



# Development of Flats Management Information System at PT. Grahata Persada Realty

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*Abstract— Nowadays, The Property Business is one of the fastest growing businesses in Indonesia. PT. Grahata Persada Realty is a property developer who's concerned towards the harmonious of nature and its surrounding environment development. The management of joint rights should be done carefully since it's involving with other people's interests. Therefore, in the improvement of every product services (i.e. apartments, flats and or housing), Springhill is striving to provide their maximum and excellence service. The only obstacle they are facing is that the online system for complaints is not yet available, which is considered still ineffective in improving the service. In this research, the writer using Descriptive Method, which describes a specific situation or circumstances that occurs based on the existing facts and data provided and collected during the research. The writer did the research on the subject by collecting and concluding all the materials related to the problem occurred, afterwards the writer make a questioner and do an interview to users to find out what are the things they need to complete the process of making the system. However, by having a computerized system, it is expected to support a maximum and excellence service in implementing the development of apartments or flats; and also it is expected to minimize less complaints that are not monitored during the process.*

*Keywords— Application; Flats; Service; SWOT; SQL; PHP*

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## I. INTRODUCTION

In this world, houses become one of the primary needs for every human being. But nowadays, not everyone can have a house due to the imbalance between the demands and the capacity of lands in order to develop houses in the urban area. The population growth that keeps increasing have impacted the demands of residence become higher, while the capacity of lands is very limited which becomes the biggest concern of the government. However, the thought of developing flats can be an alternative solution, as it also will be efficient on the use of lands in the urban area. In the context of increasing the efficiency and affectivity on the use of land especially in the population density area, a good arrangement of lands should be done so its utilization can be perceived for

the people. Related to those matters, the thoughts of developing a building that can be used as residence for people, flats development can be a solution since it will be made stratified or multi-storey so a high volume of people can live in just a certain building area without having the needs to require a big amount of lands.

Flats consist of joint land/building units. Flats were a shared property managed by a Developer, before PPRS (*The Flats Tenants Association*) was established by the tenants. The establishment of PPRS was to aim the rights and obligations between the tenants and owners of flat in order to understand each other, so that the management of flats can be run accordingly. The management of joint rights cannot be done carelessly since it is involving so many people. In addition to that, the main innovations on the property industry are concerning the quality of the building, the concepts of designing the building, and the concern of how the service will be well managed. PT. Grahatama Persada Realty is the property developer company who's focusing on the development of building and yet concerning the harmonious of nature. Therefore, PT. Grahatama Persada Realty is holding a principle in concerning the harmonious of nature and its surrounding environment. The only obstacle they are facing is that the online system for service improvement and complaints is not yet available, so a reminder system for any complaints cannot be known whether it's already being handled or it's being processed. This situation may cause the lack of trust between the tenants toward the performance of building management. In order to facilitate the tenants to gain all the information about the process of complaints precisely and accurately, they can summarize and gather all the information to make a draft of information system. The current problem is that the management is still processing everything manually, that's why an information system would be effective in improving their service to tenants in a daily basis especially related to any complaints that can be done online by only accessing the internet. The idea of making this system is that it will be used as a remainder or warning whether the management have processed any complaints and suggestions by the tenants; it can also give a measurement of taking a scale priority of which should be done first based on the level of complaints, by so we are aiming to have a maximum improvement of service. Since, this system can be monitored online of the ongoing process, also play an active role in processing the files or data, and also facilitate the officers to make a report to Tenant Relationship Officer Department regarding this matter.

