Design of forest and land fire complaint system in BPBD Tebo Jambi regency

by Herny Februariyanti

Design of forest and land fire complaint system in BPBD Tebo Jambi regency

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A R T I C L E I N F O	ABSTRACT
	A good and responsive service quality is a requirement for the success of regional disaster management agencies such as forest and land fires, but of course information technology is needed that is able to support performance and optimize the information obtained in the complaint process at BPBD Tebo Regency, Jambi province. Therefore the author aims to find solutions to problems that exist in BPBD Tebo Regency by designing an information system website that helps process complaints that are still done manually and are less efficient so that they are more advanced, accurate and facilitate the complaint process. This complaint information system provides convenience and helps the complaint process to be easier, more efficient and structured. This complaint information system is a website-based system, using the PHP programming language with the Laravel framework method and using the Mysql database to make it easier to create a design website for complaints of forest and land fires at BPBD Tebo district.

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1. INTRODUCTION

The Along with the development of the times, information systems or information facilities are needed that support more optimal performance because the level of information needed is more extensive and wider (Rochman et al., 2021). So these conditions encourage companies to implement technology in every organizational activity, one of which is by implementing a computerized system. In addition, this effort is made so that the quality of work has increased and can compete with competing companies and form work professionalism (Sopandi et al., 2021).

Information system implementation can also be done in terms of complaints and disaster mapping so that it is easier to manage and control, Public complaints are a very important source of information for service providers' efforts to correct errors that may occur, while maintaining and improving the services produced so that they are always appropriate (Naufal et al., 2022). Improper handling of disaster complaints will result in less than optimal information gathering and will have a negative impact on forest and land fire management performance.

Tebo Regency is one of the districts in Jambi Province which has the potential for forest and land fires, especially during the dry season because Tebo Regency, Jambi Province itself is an area that has large plantation areas in the form of agricultural land such as oil palm. and rubber trees which are a source of income for the majority. community in Tebo district, this is one of the possible causes of forest and land fires in Tebo district.

Currently, each stage of verification and complaints implemented by BPBD (Regional Disaster Management Agency) is still manual and in handling complaints the public must call or even come to the office first to submit complaints directly, and employees who have to collect data on complaints are still writing or typing complaints. that have been reported by the public (Josi & Fisika, 2017). This process makes it difficult to validate and verify complaints from the public.

To deal with these problems, this research will cover the Design and Development of a Web-Based Forest and Land Fire Complaint Information System with the Laravel Framework at BPBD Tebo Jambi Regency (Lesmono et al., 2018). The Website-Based Complaint System is intended to make it easier for the public to submit complaints without calling or visiting the office again, because this website can be accessed from anywhere as long as there is internet access. This system also makes it easier for employees to view complaints received and assist in reporting environmental complaint data (Desa & Banyumas, 2019).

The design of an information system for complaining about land and forest fires brings benefits to several parties, namely the first for the task force at the command post where this system makes it easier to carry out monitoring and supervision as well as accurate handling in the event of a sudden fire case (Ryananda et al., 2022). Then the second makes it easier for people to submit complaints. So that complaints submitted are more on time, accurate, and relevant (Hidayati, n.d.). The form of this system is adapted to the needs of the Tego BPBD, so that related parties can directly verify and validate public complaints. The information system that will be designed is " DESIGN OF FOREST AND LAND FIRE COMPLAINT SYSTEM IN BPBD TEBO JAMBI REGENCY ".

2.   RESEARCH METHOD

The waterfall model was applied to the development of this program. System engineering, analysis and design, coding, testing, and maintenance are the many steps of this model's approach to systematic software development. The steps of the Waterfall Paradigm are depicted in further depth in the following picture (Informatika, 2019).
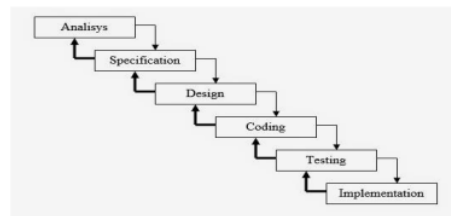

Figure 1. Waterfall Model

A systematic methodology is used to carry out this procedure, commencing with the stage of system requirements and progressing through the phases of analysis, design, coding, testing/verification, and maintenance (Anissa et al., 2021). A waterfall is a series of steps that must be completed in order (one cannot skip to the next level) and are carried out in that order. As for the Waterfall Method, Pressman claims that the phases are Requirement, Design, Implementation, Verification, and Maintenance (Fathoni & Maryam, 2021).

