

**EBARANGAY: AN APPLICATION MANAGEMENT  
SYSTEM WITH PUROK INTEGRATION AND  
FLOW OF WORKLOAD**

A Capstone Project Presented to the Faculty of College of  
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for the degree Bachelor of Science in Information Technology

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## **DEDICATION**

This study is dedicated to the people who believed in our skills and determination. To our loving parents for their undying support, guidance, and understanding along the way. Also. The people workmates, and friends who helped us in their in their own little ways in this study. To the faculty members who shared their knowledge and experience to the RJS team. To our supportive adviser who has supported and guided us along the way. And especially to our Creator, the Almighty God for giving us the continuous strength, and faith to conduct the study.

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## CHAPTER I – INTRODUCTION

### Rationale of the Study

The barangay is one of the smallest administrative government division in the Philippines. It is the foundation for a growing community. This serves as the primary planning and implementing unit of government policies, plans, programs, projects, and activities in the community, and as a forum wherein the collective views of the people may be expressed, crystallized, and considered, and where disputes may be amicably settled.

The practice of implementing a barangay is not only seen here in the Philippines but can also be observed in other countries, they call them towns. They are designed and authorized to perform certain governmental functions on the local level, and its main purpose is to exercise the power of the state to promote greater prosperity, safety, convenience, health, and the common good of the general community.

A barangay captain is an elected position by the residents in an area and supported by the government. Purok area is composed of fifty to 100 households. Purok leader is a chosen volunteer by the residents and therefore accepted and respected. A purok leader can be the bridge of information between the barangay captain and residents. (Matthies, 2017).

The eBarangay application will be proposed and distributed to the municipality of Mandaue City, Cebu utilizing the proposed revenue stream by the researchers to help manage the barangay that are under the municipality. The eBarangay application aims to divide the workload of the barangay with purok integration to achieve successful flow of workload. The management system of eBarangay helps to downgrade the services of the barangay which will receive, sort and send the complaints and concerns to the appropriate people for the concern such as the purok leader towards the barangay captain depending on the level of concern. Legal information is a very important news to every individual, with the eBarangay application. The barangay captain can post announcements. The purok leader can settle things of their responsibilities towards the residents

towards the barangay captain, and residents will be able to send their requests and complaints, such as road integrity, electricity, water, noticing new faces, tracing and other upcoming concerns. The residents could also request for barangay documents remotely. The eBarangay application includes voting system by the residents to vote of such position.

## Objectives of the Study

The main objective of this study is to design and develop a system that will bring the services of a barangay into electronic form with purok integration and flow of workload.

1. To develop an application that will enable residents to:

- manage own account
- view to eBulletin
- view the geographical map
- send their complaints
- request for barangay documents
- vote for nominees

2. To develop an application that will enable the purok leader to:

- manage own account
- access to eBulletin
- verify new user accounts
- view list of resident's profiles within their *purok* area
- receive the concerns and complaints and requests
- assess and perform necessary minor actions
- send report
- vote for nominees

3. Develop an application that will enable the barangay treasurer to:

- manage own account
- access to eBulletin
- confirm payments
- send reports
- vote for nominees

4. Develop an application that will enable the barangay secretary to:

- manage own account
- access to eBulletin
- view resident's profiles within the barangay area
- receive major concerns and complaints, the concerns and complaints from the resident users
- send reports
- vote for nominees

5. Develop an application that will enable the barangay captain to:

- manage own account
- access to eBulletin
- manage resident's profiles within the *purok area*
- manage reports
- promote, demote or nominate user

6. Develop an application that will enable the admin to:

- add officer account
- view officer account
- add resident
- assign position
- activate or deactivate barangay name
- activate or deactivate purok name

## Significance of the Study

**Residents.** The study will help strengthen the connection and gap of communication between the barangay staff and its residents. It aims to give residents a platform to voice out what's on their mind, and to access the services remotely for better convenience.

**Purok Leader:** The system will help the purok leader outline their duty within the purok they're assigned to, and will aid with managing the information that's being given to them. This system can help purok leaders to receive requests and complaints about the purok area and easily communicate to the captain. This aims to conveniently track the residents within the purok area.

**Barangay members:** The system will help the barangay members be able to immediately determine who is in need with the services a barangay can give, concisely. The barangay member can be aware of the complaints of the residents and confirm status through the eBaranagay system.

The system will help the barangay member for the reduction of workload and easy to announce news with bigger scope of audience that all residents can easily be informed, conveniently track the status and details of every *purok* and immediately determine and access the needs of the residents.

## Flow of the Study

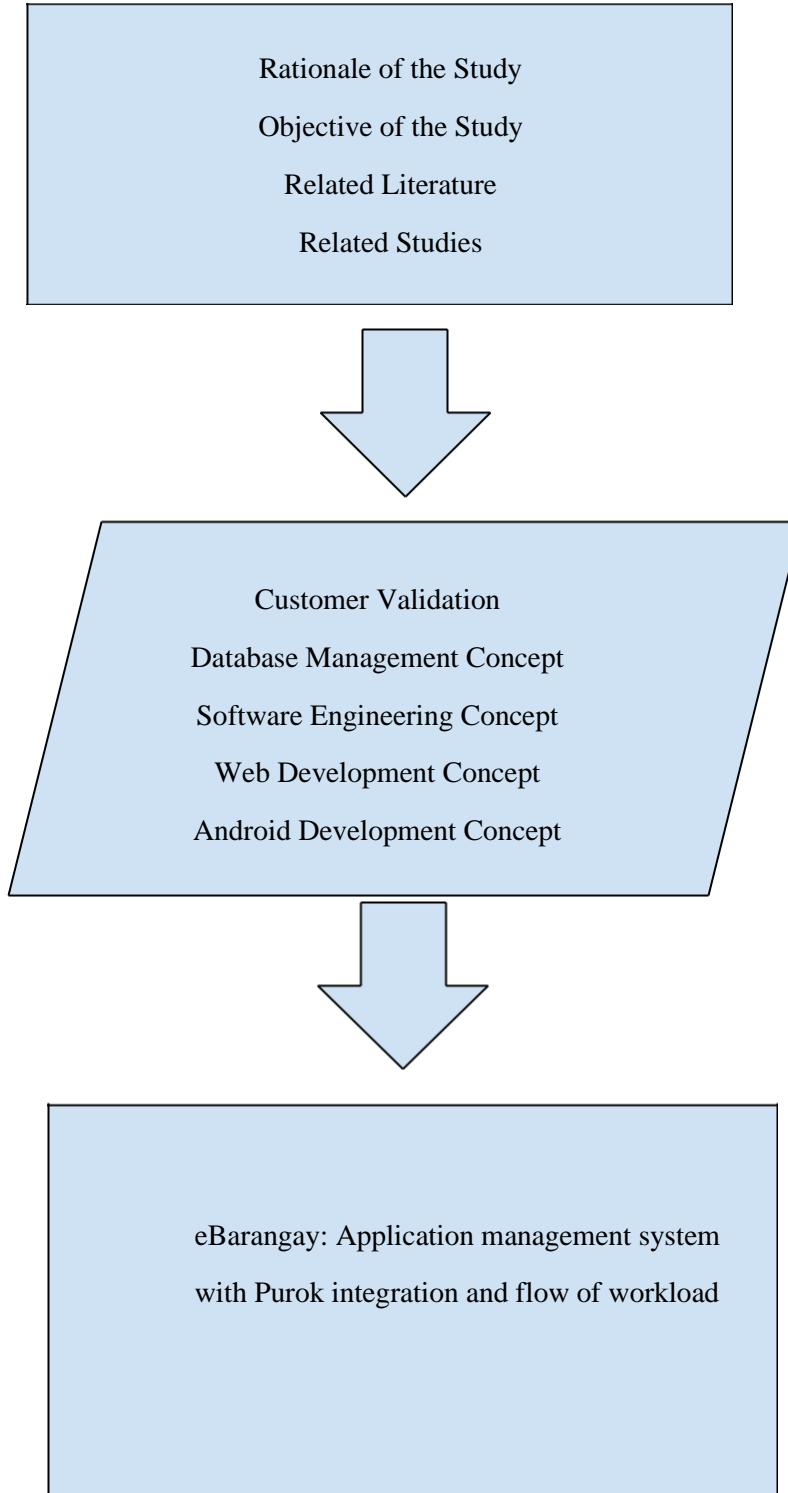


Figure 1: **Flow of the Study**

## **Definition of Terms**

Barangay – Refers to a small administrative division of the Philippines that is lead by a team composed of a Barangay captain, Secretary, Treasurers, Auditors and Councilors

Purok – It is a division within a barangay; it often serves as a unit for delivering services and administration within a barangay



## CHAPTER II – REVIEW OF RELATED LITERATURE AND STUDIES

### Related Literature

Part of purok's function is to receive, disseminate and act on information including the petty fights from the residents before passing over to the barangay captain. The United States hailed the purok system as the best practice of harnessing as the couriers of information to residents to implement strategies for disaster risk reduction (Curato & Calamba, 2018).

According to Cheng (2019), the formative years in establishing the purok system with an emphasis of volunteerism and self-help provided the necessary learning process for residents and municipal officials to overcome the challenge of coordination within the community and to the different levels of government.

Through systematic qualitative analysis, it is found that residents of a fishing village in San Francisco, Camotes could contextualize warning information to spur actions. The residents also evacuated without waiting for the Typhoon Haiyan to worsen, as well as the tourist (Ponce de Leon, 2021).

According to the CebuDailyNews (2017), the first iteration of institutionalizing of the Purok system similar to the Bohol province model was on San Francisco town on Camotes Island, Cebu. In fact, the implementation of the Purok system is what helped them survive during the Super Typhoon Yolanda's devastation back on November 8, 2013. This is all thanks to Alfredo Arquillano Jr. for setting it up back in 2004 which purok system was originally formed in 2004 for projects on education, livelihood, and waste segregation (Curato & Calamba, 2018). So, it was only a matter of time before Cebu province found a way to institutionalize the purok system that may or may not be modeled after Bohol province, which found the purok system quite valuable in its recent encounter with unwanted visitors going by the group name Abu Sayyaf. Were it not for the purok system that inculcated a sense of vigilance among residents in Bohol's Inabanga town, these bandits

would have had their way and kidnapped foreign delegates who were in the province for the ministerial round of the Association of Southeast Asian Nations (ASEAN) summit meeting

## Related Studies

**Goals**

Empower officials with an information system that allows them to manage the activities of the barangay. The Computerized record system is also beneficial for the residents since it generate reports and documents.

**Opportunities**

Cost effective, user-friendly and affordable system that is also internet-ready. Barangay database integration for Local Government System administration.

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Figure 2: **BeST Barangay System**

BeST is a Barangay e-System that provides tools that can aide the needs to operate. This system boasts a management system for Records electronically; Information Management System for their Residents Profile, Judicial and Disaster Risk Reduction; and a Document Processing module that helps with Residents barangay clearance, Barangay ID, Business permits and transaction reports.



**Figure 3: e-Barangay visual of their functionality**

The objective of OnDemand eBarangay Information System is to organize local barangay information into a media where information becomes readily available and accessible upon demand or request. Since local information cannot just be acquired anywhere, the need to build the information in electronic format is required. Guidelines and procedures are in place in order to attain this objective. History and previous information together with the current events and other information that is shared publicly will be encoded or scanned and saved in the system. Logged books can still be used and information is updated in the system. Thus, a dictionary or encyclopedia will be created and continuously updated as reference for current and future times. The contents of the eBarangay Information System will be a legacy for the future generations.

Building of information from the barangay level is a better way to create a database of residents' information. Barangay database can be linked or shared to a bigger database system where selected information is made available to the public. Information from the barangay can be scaled to municipality, provincial or even national.

Having online information for the locality offers a lot of benefits not only to the local constituents but to visiting guests and future generations. Information can be used to create

statistics, a tool for progress and event in the management of the local barangay. Partner eBIS with and ID system where unique number is assigned per individual can help crime prevention or event offers job opportunities to individuals where mix and match search can be requested.

Table 1

Comparative Matrix

	<b>BeST</b>	<b>WarpVision ISS</b>	<b>eBarangay</b>
Manage Account	✓	✓	✓
Manage Complaints			✓
Manage Requests			✓
Request Documents	✓	✓	✓
Profiling	✓		✓
Purok Integration	✓		✓
Public eBoard			✓
Schedule Activities			✓
Geographical View			✓
Create Organization/Groups			✓
Voting System			✓



## CHAPTER III – RESEARCH METHODOLOGY

### Scope and Limitations

This study focuses on developing a web and mobile-based platform for management system. This system will help mentioned barangay officials manage residents records, complaints, reports, and document requests. In addition, residents can receive notifications and be able to submit document request, complaints, and their votes on the ongoing election.. This study will be first conducted here in Mandaue City.

The limitations of eBarangay are the following:

- The system cannot verify if the details inputted by the residents for their profile is accurate.
- The system will not handle the management of organizations.
- The system will only cater document requests for Barangay clearance, and Cedula.
- The system will only handle complaints and requests regarding lights, roads, residents, electricity, and water.
- The proposed study will only focus on barangays within the Mandaue City area.
- The system is not compatible with IOS.
- Android 4.0.3 and higher for Mobile devices.
- Windows 7 and higher for desktop/web.