## II. STUDY LITERATURE

Nowadays, the business property has been growing rapidly in Indonesia. To strive the improvement of customers 'satisfaction in investing in the property business, surely the Developer should give their priority for customers so that they will not suffer from deprivation whatsoever. In order to do so, an information system should be made to maximize its service. According to Law No. 16 of 1985 Article 1 and Article 1 Point 1 concerning Flats Building, it is stated that Flats are multi-storey buildings that are built in an environment, which are divided into functionally structured parts in horizontal and vertical directions and are units that can be owned and used separately, especially for residence, equipped with joint parts, joint objects and shared land [1]. Management is an activity carried out by the organization in order to control, maintain and regulate the resources systematically within the organization [2]. Owners of flats and residents of flats, regulated in Law No. 16 of 1985 concerning Flats, especially Article 1 Point 9 and Point 10, stated that what is meant by Owners are individuals or legal entities that have flats who have met the requirements as the rights holders of land, while what is meant by Residents are individuals who reside in the apartment unit [1]. According to Robert G. Murdick and Joel E. Ross "Management information system is a communication where the input information is recorded, stored and processed to produce the output in the form of decisions about operational planning and supervision" [3]. Waterfall is a waterfall method or the so-called waterfall method, which describes a systematic and sequential approach to software development starting with the specification of user needs and then going through the stages of planning, modelling, construction and deployment of the system to customers or users, which ends with the support of the completed software produced [4]. A Php (*Hypertext Pre-processor*) is a server-side web programming language which is an open source. PHP is a script that is integrated with HTML and is on a server (server side HTML embedded scripting) [5]. Mysql is a database management system that is used to store data in separate tables and place all data in one storage place. MySQL is included as an RDBMS application (*Relational Database Management System*) or commonly called the database applications that use relational principles [6]. The website was originally an information service that uses the concept of hyperlinks, which makes it easy for internet users to search information on the internet. Information presented with the web uses multimedia concepts, information can be presented using many media, such as text, images, animations, sounds, or films [7]. The purpose of UML is to provide general vocabulary from object oriented terms and diagram techniques that are rich enough to model each system development project from analysis through implementation [8]. SWOT Analysis (Strength, Weakness, Opportunities, Threat) is a systematic identification of the strength factors and organizational weaknesses as well as opportunities and environmental threats outside the strategy that present the best combination of the four [9]. The development of the organization is triggered by improved services. Improved services to the system developed will provide accuracy in data processing, easy

to use system, the ability to handle problems viewed from normal conditions, able to coordinate activities to achieve goals and objectives, reliability of consistency in [10]. processing input and output and reliability in handling exceptions.

### III.METHODS

#### A. Collection Data Technique

The following is the data collection method which carried out in this research:

1. Conduct literature studies related to this research to understand the theoretical basis and the concepts to support this research.
2. Conduct interviews directly with residents and management workers in the flats.
3. Conduct observations in the field and be directly involved actively on the object that's being examined, to facilitate the writer in analysing the ongoing process.

#### B. The Research Flow Diagram

In conducting this research the writer takes steps taken systematically so that what is desired can be achieved [11]. Following are the proposed research steps:

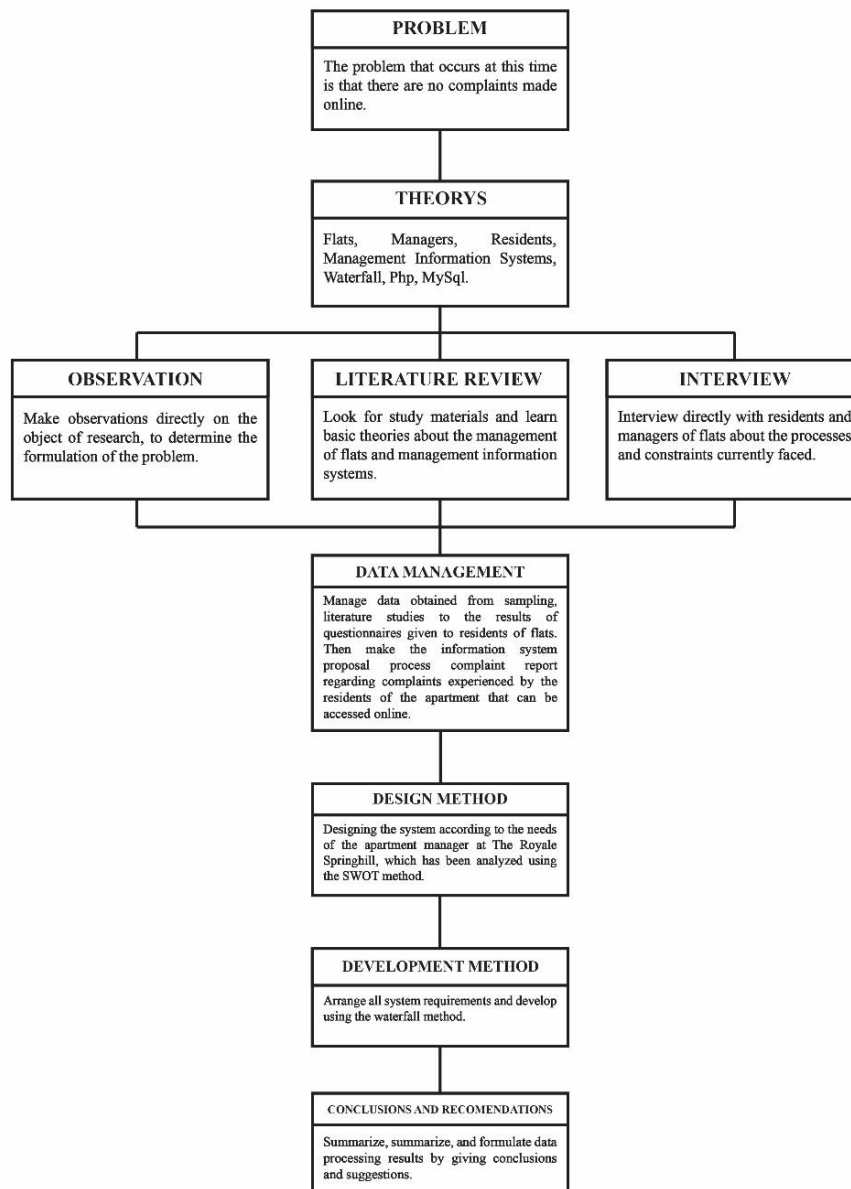


Figure 1 Research Steps

Explanation of the research steps above, as follows:

1. The first step is to determine the topic to be researched by looking for the unresolved problems in the field.
2. The second step is to determine the formulation of the problem which then analyse the problem using the SWOT method.
3. The third step is to conduct a literature review obtained through books and journals research that have been carried out previously.
4. The fourth step is to study the research that has been done previously and compare it to the recent research.
5. The fifth step is directly interviewing the residents and management workers how the process is currently running in the field.
6. The sixth step is to collect the data obtained in the field which is then used as reference materials in making the questionnaires given to the residents for analysing existing problems.
7. Next step is analysing the data obtained with the SWOT method.
8. The seventh step is to design and propose information system based on the problems that exist in the results of SWOT Analysis with the aim of resolving these problems.
9. The eighth step is to develop the system using the waterfall method.
10. The final step is to make conclusions and suggestions on the research conducted.

**C. Design Method**

The writer is using the UML (*Unified Modelling Language*) design method; the method is used to model a system that uses an object-oriented concept. The UML is a language that has become a standard in the industry for visualizing, designing and documenting software systems. UML offers a standard for designing a system model [12].

**D. Development Method**

The development method in the application that will be made, the writer is using the waterfall development method. Waterfall method is a systematic and sequential development model of information system [4].