3.   RESULTS AND DISCUSSIONS

3.1 Problem Analysis

Analysis of the problems that occurred at the Tebo Regional Disaster Management Agency (BPBD) is still carrying out the process of receiving verification complaints manually and in handling complaints the public must call or even go to the office first to make complaints directly, and employees who have to collect data on complaints are still writing or typing of complaints that have been reported by the public (Organizer, 2018). This process makes it difficult to validate and verify complaints from the public. To deal with these problems, this research will create a Web-Based Forest and Land Fire Complaint Information System Design using the Laravel Framework at BPBD Tebo Jambi Regency (Herdiansah et al., n.d.). A website-based Complaint System intended to make it easier for the public to make complaints without calling or visiting the office again (Setyabudhi, 2021).

3.2 System Analysis to be Developed

The system to be built in this research is a web-based Forest and Land Fire Complaint information system using the Waterfall system development method. According to (Bassil, 2012) which is a methodology for designing and building software systems, namely the design process gradually flows downward (similar to a waterfall). The use of this method begins by listening to all constraints, obstacles and suggestions from the user. Then a system design will be carried out that is tailored to the needs and complaints that have been submitted by the user, after that the development design is implemented in the form of a website. After that the system will be tested to find out where the bugs (weaknesses) are, which will later be repaired and refined to the system (Akbar et al., 2022). This system will be built using the PHP Programming Language with the Laravel framework and using the MySQL database. The flow in this system is that the first user (Admin, User) must login. After logging in, the system will redirect to each user's page according to their access rights (Sephira et al., 2021).

3.3 System Design

a)   Use Case Diagrams

Use Case Diagrams explain the relationship between actors and the system, used to find out what functions are in the system. there are 3 actors who will use the application namely Complainant, BPBD Admin, Karhutla Admin.

Figure 2. Use Case Diagrams

b) Sequence Diagrams

1) Login and Register Complainant Sequence

In the complainant registration sequence, it is recommended to enter the website page first then register by filling in the identity, after that the complainant waits for email verification and after success immediately proceeds to the login page.
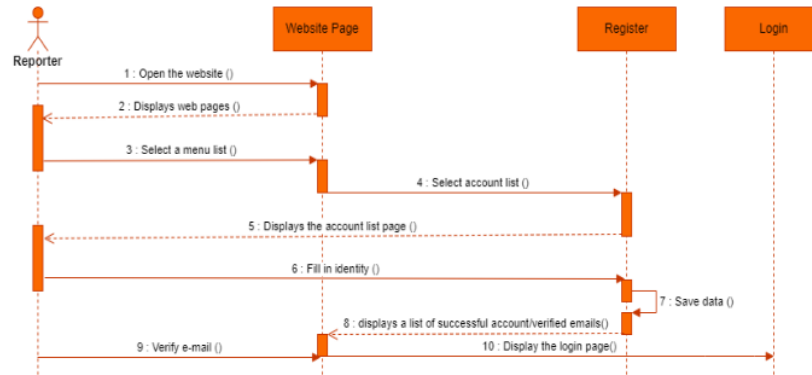
Figure 3. List Sequence Diagrams

The complainant first enters the website, selects the login menu, then fills in the NIK and Password, after that the system will validate the NIK and password. After that, if it is true, the system will go directly to the complainant's main menu.
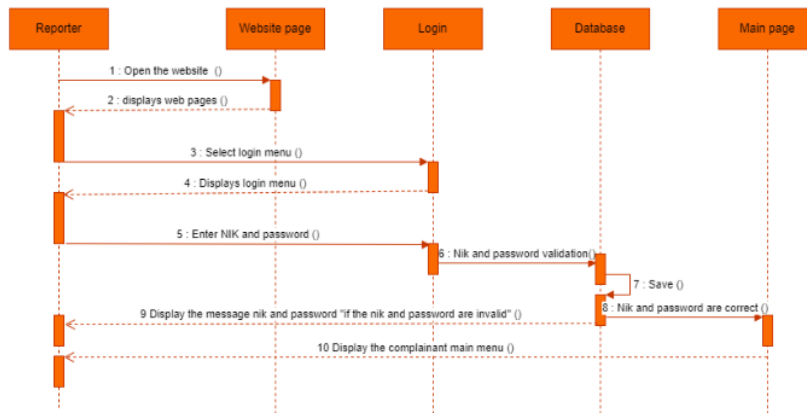