## Software Engineering Methodology

Software Engineering Methodology is a series of systematic process used in software projects. It comprises features of either building in a sequence, refining of current versions or tweaking of the system.

Iterative model design is a particular design that is broken down into iterations. It starts with the requirements where system related information is gathered and analyzed. Then the design phase is next, to utilized the design of the system. After that is the implementation phase, coding process is involved and executed from the designs and specifications to implement the initial iterations. Testing phase will then be done to test the code that was implemented. This is to identify and locate potential bugs and issues. Evaluation is the final phase of the iterative model design. This is to examine the project status and validate the initial requirements as well as the suggestions for the next possible iteration.

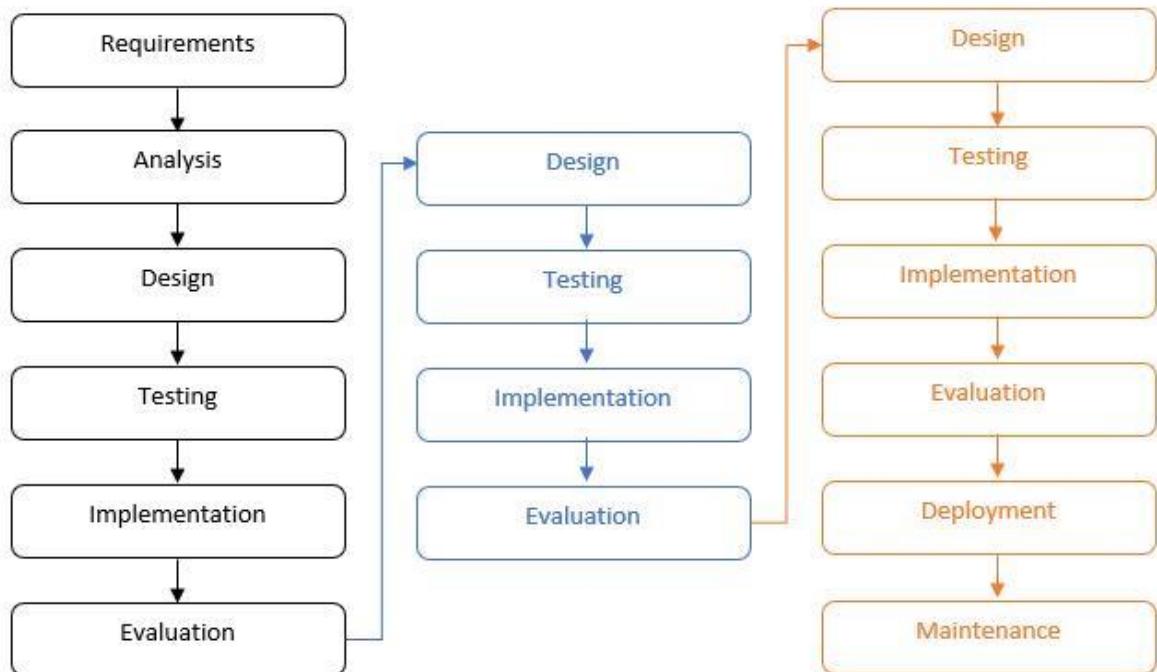


Figure 4: **Iterative Model – Design**

Iterative model design is a cycle of various processes or phases when implementing a software project. Each of the phases are iterated, starting from designs and developments, to having to test and evaluate the system, identify further requirements. Having to base on the evaluation of the previous product, you can identify the requirements needed to either maintain or improve the system.

The model starts not with the full requirements but basic ones like design and development. They are used first to make the initial iteration, once developed, it is then evaluated to define or to decide the next iteration. The process is repeated to improve and develop the software until they come to a conclusion where no further requirements are needed.

## Planning Phase

### Business Model Canvas

Business Model Canvas is a strategic management and lean startup template for developing new or documenting existing business models. It is a great tool to help us understand a business model in a straightforward, structured way. It is a visual chart with elements describing a product's value proposition, infrastructure, customers, and finances.

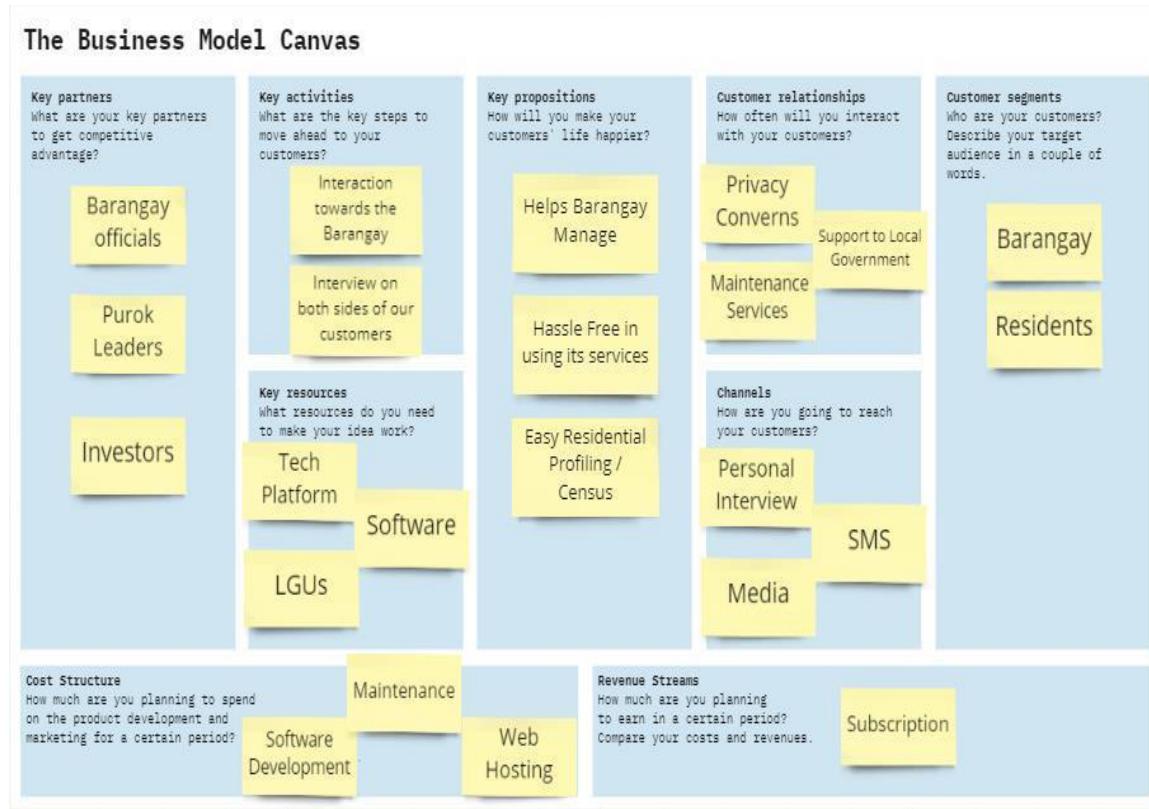


Figure 5: **Business Model Canvas**

The figure above is the business model canvas used by the eBarangay. There are two customer segments involved: Barangay and Residents. As for Residents, they need to register in order to gain access to the services, while initial Barangay users will have their accounts be assigned their respective user type by the admin. The revenue streams rely on the subscriptions from barangays who want to use the system, and service charges from every document requests.

## Program Workflow

A program workflow is a demonstration of an application that represents a step-by-step process of software that is executed accordingly.

### Web Program Workflow

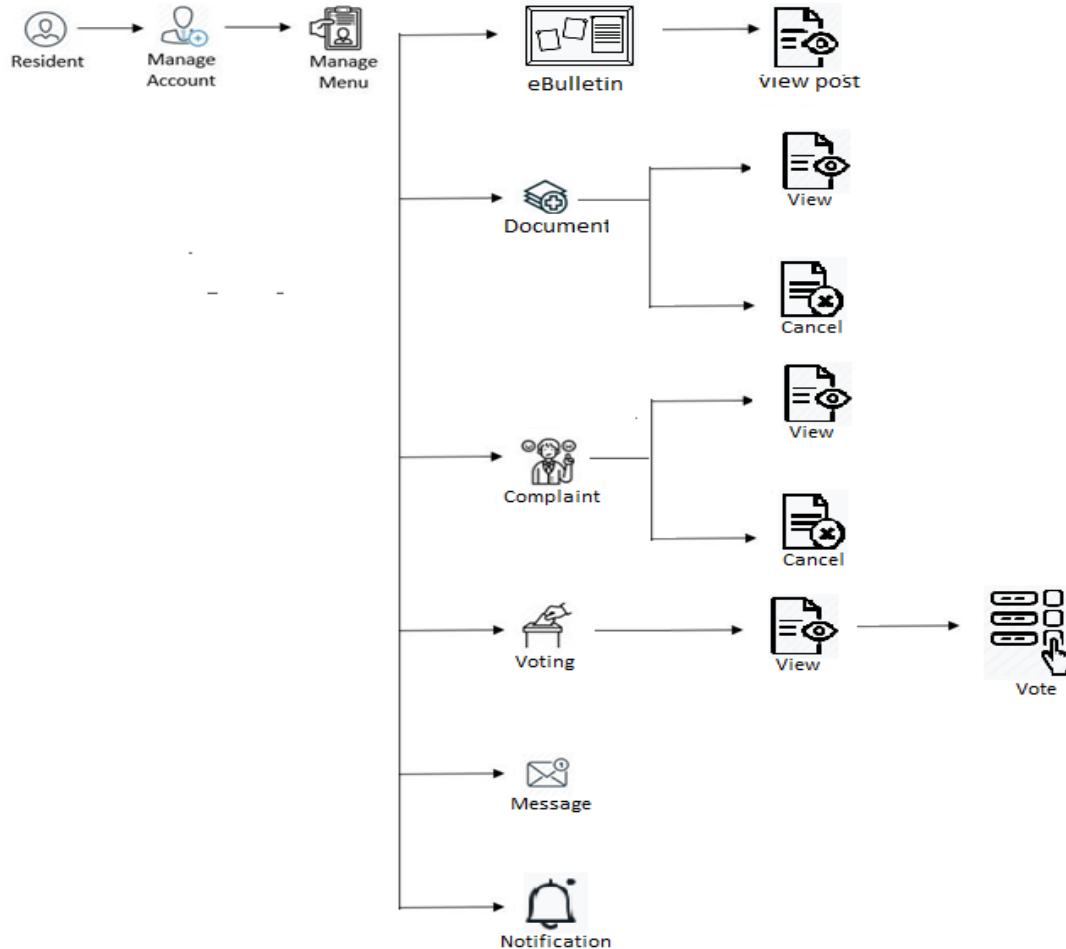


Figure 6: Resident – Web Workflow

The figure above is the program workflow for the resident. The Residents can check her account and edit information. They have access to request document and send complaints to the purok leader. The eBulletin is The eBulletin is visible to the resident account, yet they cannot post. They can send message and receive notification. They are also able to see the nominees created by the captain which residents can vote.