**IV. RESULT AND DISCUSSION**

**A. Problem Analysis**

To be able to formulate the problem the writer identifies the ongoing process which is then detailed with the SWOT method as comparative or consideration data between the ongoing process with the proposed process, the following is the process analysis using the SWOT method based on the ongoing business processes and the proposed process:

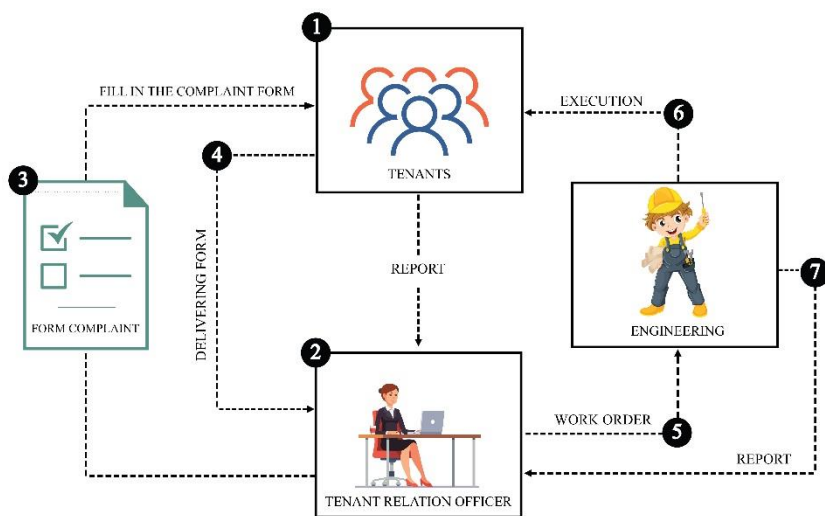
**Table 1 Problem Analysis Using the SWOT Method**

SWOT	Ongoing	Proposed
Strengths	Recording of complaints is carried out in the ledger and the complaint process is carried out directly.	Recording complaints becomes systematic and the complaint process becomes structured and more effective.
Weakness	Monitor outstanding complexes are done manually and work orders are often scattered and sometimes unsystematic due to the negligence of flat workers.	Special adjustments are needed for residents who have lack of technology perspective and not all residents have internet access.

Opportunities	Improvement of services carried out at this time has been considered good, so the residents' satisfaction with its current managing services have reached its maximum.	Applications can encourage employee performance in managing and also improving services to flat residents.
Threats	The negligence of employees in managing documents that causes complaints are not being monitored properly, resulting the disappointment of residents' in the performance of flats management.	The lack of a defence system gives the opportunities for hackers and the existence of viruses that can interfere with the performance of the system.

### B. Ongoing Process Analysis

The following are the results of the Analysis which currently running under the flats management of The Royale Springhill:



**Figure 2 The Ongoing Process**

Figure 2 explains the current flow of the Royale Springhill Residences management who currently running a process in reporting or complaining complaints of the residents, the steps are as follows::

1. The residents come to the officers or commonly called the TRO (Tenant Relations Officer) to make reporting complaints.
2. The TRO (Tenant Relations Officer) give the complaints reporting form or sheet for the residents.
3. The residents fill out the form and describe the problems experienced in their units.
4. The residents give back the filled in form to the TRO (Tenant Relations Officer).
5. The TRO (Tenant Relations Officer) make a Work Order attached in the reporting form.
6. The TRO (Tenant Relations Officer) gives the Work Order to the engineers to be followed up. Then the engineers follow up on the reporting complaints, then the engineers request an approval from residents that the unit had been processed.

- After the engineers resolved the problems complained and have received the approval from the residents, then the engineers return the work order to the TRO (Tenant Relations Officer) to be recapped and filled in.

### C. Design Method

Based on the results of the analysis above, the proposed process can be described as follows:

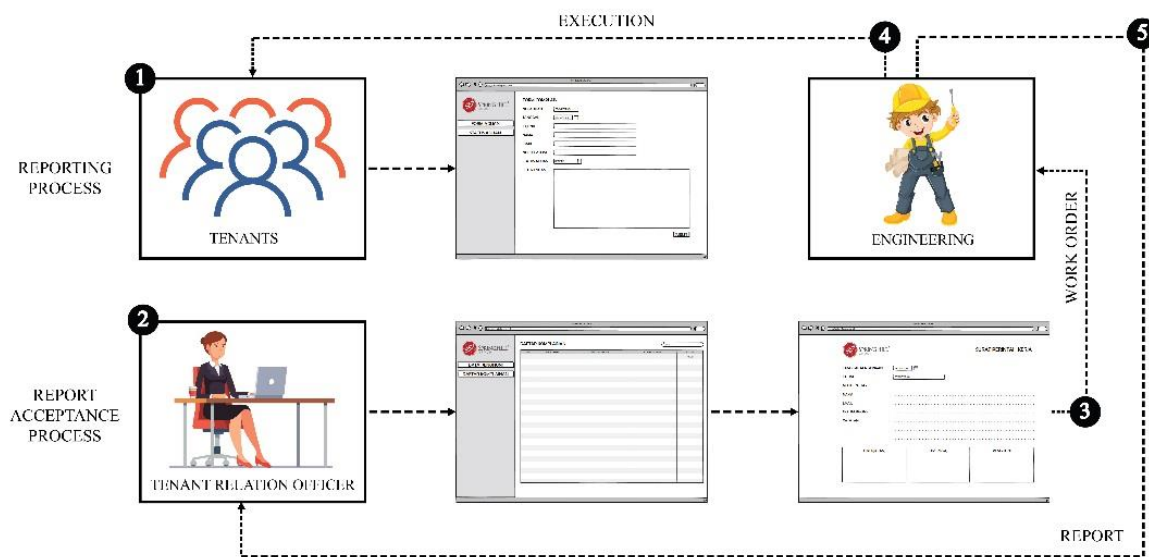


Figure 3 The Proposed Process

The following are the process steps of the proposed system:

- The residents make online reports.
- The TRO (Tenant Relations Officer) monitor and check the outstanding complaints that are accessed online.
- The TRO (Tenant Relations Officer) print out the Work Order selected from the outstanding complaints to be given to the engineers.
- The engineers follow up on the reports that are carried out directly to the residents' units concerned.
- The engineers request an approval from the residents as a marker that the problems have been resolved and then return the work order to the TRO (Tenant Relations Officer).

### D. Proposed Process

The ongoing process in accepting the residents' complaints made by the management is still using a manual method and has not been computerized so that it's slowing down the performance process in improving services to the residents of The Royale Springhill. Based on the results of the analysis carried out, the writer will make a system design using PHP and MySQL where the systems help to improve the management services. In designing the system, it takes stages of a life cycle of the system development which obtained through analyzing the problems that occur in the business processes that are currently running. The following is a design proposal in creating a system built to manage complaints at flats of The Royale Springhill Residences using the UML method:

### 1. The Proposed Use Case Diagram

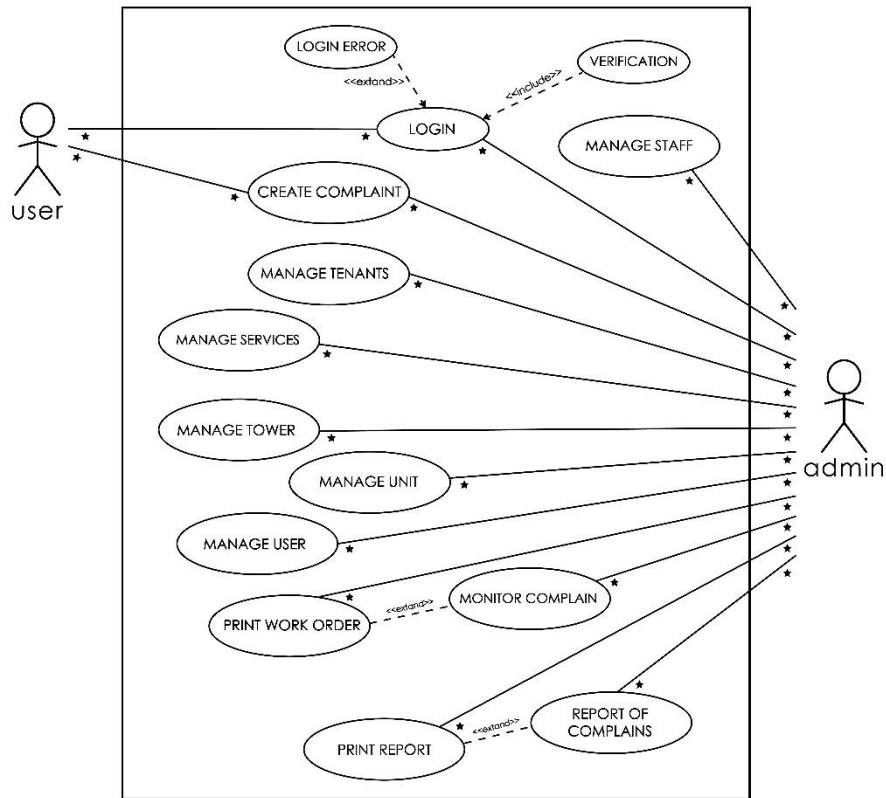


Figure 4 The Proposed Use Case Diagram

Figure 4 explains that the admin has the right to full access to manage the data in each application menu, while the user only has access to make complaints. In the use case that is made there are two actors, namely admin and user, which the two actors have their respective roles. Admin plays a role in managing complaint data, occupant data, service data, staff data, tower data, data units, user data and the user has the role only to make complaints.

### 2. The Proposed Sequence Diagram

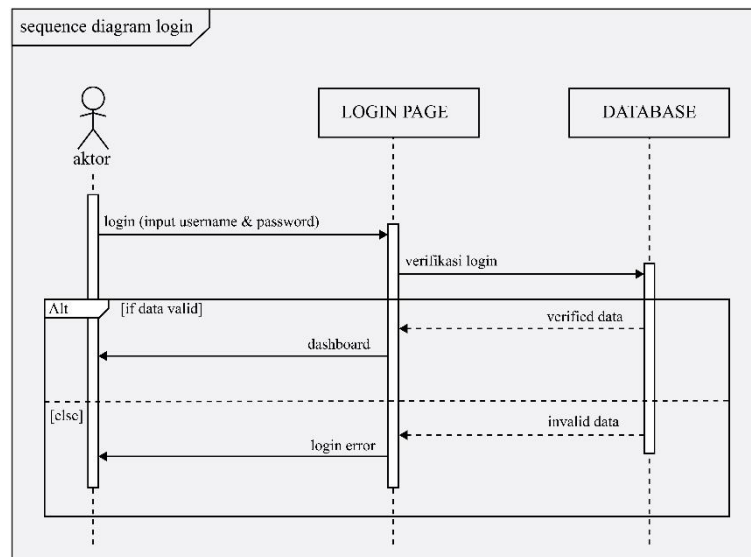
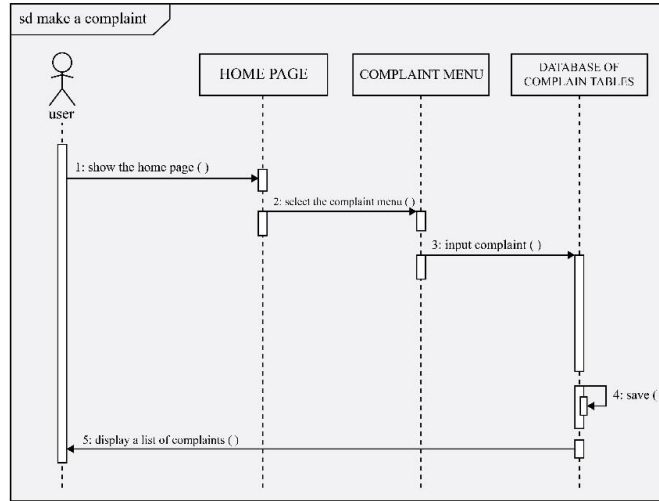


Figure 5 A Sequence Diagram Login

Figure 5 explains how the actors (admin and user) login with the current data, then the system will check the existing database, whether the database entered is appropriate or not appropriate. If it does not match, the system will deny; if successful, the system will continue to the dashboard menu.