Figure 4 Login Sequence Diagrams

2) Sequence Diagram of Making a Complaint
   The complainant has entered the main menu and will certainly display a complaint form later. Then you can directly make a complaint.
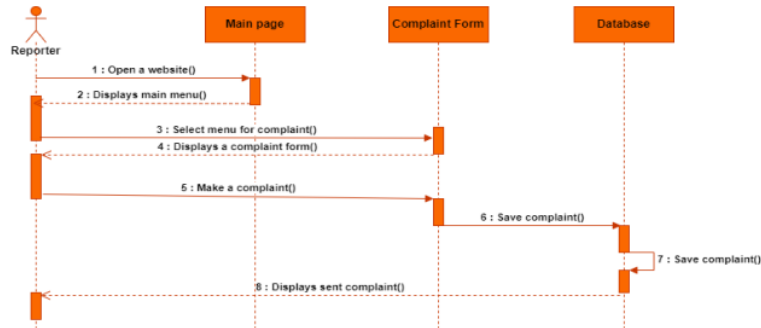
Figure 5. Sequence Diagram of Making a Complaint

3) Complaint Validation Sequence Diagram
To validate the complaint, the BPBD Admin goes directly to the incoming report page and selects the details of the complaint where there are various details of the complaint. Then, the BPBD Admin will confirm the complaint and submit the complaint to the Karhutla Admin.
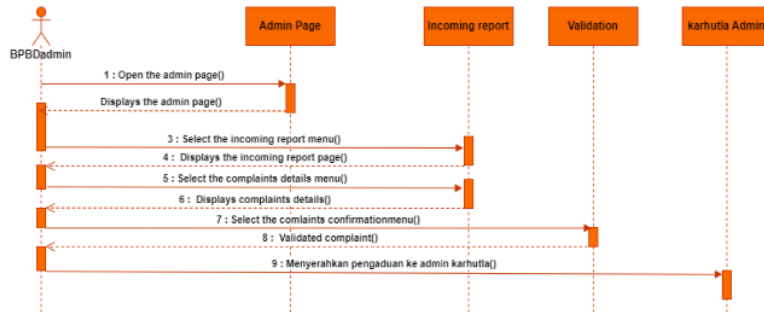

Figure 6. Complaint Validation Sequence Diagram

4) Sequence Diagram Viewing Responses
The Karhutla admin receives incoming reports and then responds to the complaints.
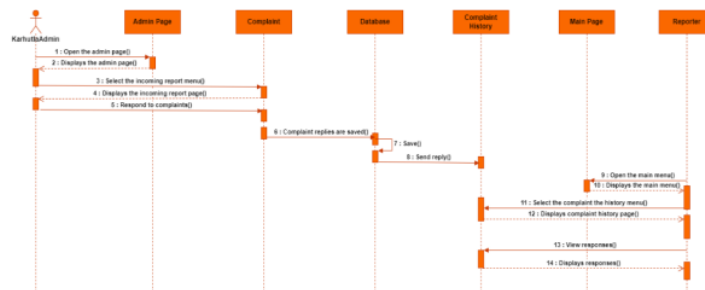

Figure 7. Sequence Diagram Viewing Responses

5) Sequence Diagram Downloading the Complaint Report

Here the BPBD Admin downloads the complaint report by following steps such as downloading the report first and then printing reports from several confirmed complainants.
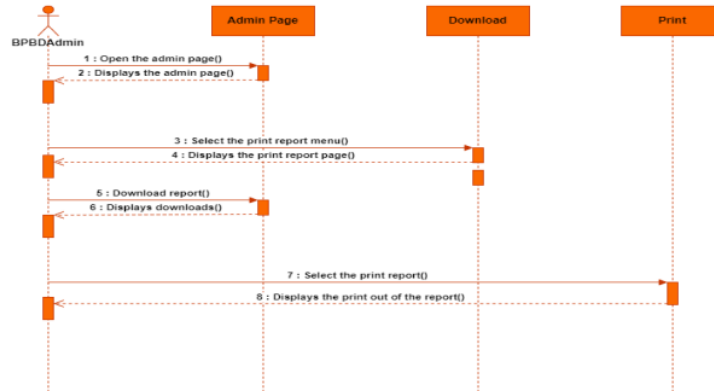