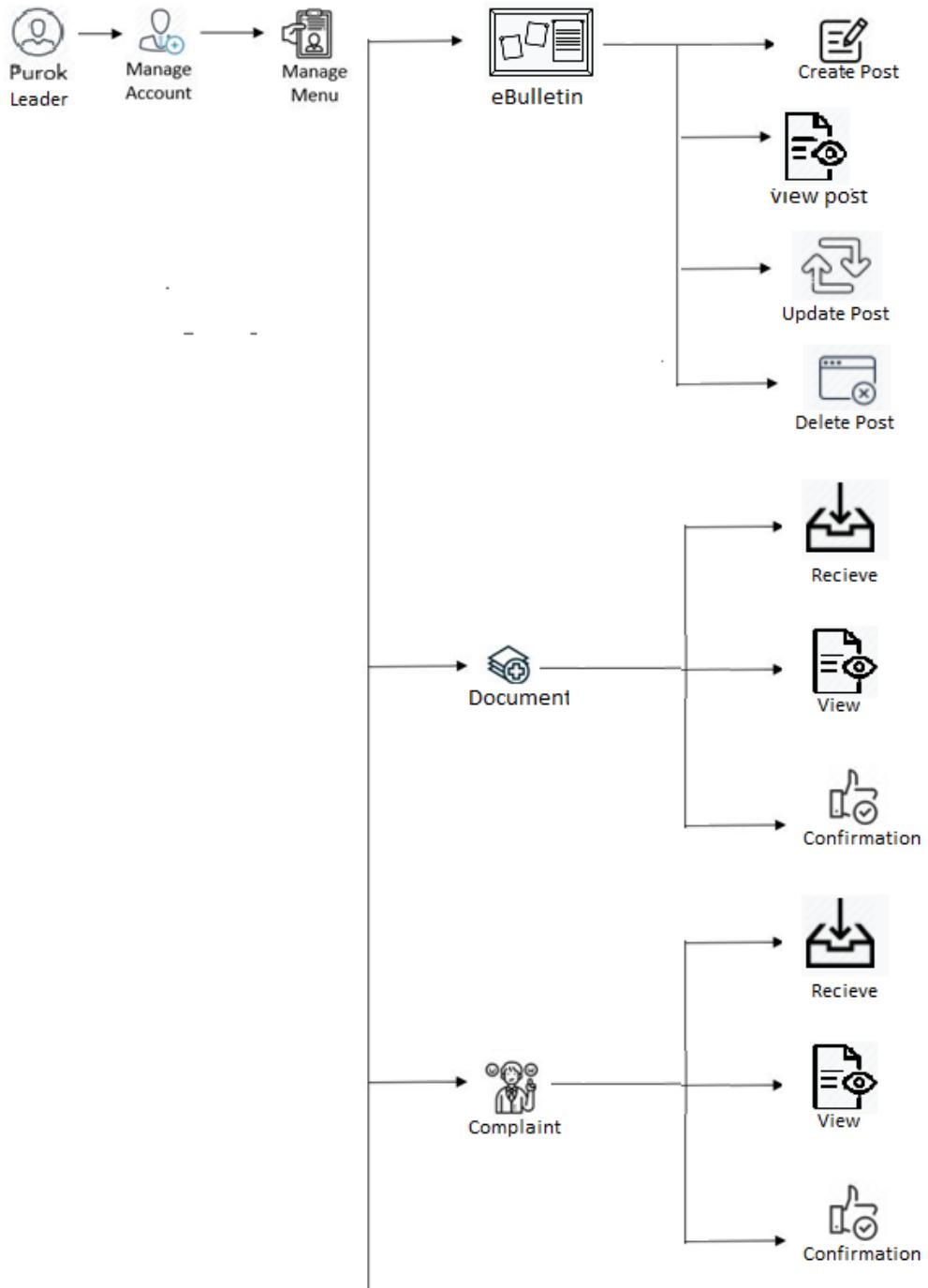


Figure 7.1: Purok Leader – Web Workflow

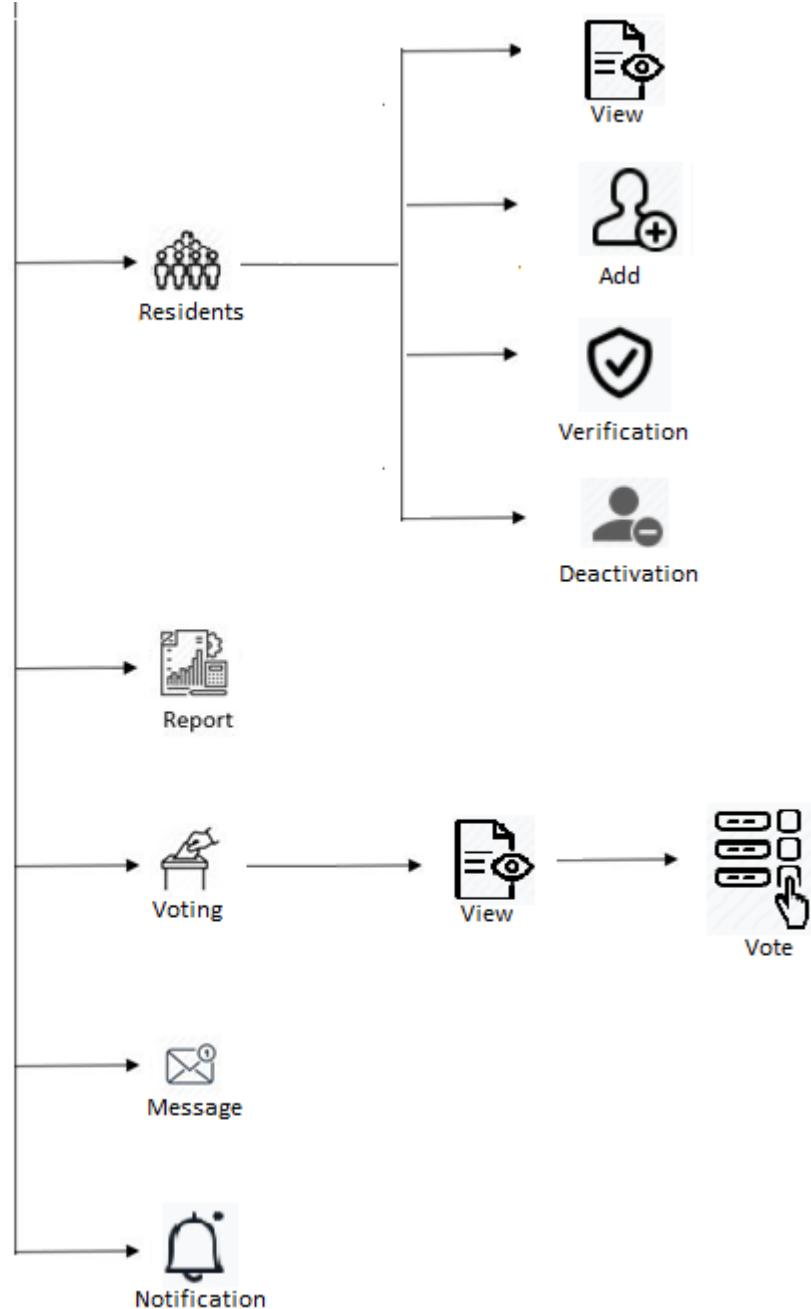


Figure 7.2: Purok Leader – Web Workflow

The figure above is the program workflow for the puro leader. They can post their announcements on eBulletin which can also edit or delete their post. Purok leaders confirms the status of received requests and complaints from the residents. Every purok leader can view their residents' general information. They can also choose on which candidate wanted to vote. They can send message and receive notification. Purok leaders also creates reports.

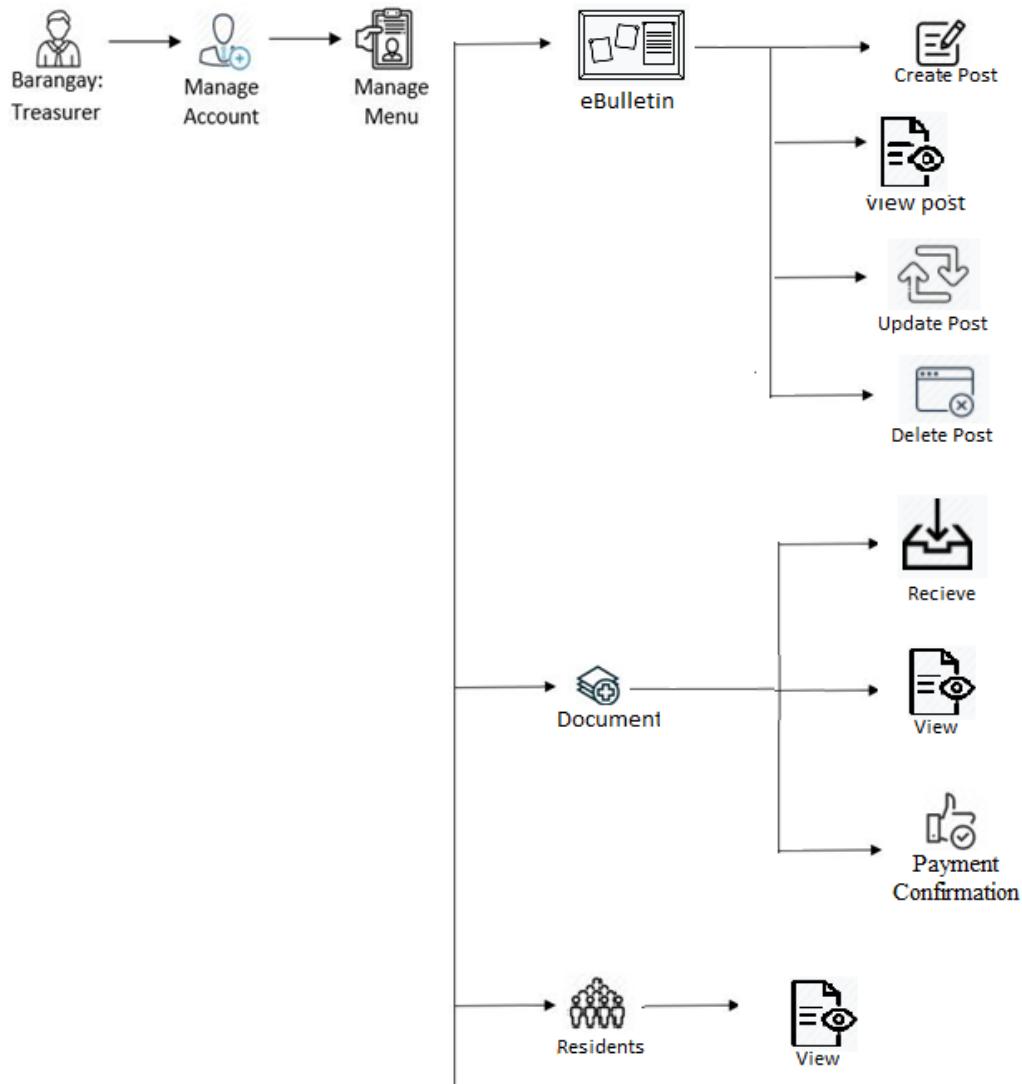


Figure 8.1: Treasurer – Web Workflow

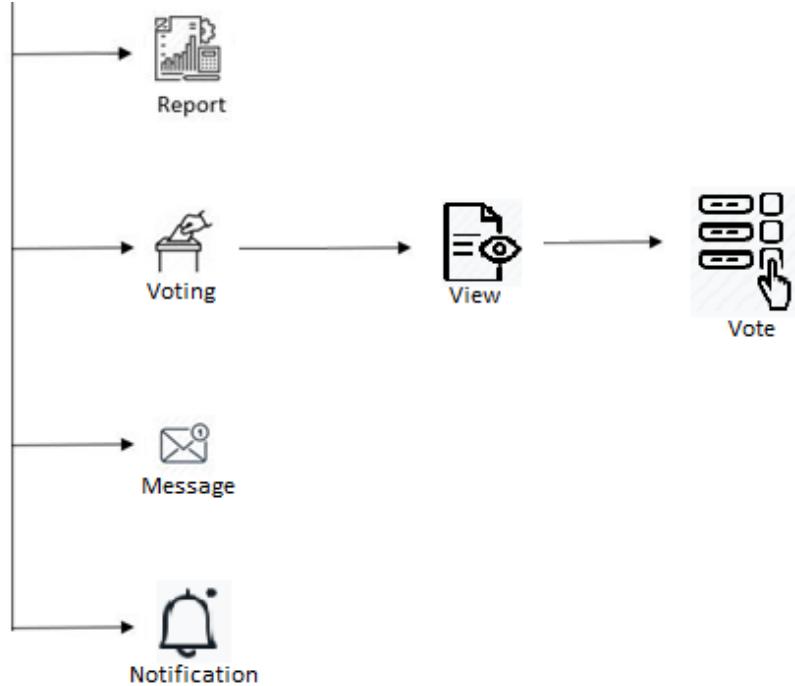
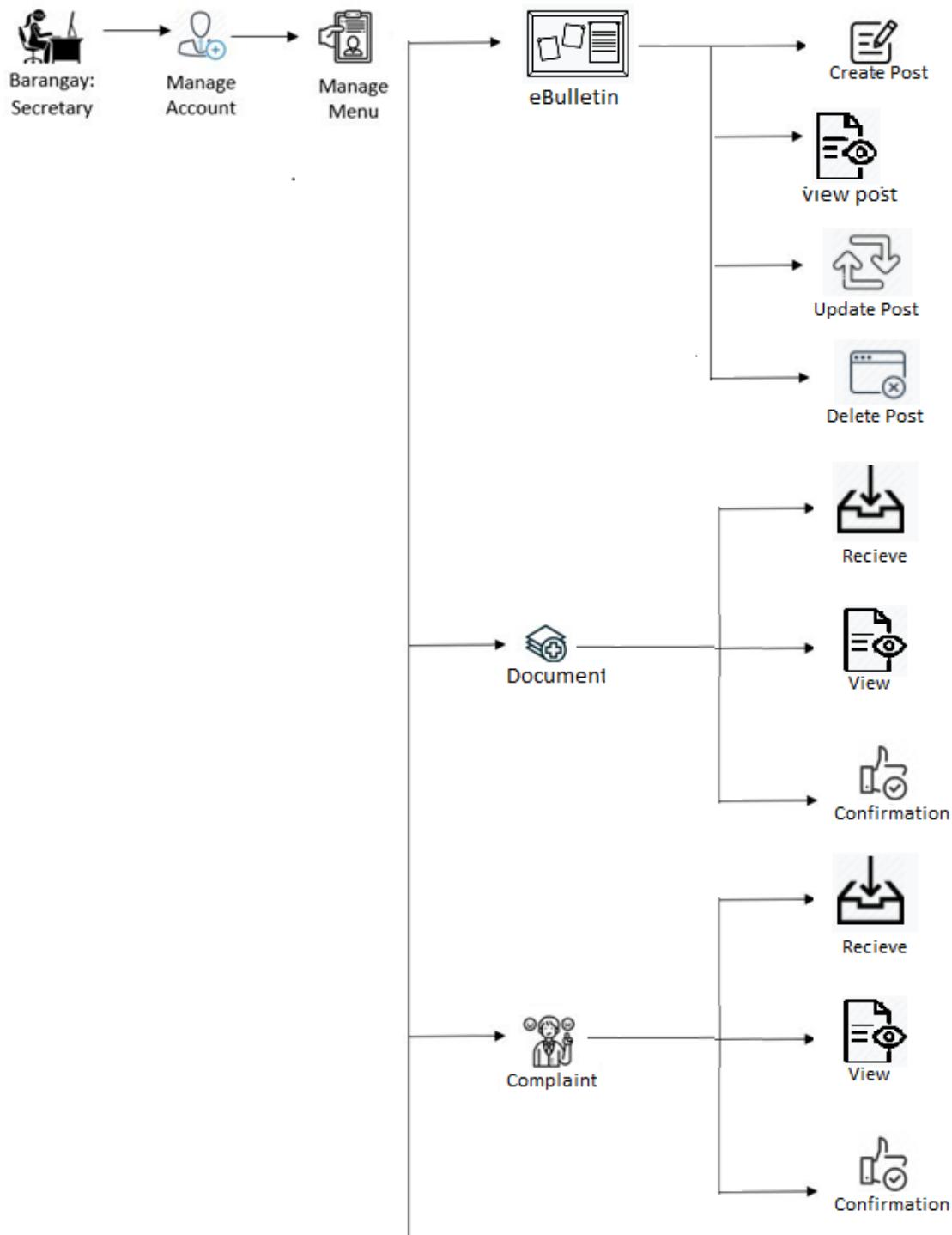