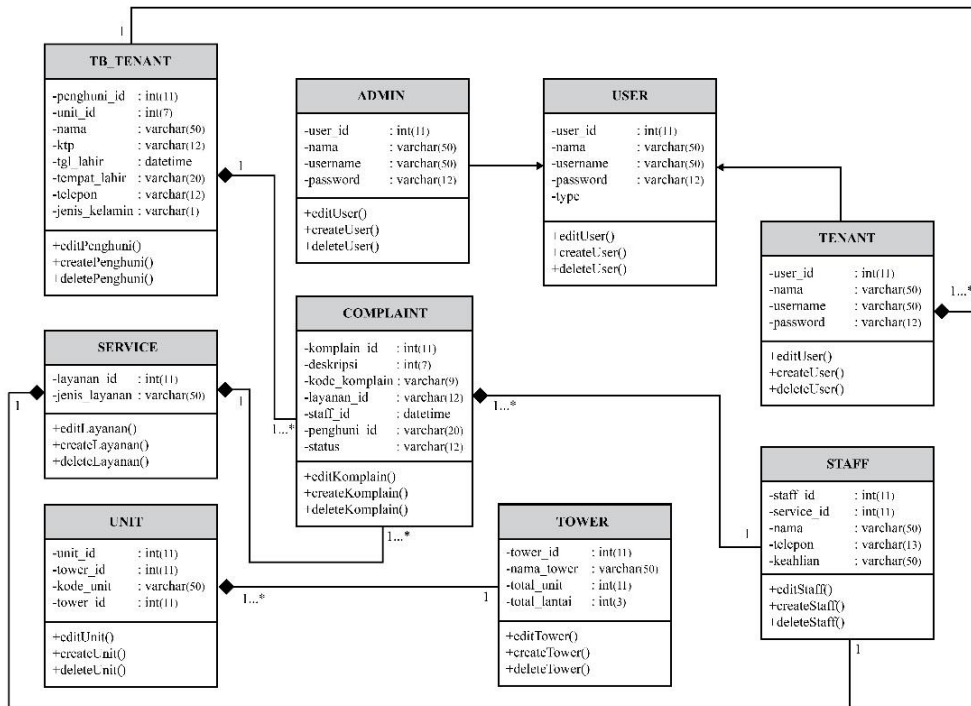


**Figure 6 How A Sequence Diagram Make Complaints**

Figure 6 explains how the actors (admin and user) make complaints and the system will display a complaint menu containing the column for inputting the data that has been specified which is then stored in the database.

**3. The Proposed Class Diagram**

Class diagrams are used as table designs that will be used in the application. The following is a proposed class diagram that will be used in making the application for complaints management that will be applied in the management flats of The Royale Springhill Residences:



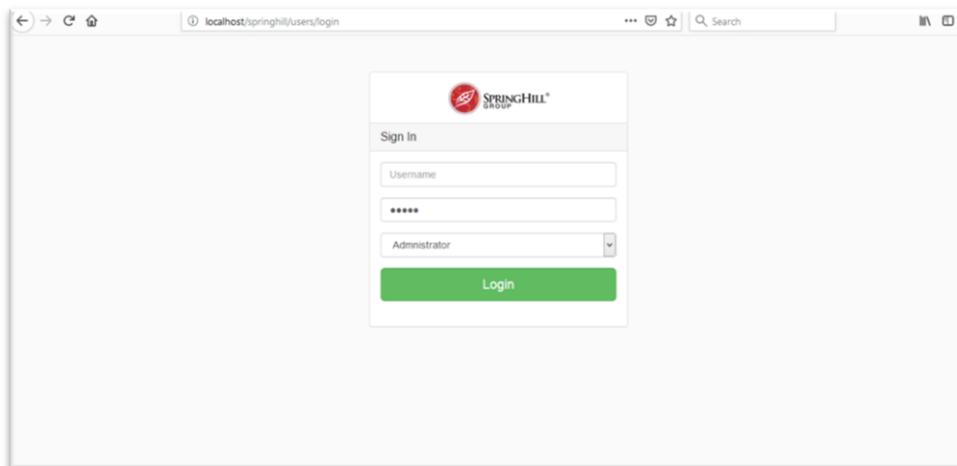
**Figure 7 How an Activity Diagram Print Out Reports**