Figure 8. Sequence Diagram Downloading the Complaint Report

c) Activity Diagram
   1) Login Activity Diagrams
      In the Complainant Login Activity Diagram, the BPBD Admin and the Karhutla Admin enter the NIK and password for the complainant, then for the BPBD Admin and the Karhutla Admin enter the NIP and Password. The system will later check whether it is correct or incorrect, if it is correct then it will go to the respective main page.
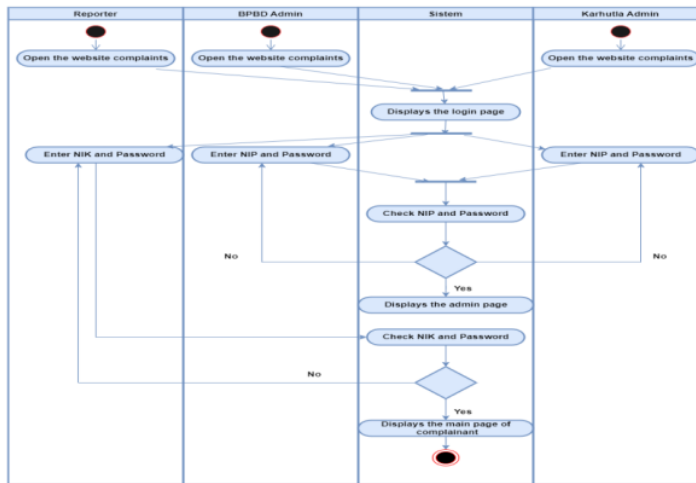

Figure 9. Login Activity Diagrams

   2) Activity Diagram Making a Complaint
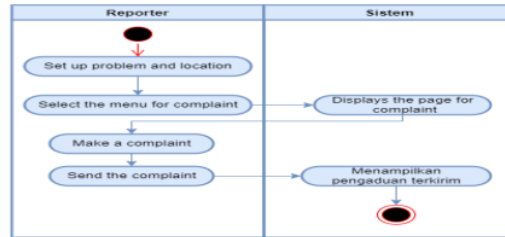   The following is an Activity Diagram for making a complaint:

Figure 10. Activity Diagram Making a Complaint

3) Activity Diagram Viewing Responses
   In the Activity Diagram, see the complainant's response to sending a complaint and being received by the BPBD Admin. The BPBD admin validates the complaint and submits everything to the Karhutla Admin.
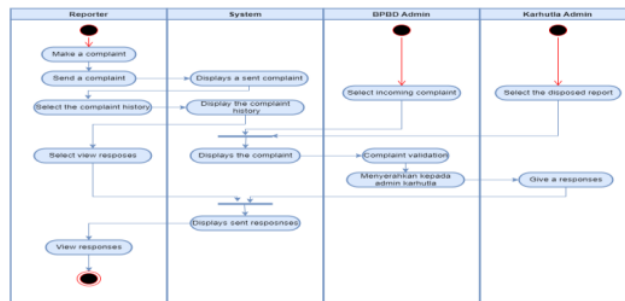

Figure 11. Activity Diagram Viewing Responses

4) Complaint Validation Activity Diagram
   The following is a Complaint Validation Activity Diagram:
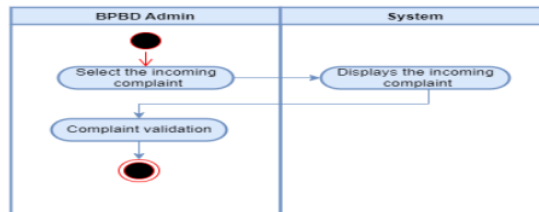

Figure 12. Complaint Validation Activity Diagram

5) Activity Diagram Giving Feedback
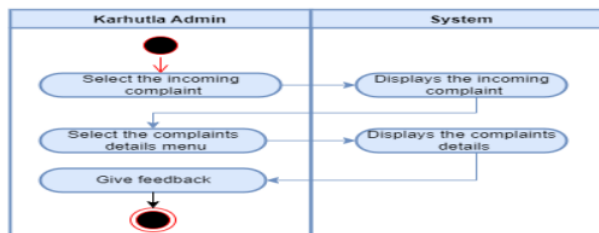   The following is an Activity Diagram Giving Responses:

Figure 13. Activity Diagram Giving Feedback

d) Class Diagram
The class diagram is a picture of several tables in the system that can help in designing a database for an application. The tables in the class diagram have a relationship between one table and another. These tables explain the relationship between one table and another. Based on the class diagram above, a database can be designed which will later become a data store.
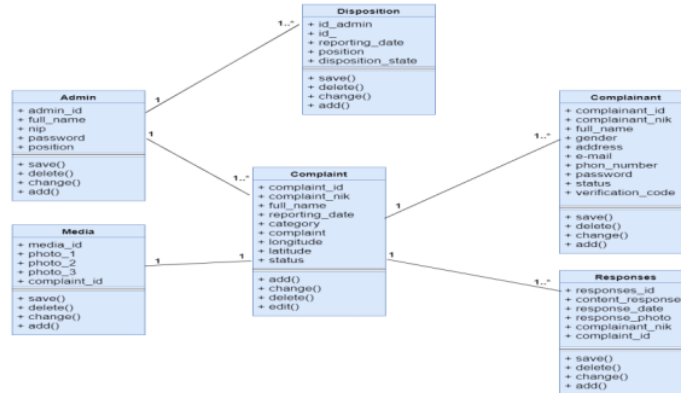

Figure 14. Class Diagram

3.4 System Implementation
System implementation is one of the implementation stages of the system design that has been made and approved in the design. In the implementation stage of this system, it will be explained regarding the implementation of the information system from the implementation that has been built and has been developed.

a. Home Page
The home page is an interface for the Forest and Land Fire Complaint System which contains several information menus. For details can be seen in the picture.

Figure 15. Home Page

b. About Us Page
The About Us page is an explanation of the background of a website for the Forest and Land Fire Complaint System at BPBD Tebo. For details can be seen in the picture.

Figure 16. About Us Page

c. Complaint Procedure page
    The Complaint Procedure page is a page that aims to make it easier for complainants to start the complaint steps properly. For details can be seen in the picture.
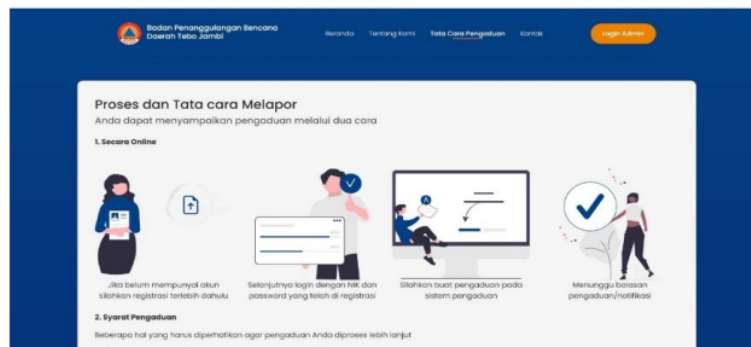

Figure 17. Complaint Procedure Page

d. Registration Page
    The Registration page is a page that functions to self-register in order to get a digital account in the Forest and Land Fire Complaint System application. For details can be seen in the picture.

Figure 18. Registration Page

e. Login Page
    The Login page is a page that functions to enter the Forest and Land Fire
    Complaint System application by entering the NIK data and Password that the
    user has previously registered. For details can be seen in the picture.
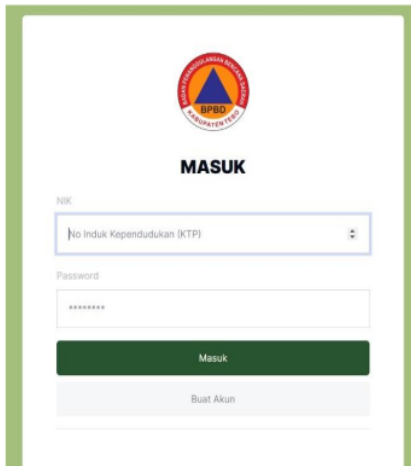
Figure 19. Login Page

f. Dashboard Page
    The Dashboard page is a page that displays the features available in the Forest
    and Land Fire Complaint System application. For details can be seen in the
    picture.