Figure 8.2: **Treasurer – Web Workflow**

The figure above is the program workflow for the barangay treasurer. The barangay Treasurer can check on their account. They can post their announcements on eBulletin which they can also edit or delete their post. Treasurer confirms the payment status of received requested document. Treasurer can view residents' general information. And can also choose on which candidate to vote. Treasurer can send message and receive notification and creates report.

Figure 9.1: Secretary – Web Workflow

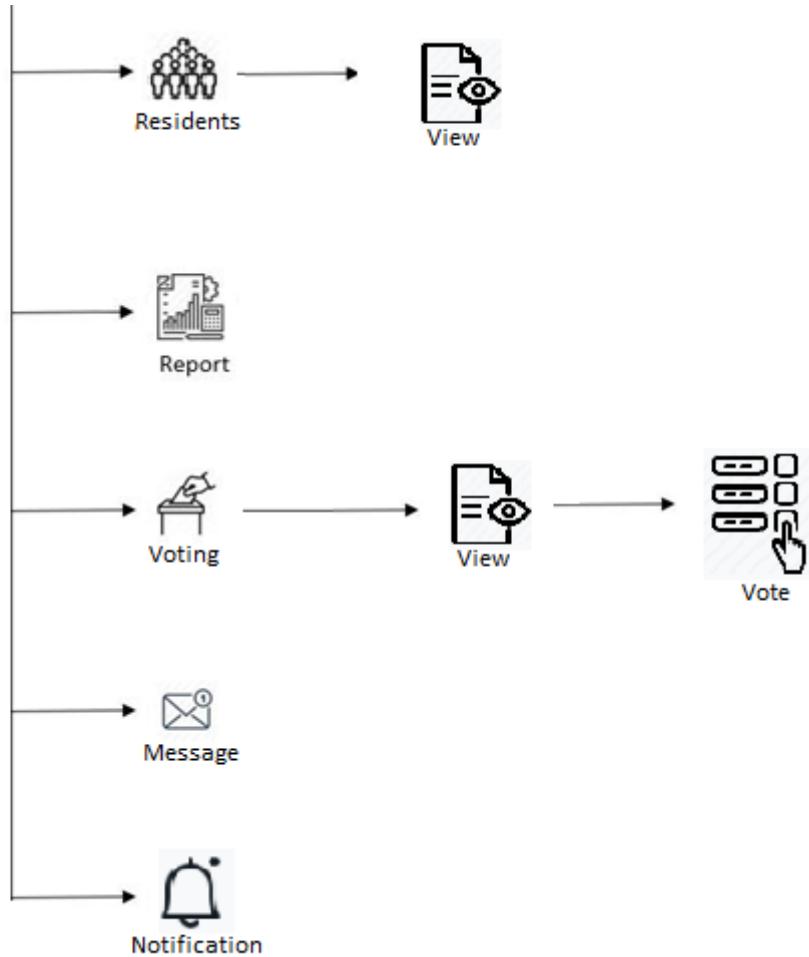
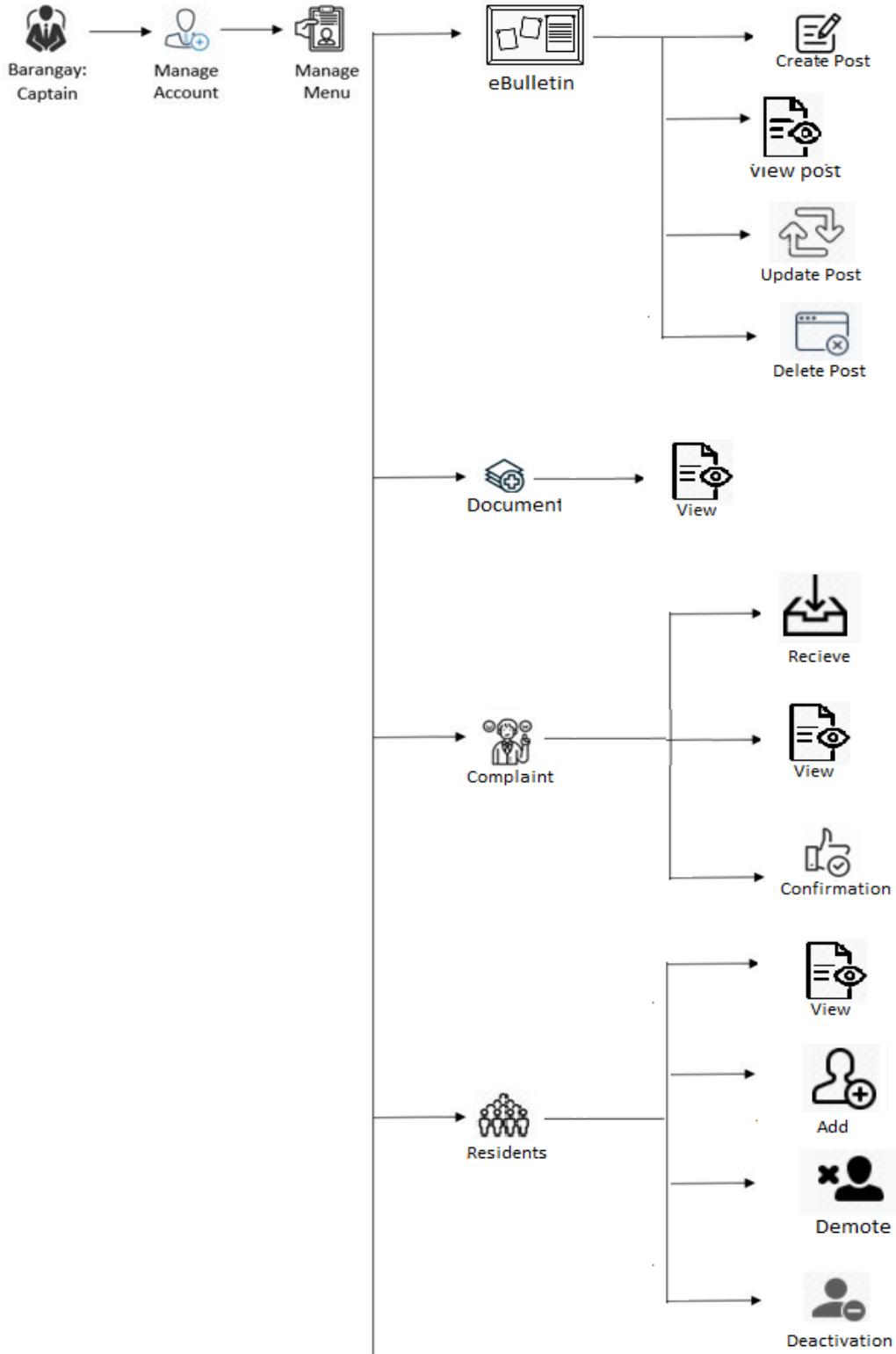


Figure 9.2: **Secretary – Web Workflow**

The figure above is the program workflow for the barangay secretary. The user can post their announcements on eBulletin which can also edit or delete their post. Secretary confirms the status of received requests and complaints for them to record and report. Secretary can view their residents' general information by purok. The user can also choose on which candidate wanted to vote. They can send message and receive notification.

Figure 10.1: Captain – Web Workflow

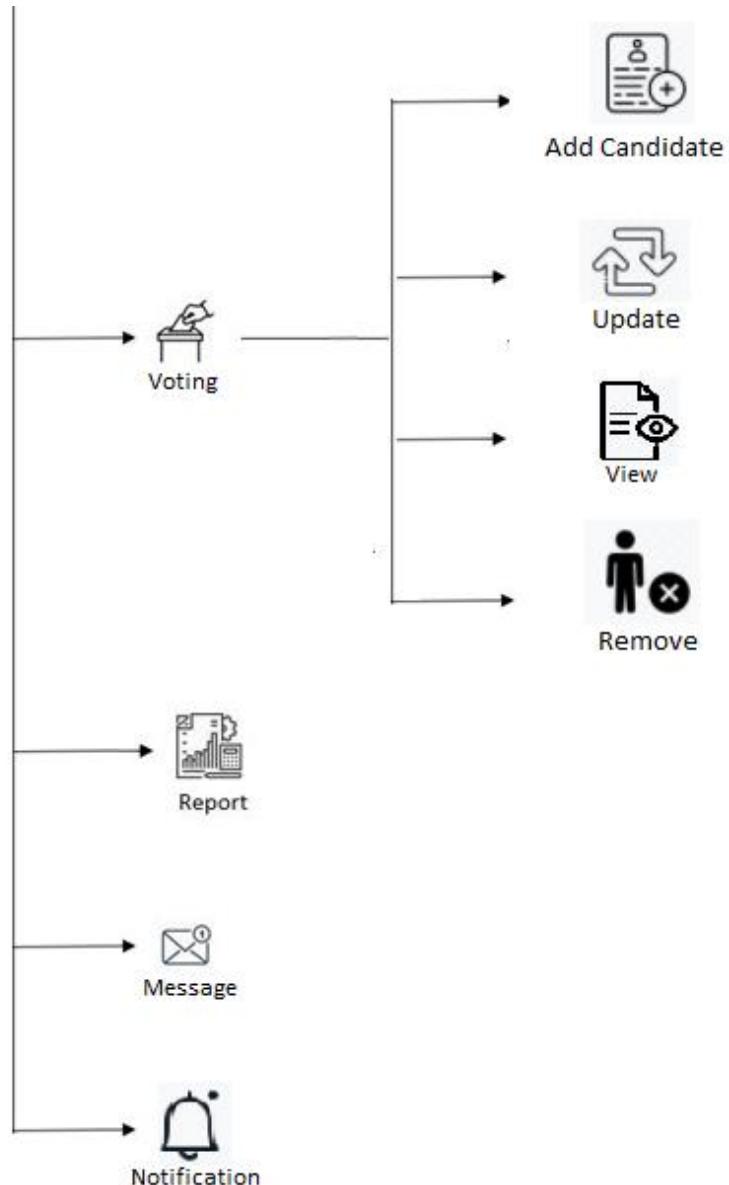


Figure 10.2: Captain – Web Workflow

The figure above is the program workflow for the barangay captain. The barangay Captain have access to check on their account. The user can post their announcements on eBulletin which can also edit or delete their post. Captain can be able to view the requested documents. And confirms the status of complaints for them to record and report. A resident can be added, an official can be demoted or an account can be deactivated through the access of the Captain. They can also manage the voting through adding which other users can vote or removing a nominee. Captain can view their residents' general information by purok. They can send message and receive notification.

