete operations. The repair class consists of the repair id attribute, complaint id, repair details, and user id. The admin class consists of attributes admin id, full name, address, username, password, and access rights id and has input operations, edit, delete, and view. The access rights class consists of attributes of the access rights id and job title and has input, edit, and delete operators. In the association user class with the complaint class, the complaint class associated with the repair class and the mail class, the association repair class with the admin class, and the association admin class with the access rights class. Class diagram can be seen on Figure 2.

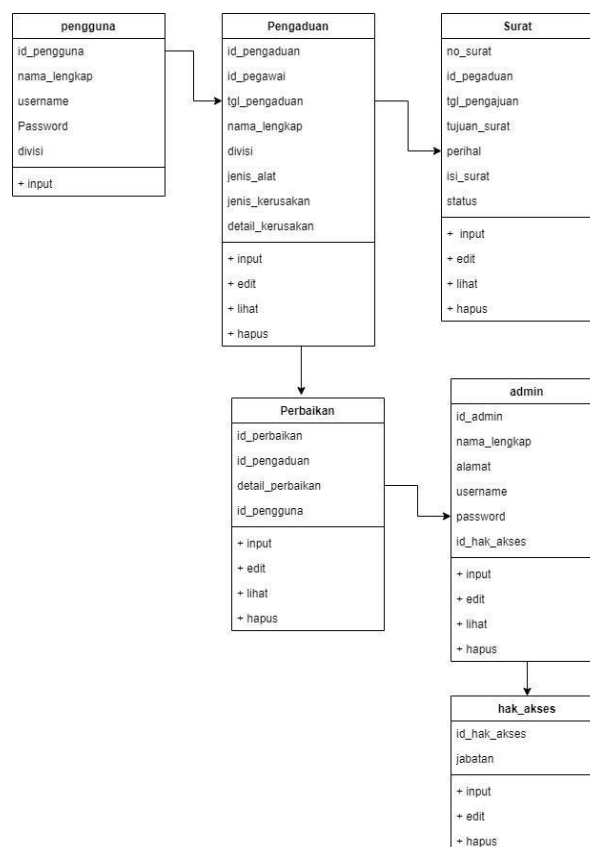


Figure 2. Class Diagram

3) Interface design

a) Admin interface design

In the sidebar are complaint data, repairing data, complaint letter data, user data, complaint reports, letter reports, and repair reports. The navbar section has a complaint notification and a logout menu. The content section will display the data according to what was selected. Admin interface design is presented in **Figure 3**.

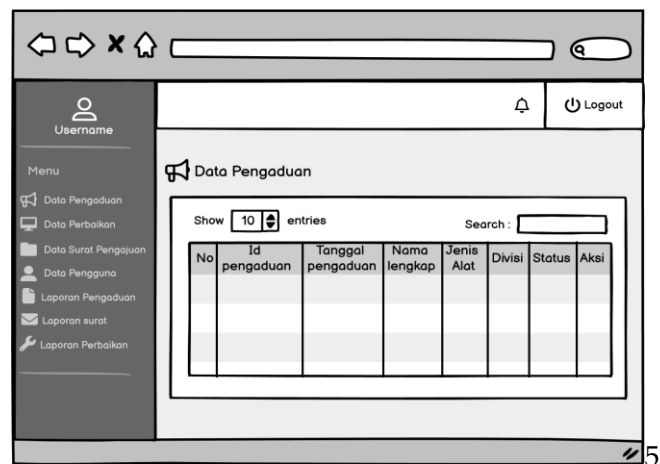


Figure 3. Admin Interface Design

b) Design of the main menu user interface

In the user's main menu design, there are four menus: a complaint send menu, a list of complaints, user profiles, and an exit menu. Design of the main menu user interface is presented on **Figure 4**.



Figure 4. Design of the Main Menu User Interface

c) Design of user complaint form

The complaint report form consists of the complainant's full name, division, a category consisting of hardware and network, type of tool consisting of computers, laptops, printers, LAN networks, and internet networks, as well as details of damage used to explain in

more detail about the damage that occurred. Design of user complaint form is presented on **Figure 5**.

Figure 5. Design of User Complaint Form

d. Coding The System

1) Admin page view

The complaint data page contains complaint data submitted by the user. The repair data page contains hardware and network data that technicians have repaired. The mail data page contains the mail data and sends a repair request letter to the section head. The user data page contains admin, technician, and section head data. The complaint report page contains complaint data based on the selected date. The mail report page includes the data of the repair request letter approved by the section head. The repair report page contains the selected date's hardware and network repair data. Admin page view is presented on **Figure 6**.

No	ID Pengaduan	Tanggal Pengaduan	Nama Lengkap	Jenis alat	divisi	Status	Aksi
1	73	23 Feb 2023	Ayu lestari	jaringan	sekretariat	selesai	Detail Data Hapus data
2	72	22 Feb 2023	Muhammad iqbal	Hardware	poli medis	proses	Detail Data Hapus data
3	71	21 Feb 2023	Annisa	jaringan	SDM	selesai	Detail Data Hapus data
4	70	09 Feb 2023	Ardiansyah	Hardware	poli mata	selesai	Detail Data Hapus data

Figure 6. Admin Page View

2) Display of the user's main menu page

On the send complaint menu, users or employees can send complaints of damage that occur to the admin. On the complaint list menu, users can see the complaint data sent. On the profile menu, the user can see the user data. In the log-out menu, users are used if they want to

log out of the account or want to change to another account. Display of the user's main menu page is presented on **Figure 7**.

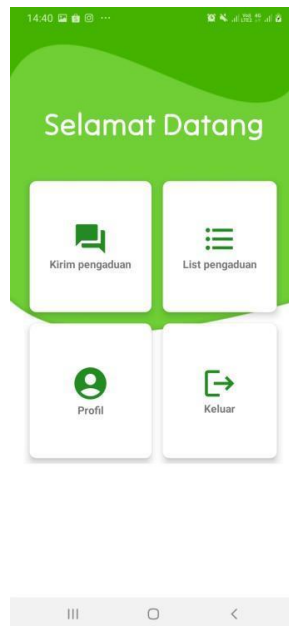


Figure 7. Display of the User's Main Menu Page

3) Complaint menu page view

On the send complaint page, the user will fill in the full name, division, category, type of damaged hardware or network experiencing interference, and details of the damage. Complaint menu page views is presented on **Figure 8**.



Figure 8. Complaint Menu Page Views

e. System Testing Phase

In this study, the testing phase uses the black box method to test the application's features by observing the input and output results. The test results can be seen in [Table 1](#).

Table 1. Complaint Menu Page View System Testing Phase

No	Tested cases	Test scenarios	Expected results	Test results
1	Login page	Admin login test	Admins can go to the main page	Succeed
2	Complaint data menu	Change complaint status test	The status of the complaint was successfully changed	Succeed
3	Repair data menu	Repair data input tests	Data successfully entered into the database	Succeed
4	Submit a complaint	Test submit complaint	Users can submit complaints	Succeed

4. Conclusion

This research results in the successful construction of web and Android-based complaint applications that are expected to make it easier for employees to complain about damage to computers, laptops, printers, and networks. This research successfully developed web-based and Android-based complaint applications expected to make it easier for employees to complain about damage to computers, laptops, printers, and networks. This application allows admins and engineering to manage complaints and repair facilities more efficiently. The application was built using prototype methods, the Java programming language, and the Code Igniter 3 framework.

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