The application consists of 7 tables, including occupant tables, user tables, unit tables, tower tables, staff tables, complaint tables, and service tables. Each table connects with other tables.

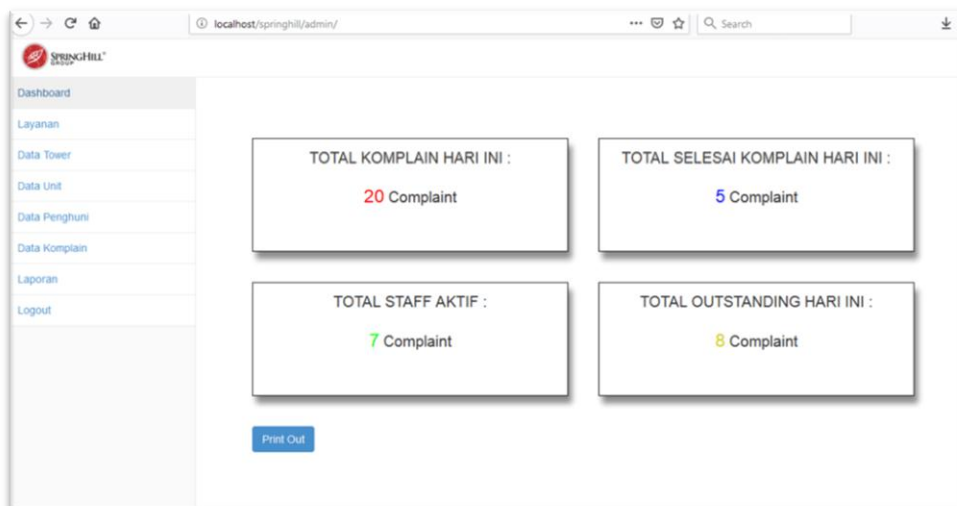
### E. Interface Implementation

After analysing the business processes that were running before using the SWOT analysis method and the proposed design using the UML method, the following are the results of the development system made by the writer:



**Figure 8 Login Page View**

Figure 8 is the page view of the information system of the Royale Springhill flats management. To access the page, the admin or user should enter the login data that has been registered and recorded in the database.



**Figure 9 Dashboard Page View**

Figure 9 is a dashboard page of the information system of the Royale Springhill flats management which set out a system after the admin passes the login process. On this dashboard admin can control and monitor all the complaints reported by the residents so that the admin knows the process of complaints which have been done/resolved, which is being processed, and also that has not been processed.

**Figure 10 Complaints Page View**

Figure 10 is a complaints page view which consists of columns to input the complaints data and next will be stored in the database.

## V. CONCLUSIONS

Based on the description described by the writer in the previous chapters, the writer makes a conclusion as follows:

- a. Based on the results of research conducted and formulated by the writer using the SWOT analysis method of the complaint process that took place previously and its proposal which is then carried out the design of application using the UML (Unified Modelling Language) design method contained in the diagrams described above with the aim to simplify and explain the characteristics and detailed processes in making this application.
- b. After conducting the above process, the writer chose an application development using the waterfall method. The application is considered successful in increasing the effectiveness of the complaints process carried out by the residents of the flats, so that the apartment management received a positive feedback in improving the services of the flats management of The Royale Springhill Residences.

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