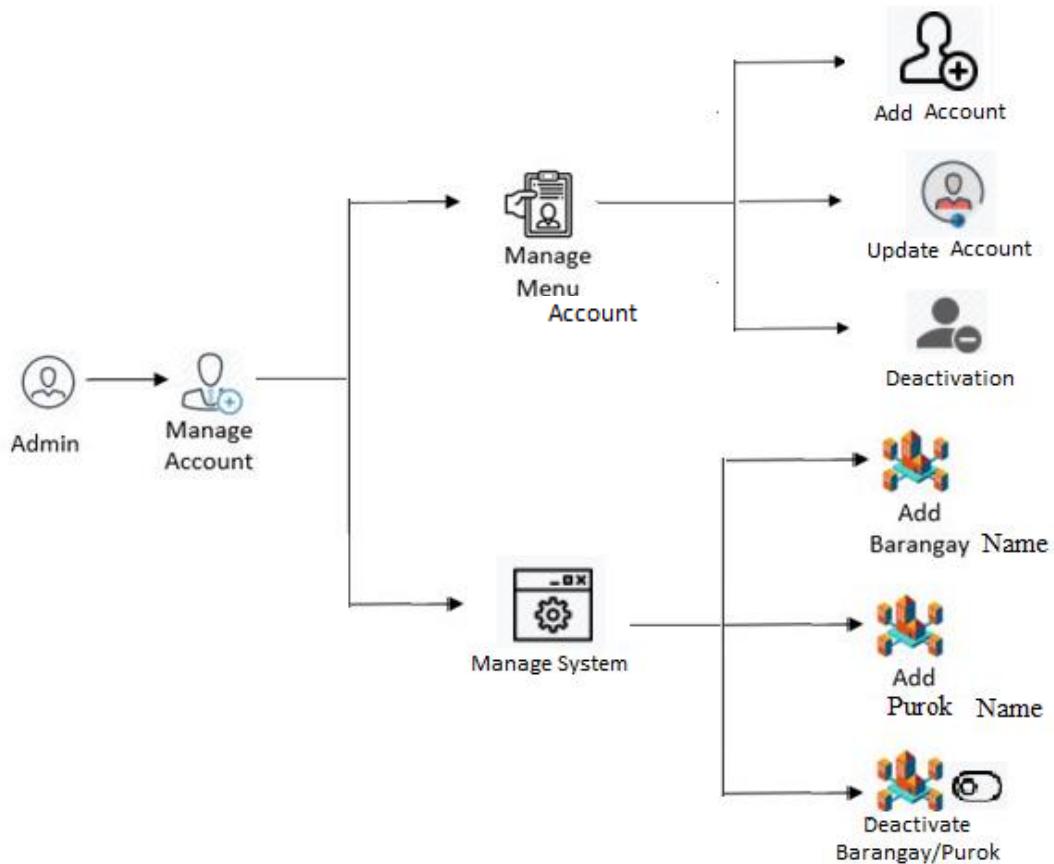


Figure 11: **Admin – Web Workflow**

The figure above is the program workflow for the admin. The admin can manage account through adding, updating or deactivating an account for the user. Admin assigns account for the barangay officers. The admin can add new barangay and purok name in the system, as well as deactivating a barangay or purok name.

### Mobile Program Workflow

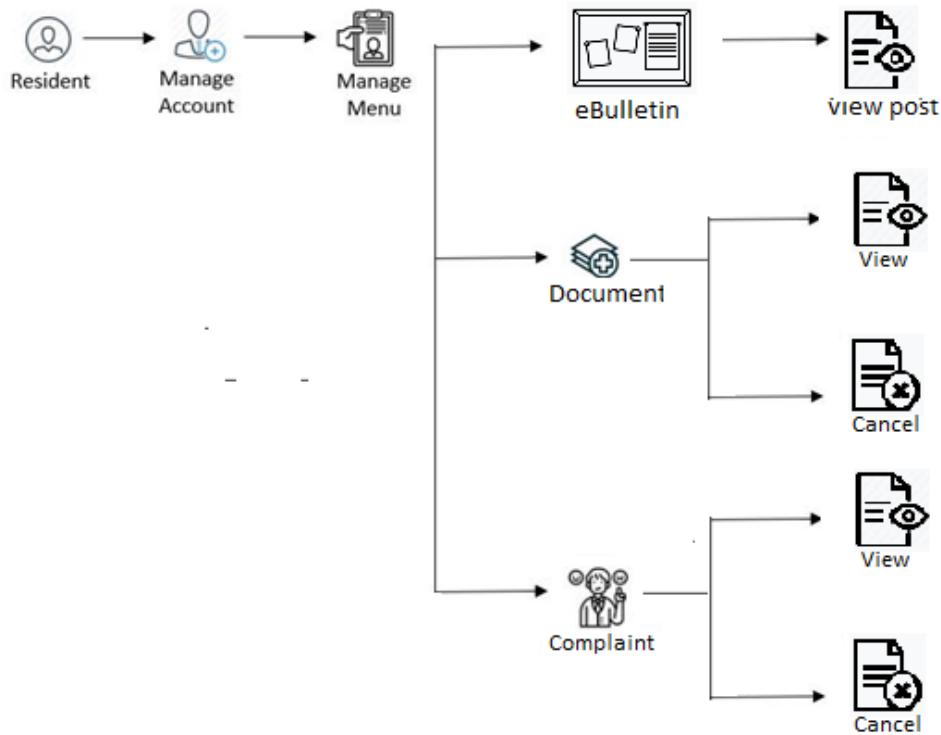


Figure 12: **Resident – Mobile Workflow**

The figure above is the program workflow for the resident on mobile which user can manage account. Resident can view on posted announcements through eBulletin. They can also check on their documents and complaints.

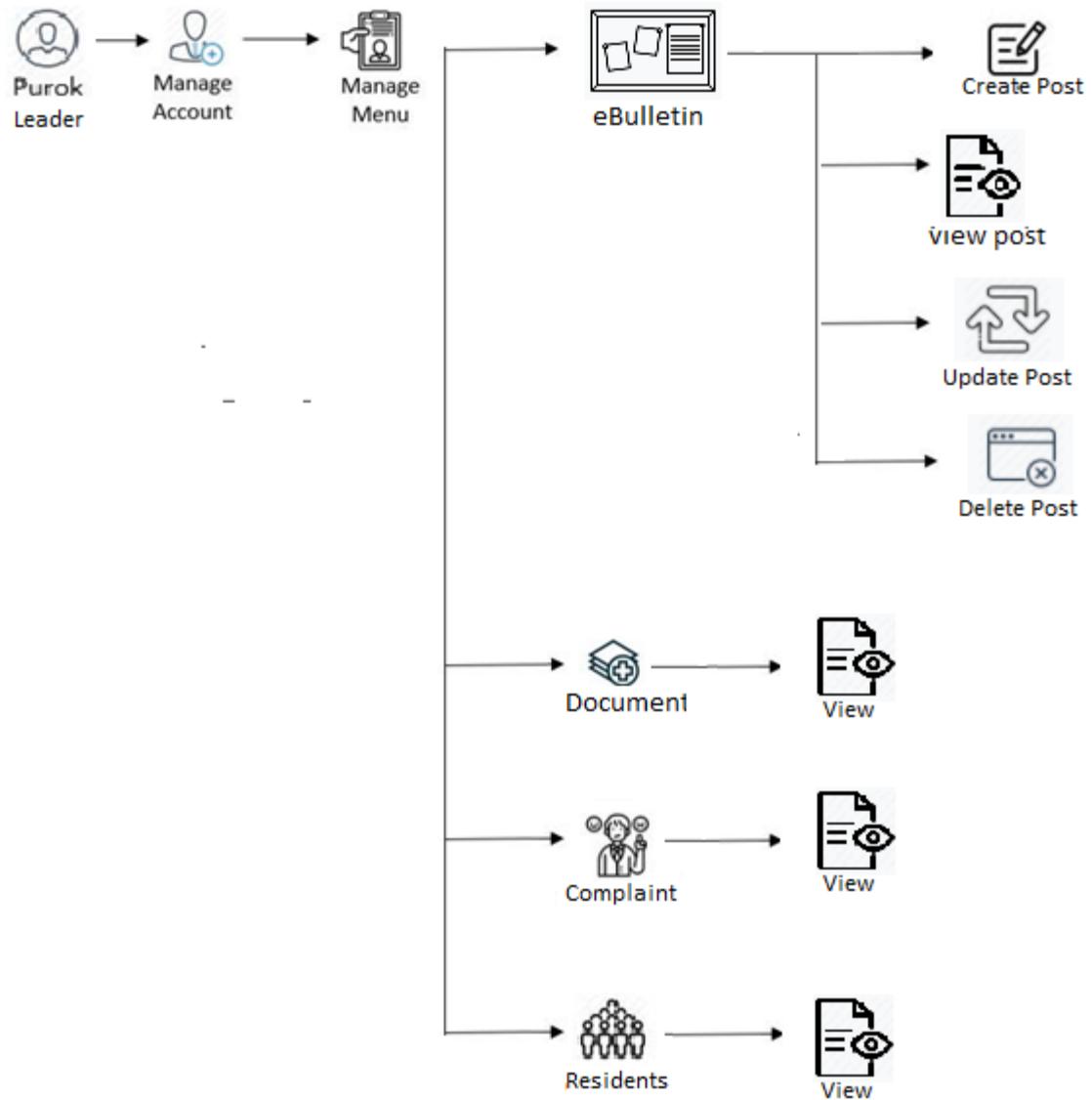


Figure 13: **Purok Leader – Mobile Workflow**

The figure above is the program workflow for the purok leader on mobile which user can manage account. Purok leaders on mobile can post or delete announcements through eBulletin. They can also view on their documents, complaints and residents.

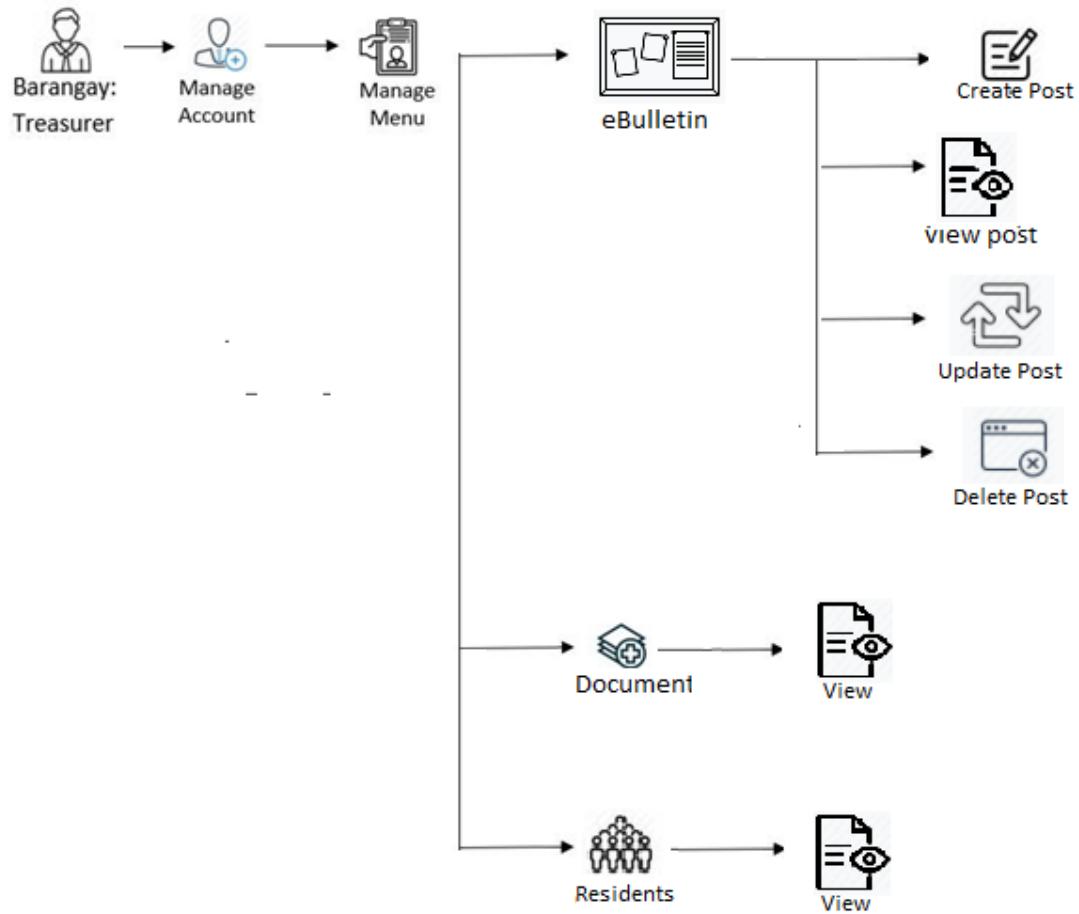


Figure 14: Treasurer – Mobile Workflow

The figure above is the program workflow for the treasurer on mobile which user can manage account. Treasurer on mobile can post or delete announcements through eBulletin. They can also view on their documents and complaints.