Figure 20. Dashboard Page

g. Create Complaint page
    The Create Complaint page is a page where the complainant fills out an
    incident problem form, such as filling in the details of the incident at the scene
    of the incident, and photographic evidence of the incident. For details can be
    seen in the picture.

Figure 21. Create Complaint Page

h. Complaint History page
    The Complaint History page is a page that contains complaint reports that display the status of complaints that have been made by the complainant. For details can be seen in the picture.

Figure 22. Complaint History Page

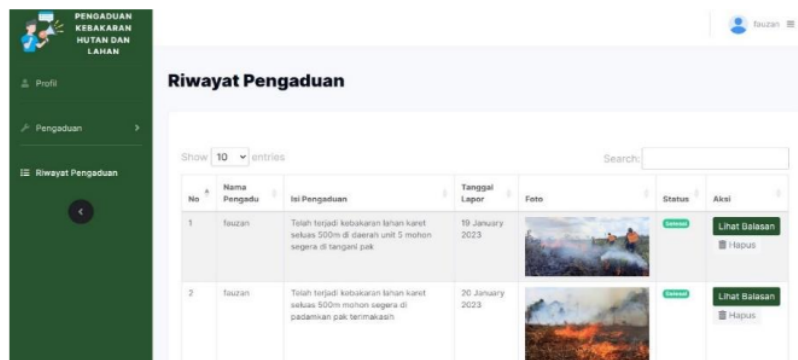i. Viewing Reply page
    The Viewing Reply page is a page that displays reply information that has been sent by the Karhutla admin. For details can be seen in the picture.
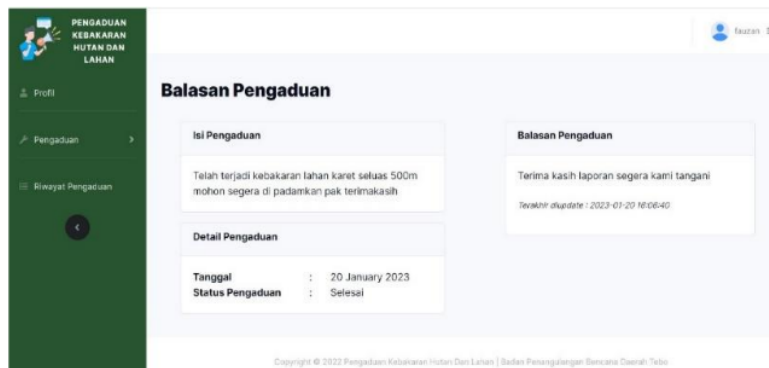

Figure 23. Viewing Reply Page

j. Profile page

Profile page is a page that displays user profile information which contains data that has been entered during registration and data changes can be made. For details can be seen in the picture.
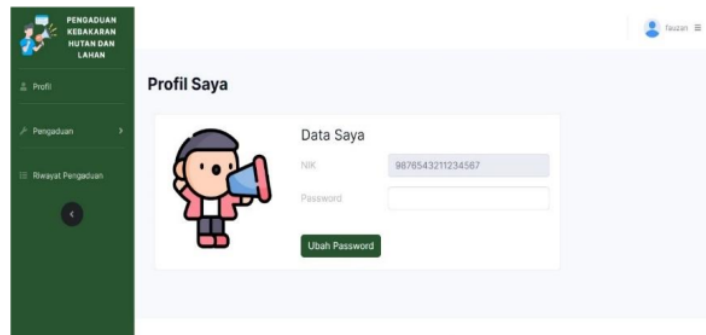

Figure 24. Profil Page

4. CONCLUSION

Based on the results of the research, the authors can conclude several conclusions, including this research has succeeded in creating a Forest and Land Fire Complaint System at BPBD Tebo Jambi, with the existence of a Forest and Land Fire Complaint System at Tebo BPBD can facilitate the process of collecting report data, and for people who complain make it easier to complaint process. This system is still far from perfect, so those who are motivated for future research are expected to be able to develop a complaint system at the Tebo Jambi Regional Disaster Management Agency Service. Furthermore, the system can only process forest fire complaints, developers can add complaint options related to the Regional Disaster Management Agency.

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