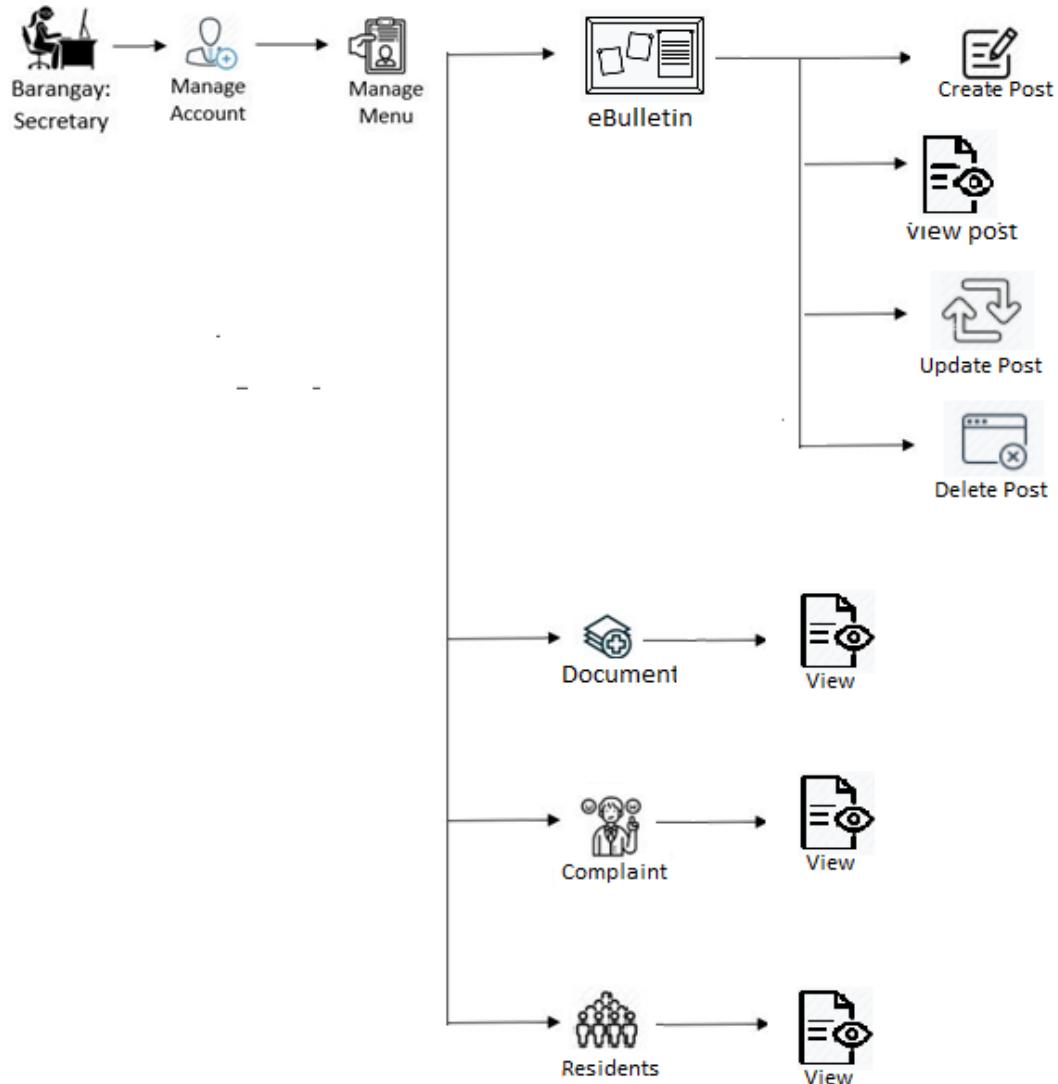


Figure 15: **Secretary – Mobile Workflow**

The figure above is the program workflow for the secretary on mobile which user can manage account. secretary on mobile can post or delete announcements through eBulletin. They can also view on their documents, complaints and residents.

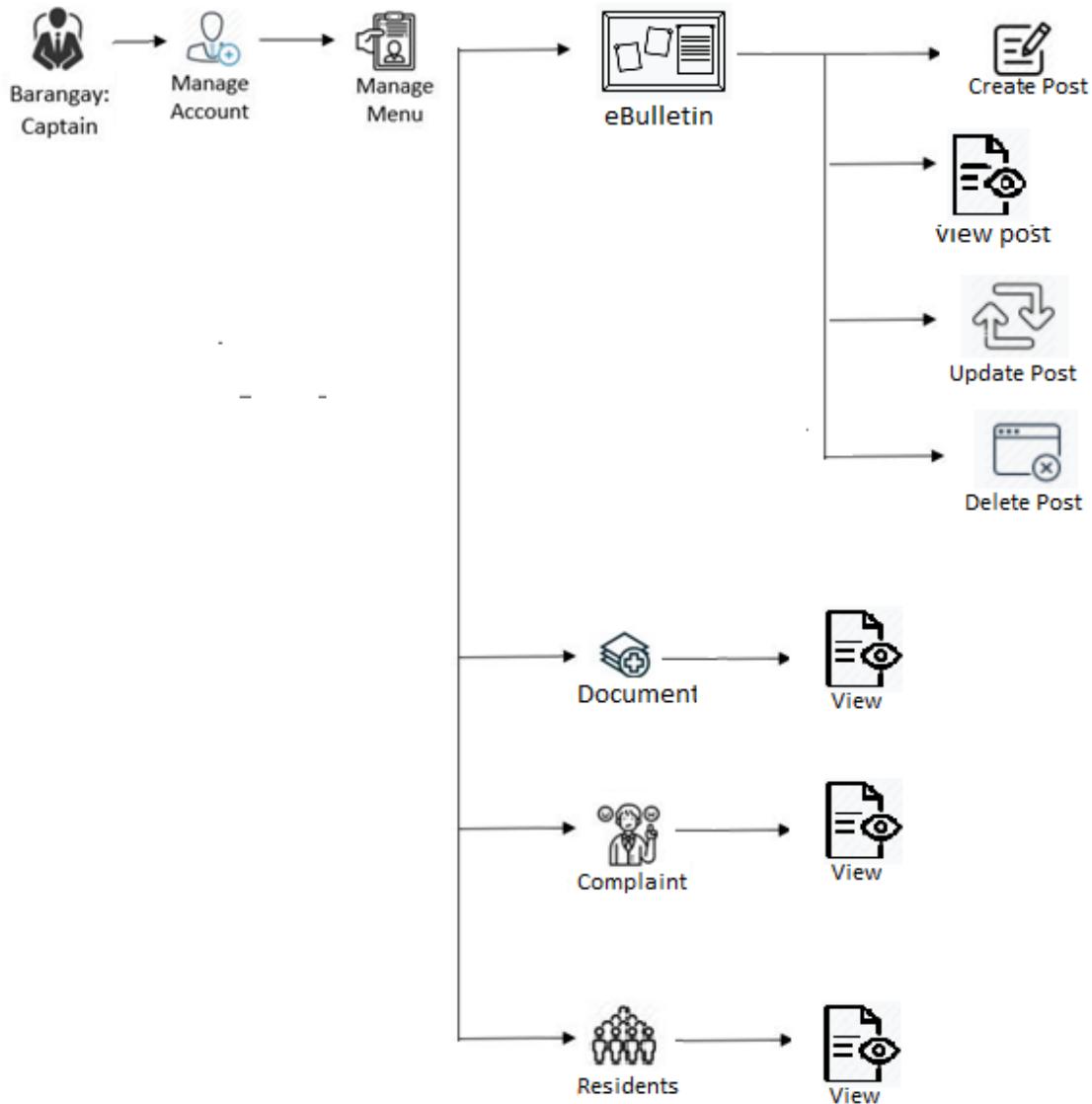


Figure 16: **Captain – Mobile Workflow**

The figure above is the program workflow for the barangay captain on mobile which user can manage account. Barangay captain on mobile can post or delete announcements through eBulletin. User can also view on their documents, complaints and residents.

## Gantt Chart

These is the Gantt chart of the researchers which shows the amount of work done or production completed in certain periods of time in relation to the amount planned for those periods.

Table 2

Capstone 1 Gantt Chart: Projected

Task ID	Task Name	Start Date	End Date	1	2	1	2	3	4
1	Rationale of the Study	04/05/2021	04/06/2021						
2	Objectives of the Study	04/07/2021	04/08/2021						
3	Scope and Limitations of the Study	04/09/2021	04/10/2021						
4	Significance of the Study	04/11/2021	04/11/2021						
5	Flow of the Study	04/11/2021	04/11/2021						
6	Definition of Terms	04/11/2021	04/11/2021						
7	Related Literature	04/12/2021	04/13/2021						
8	Related Studies	04/12/2021	04/13/2021						
9	Comparative Matrix	04/13/2021	04/13/2021						
10	Software Engineering Methodology	04/19/2021	04/19/2021						
11	Business Model Canvas	05/03/2021	05/03/2021						
12	Program Workflow	05/03/2021	05/05/2021						
13	Gantt Chart	05/05/2021	05/05/2021						
14	Functional Decomposition Diagram	05/06/2021	05/06/2021						
15	Use Case Diagrams	05/07/2021	05/10/2021						
16	Storyboard	05/09/2021	05/12/2021						
17	Database Design	05/13/2021	05/15/2021						
18	Data Dictionary	05/15/2021	05/15/2021						
19	Network Design	05/17/2021	05/18/2021						
20	Network Model	05/18/2021	05/19/2021						
21	Network Topology	05/20/2021	05/21/2021						
22	Technology Stack Diagram	05/22/2021	05/23/2021						
23	Software Specification	05/24/2021	05/24/2021						
24	Hardware Specification	05/24/2021	05/24/2021						
25	List of Module	05/24/2021	05/25/2021						

## Table 3

### Capstone 1 Gantt Chart Completed

Task ID	Task Name	Start Date	End Date	1	2	1	2	3	4
1	Rationale of the Study	04/05/2021	04/06/2021						
2	Objectives of the Study	04/07/2021	04/08/2021						
3	Scope and Limitations of the Study	04/09/2021	04/10/2021						
4	Significance of the Study	04/11/2021	04/11/2021						
5	Flow of the Study	04/11/2021	04/11/2021						
6	Definition of Terms	04/11/2021	04/11/2021						
7	Related Literature	04/12/2021	04/13/2021						
8	Related Studies	04/12/2021	04/13/2021						
9	Comparative Matrix	04/13/2021	04/13/2021						
10	Software Engineering Methodology	04/19/2021	04/19/2021						
11	Business Model Canvas	05/03/2021	05/03/2021						
12	Program Workflow	05/03/2021	05/05/2021						
13	Gantt Chart	05/05/2021	05/05/2021						
14	Functional Decomposition Diagram	05/06/2021	05/06/2021						
15	Use Case Diagrams	05/07/2021	05/10/2021						
16	Storyboard	05/09/2021	05/12/2021						
17	Database Design	05/13/2021	05/15/2021						
18	Data Dictionary	05/15/2021	05/15/2021						
19	Network Design	05/17/2021	05/18/2021						
20	Network Model	05/18/2021	05/19/2021						
21	Network Topology	05/20/2021	05/21/2021						
22	Technology Stack Diagram	05/22/2021	05/23/2021						
23	Software Specification	05/24/2021	05/24/2021						
24	Hardware Specification	05/24/2021	05/24/2021						
25	List of Module	05/24/2021	05/25/2021						

Table 4  
Capstone 2 Gantt Chart: Projected

Table 5

## Capstone 2 Gantt Chart: Completed

## Functional Decomposition Diagram

Functional decomposition is defined as a top-down representation of process or function. The Functional Decomposition Diagram shows that there are eight managements which are: Services, Profiling, Accounts, Information, Organization, Complaints, Barangay, and Voting. These managements can be accessed by varied users. The legend shows you which functionalities are accessed by whom. Basically, this is used for representing business function and operation in hierarchical manner.

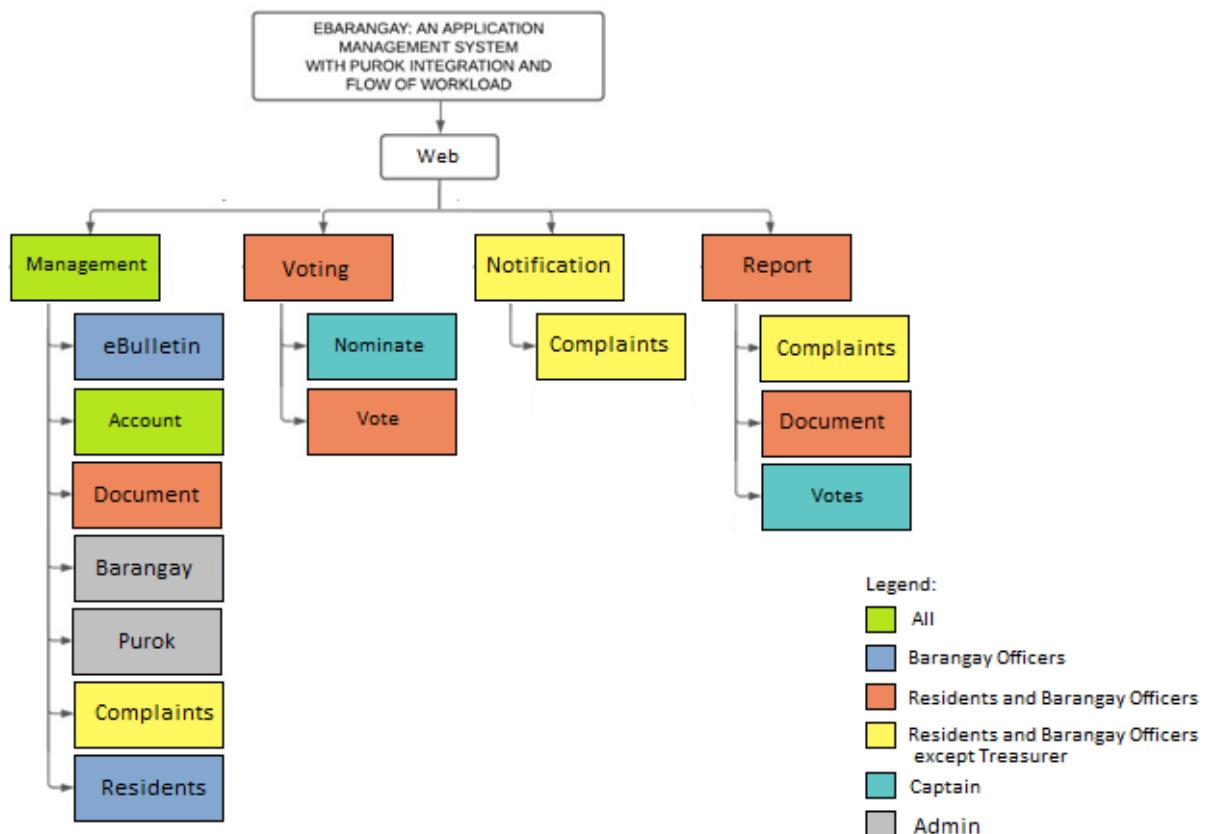


Figure 17.1: Web - Functional Decomposition Diagram

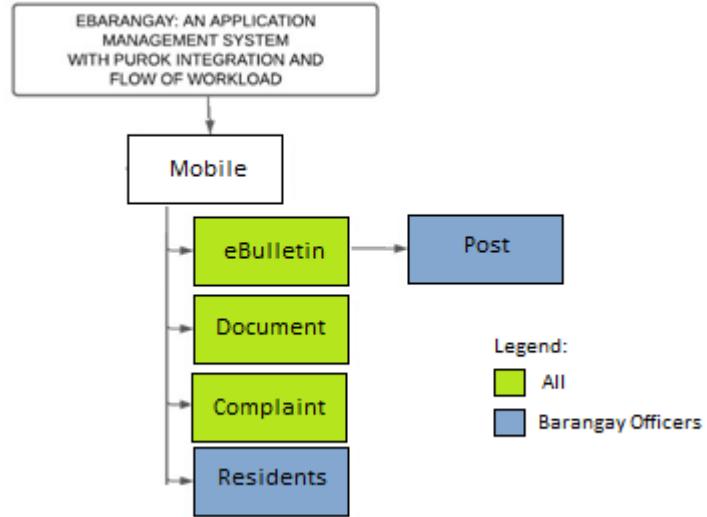


Figure 18: **Mobile - Functional Decomposition Diagram**

## Analysis Phase

### Use-Case Diagram

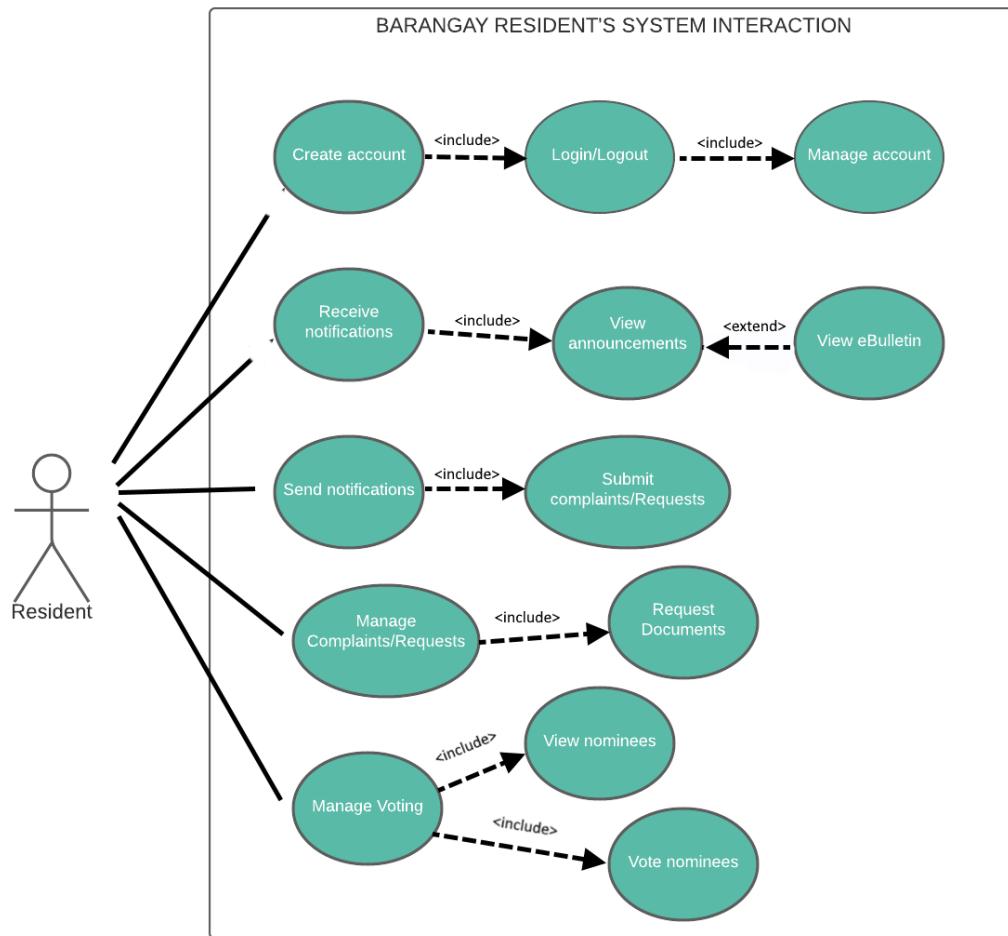


Figure 19: **Resident – Use-Case Web**

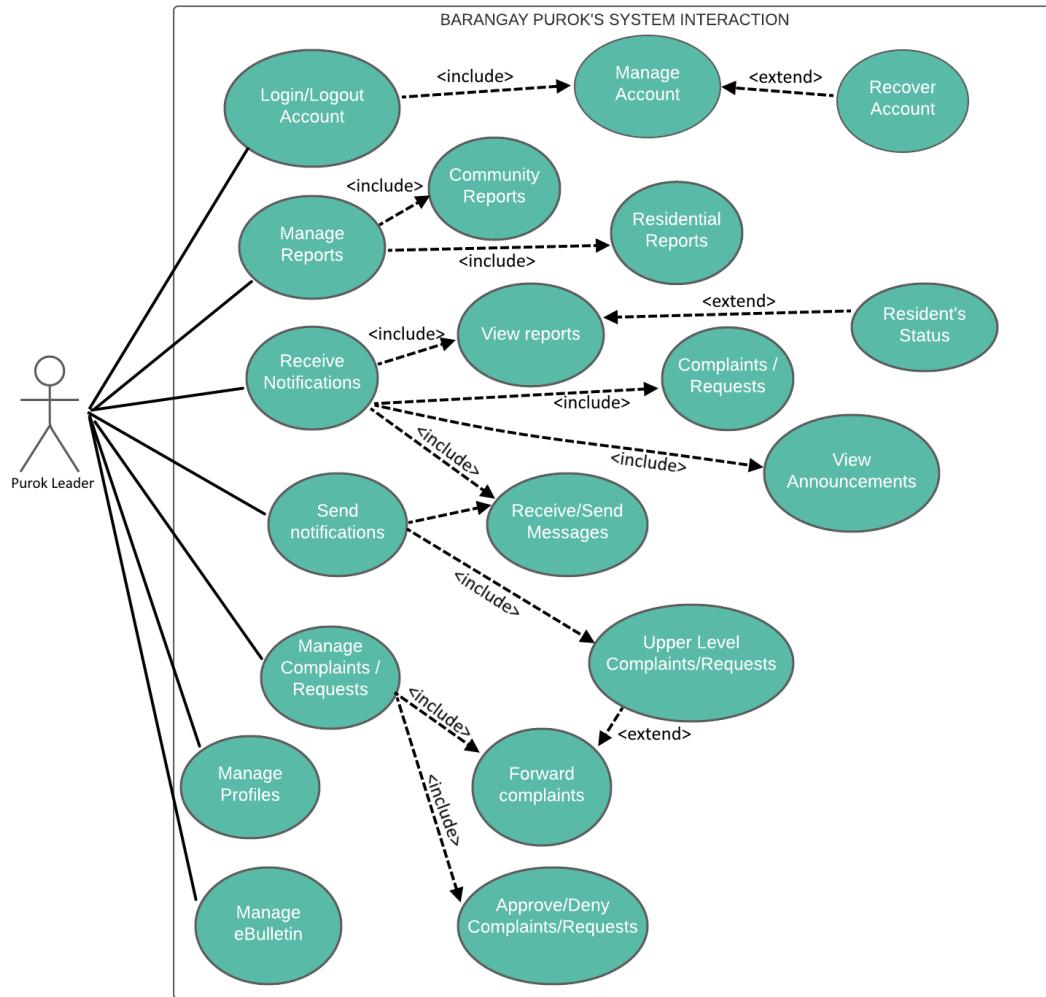


Figure 24: **Purok Leader – Use-Case Web**

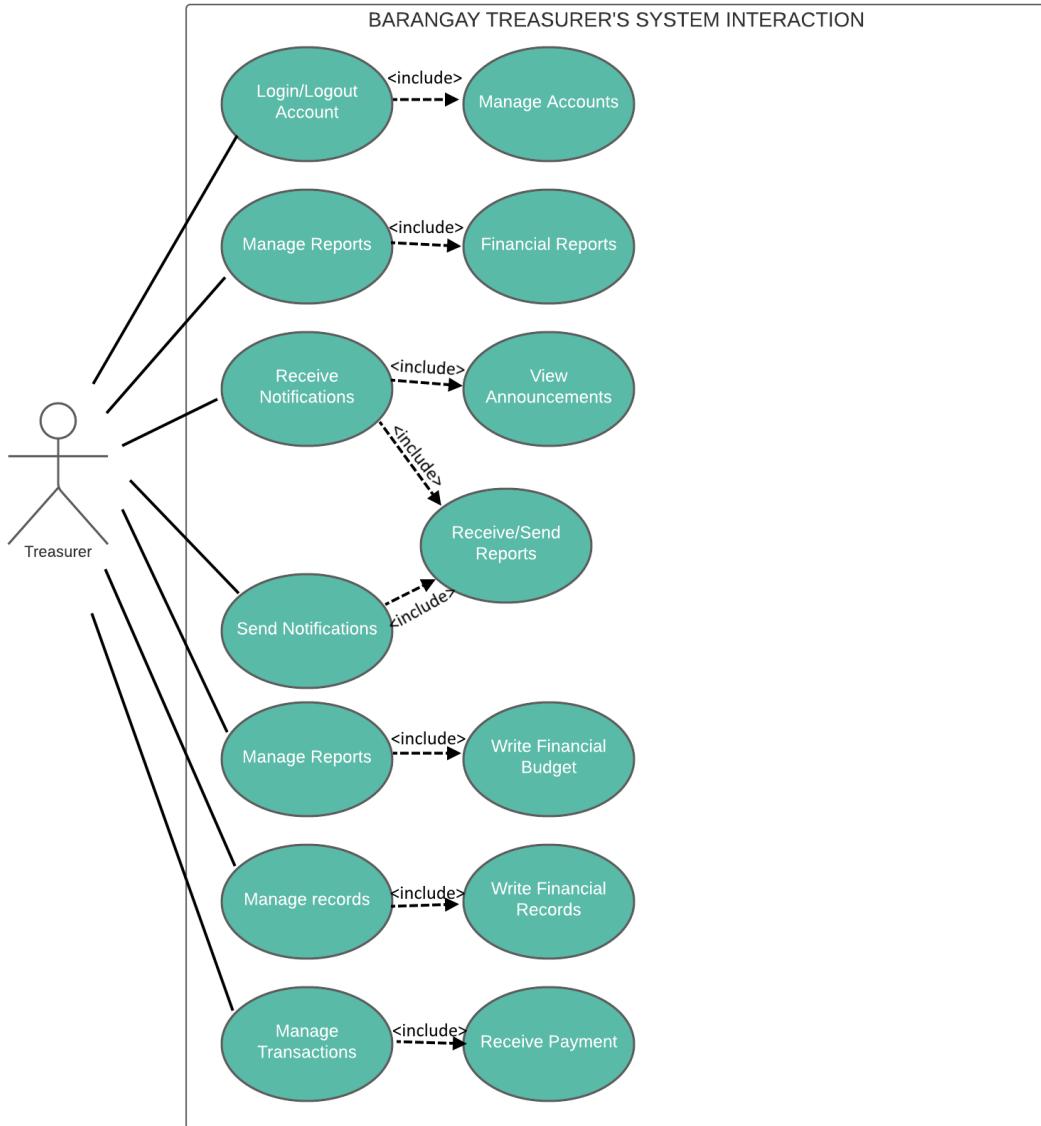


Figure 20: **Treasurer – Use-Case Web**

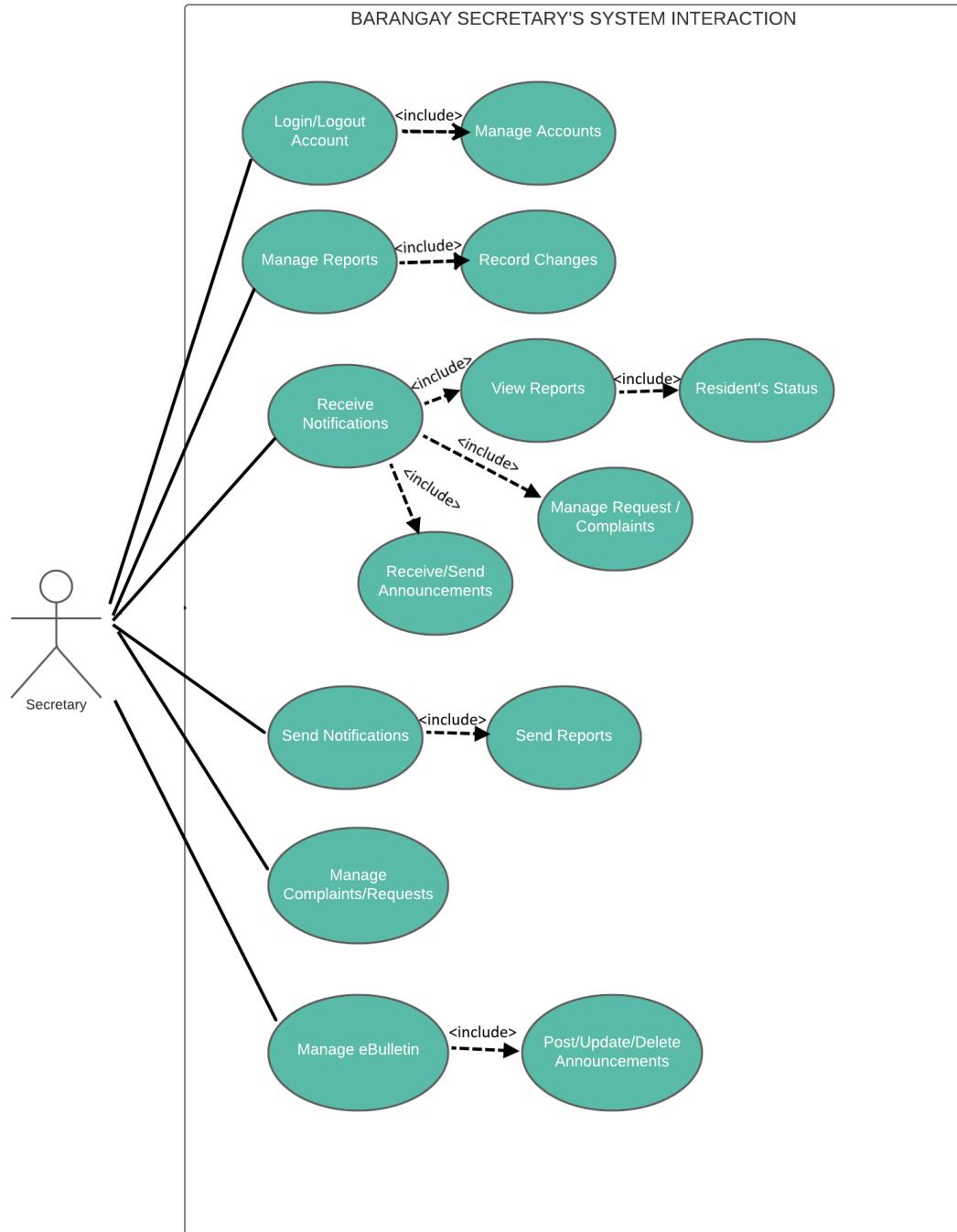


Figure 21: Secretary – Use-Case Web

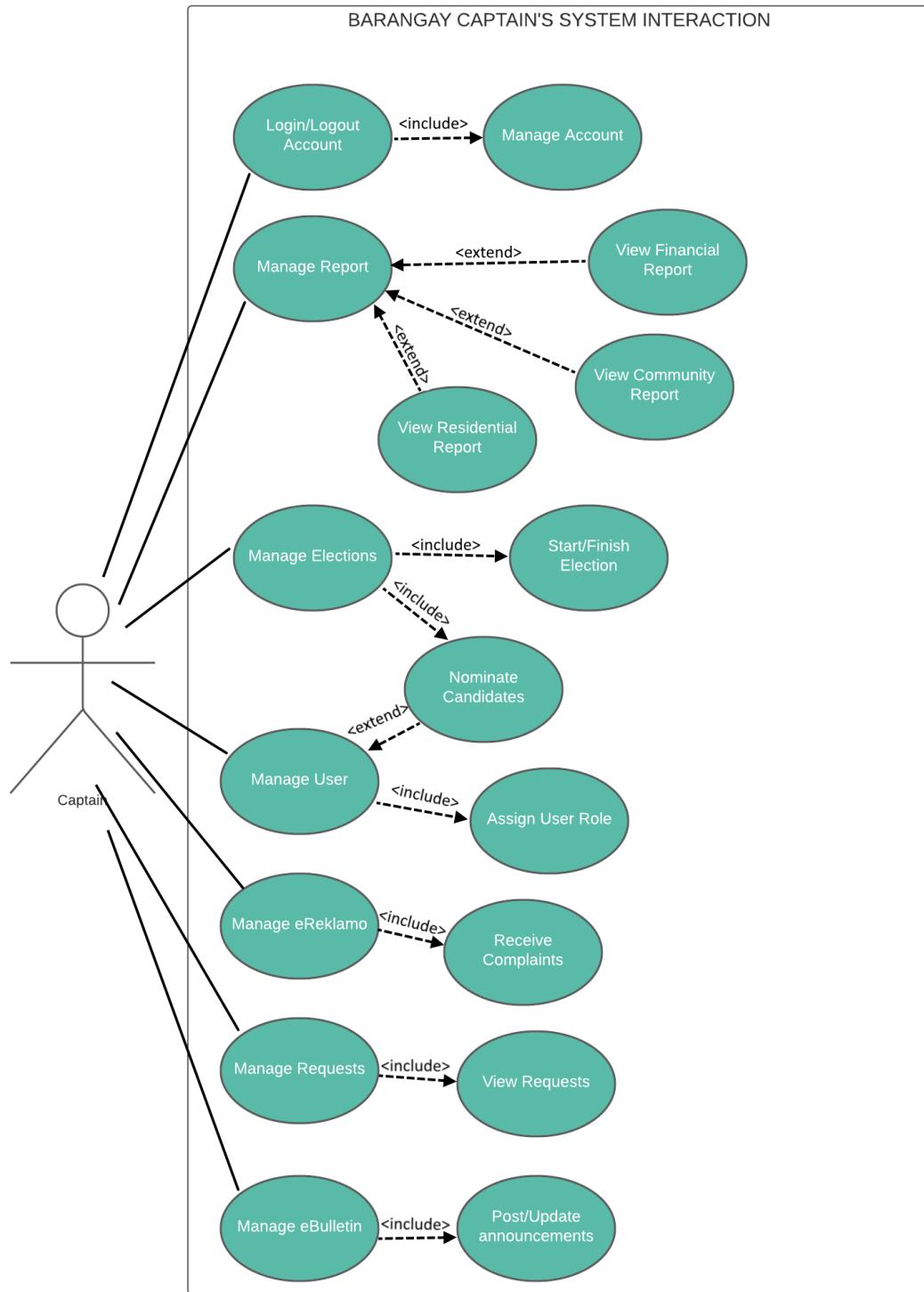


Figure 22: Captain – Use-Case Web

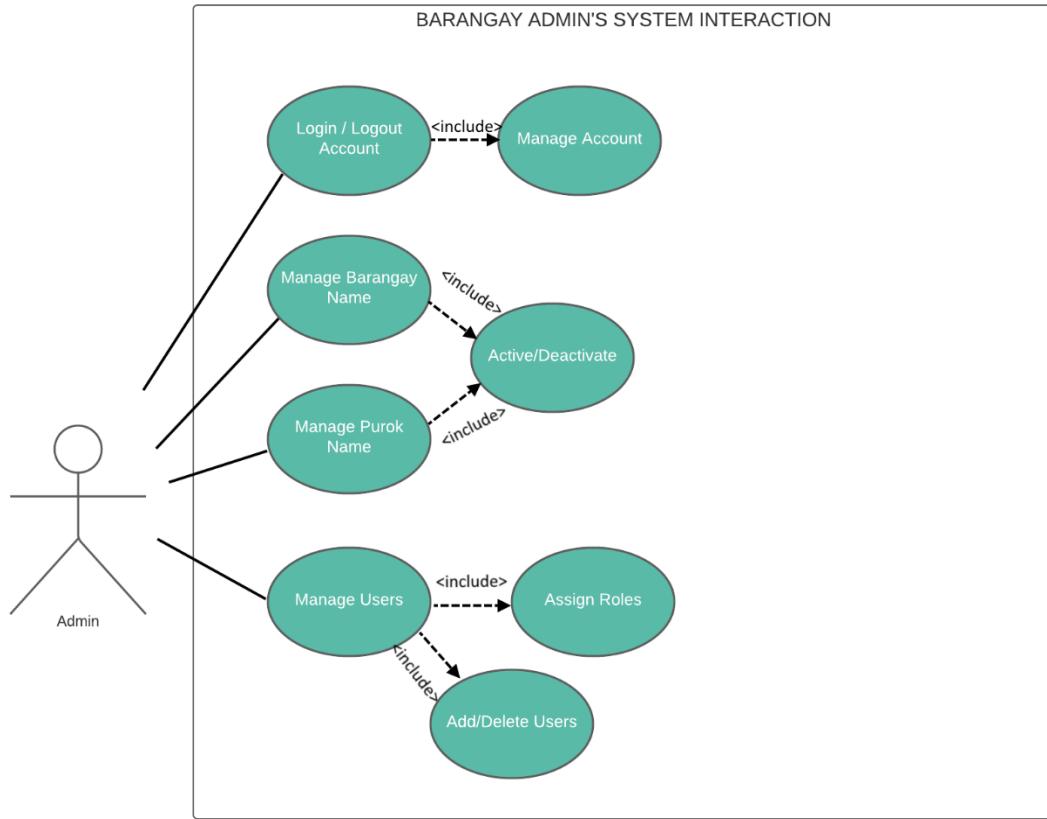


Figure 23: Admin – Use-Case Web

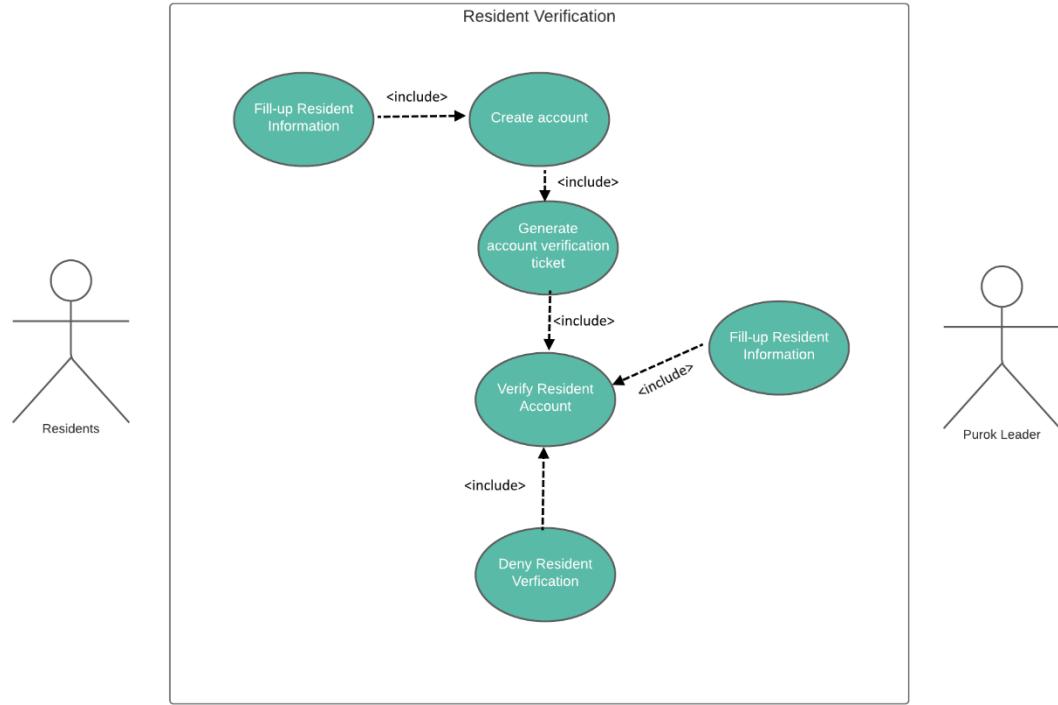


Figure 25: **Resident Verification – Use-Case Web**

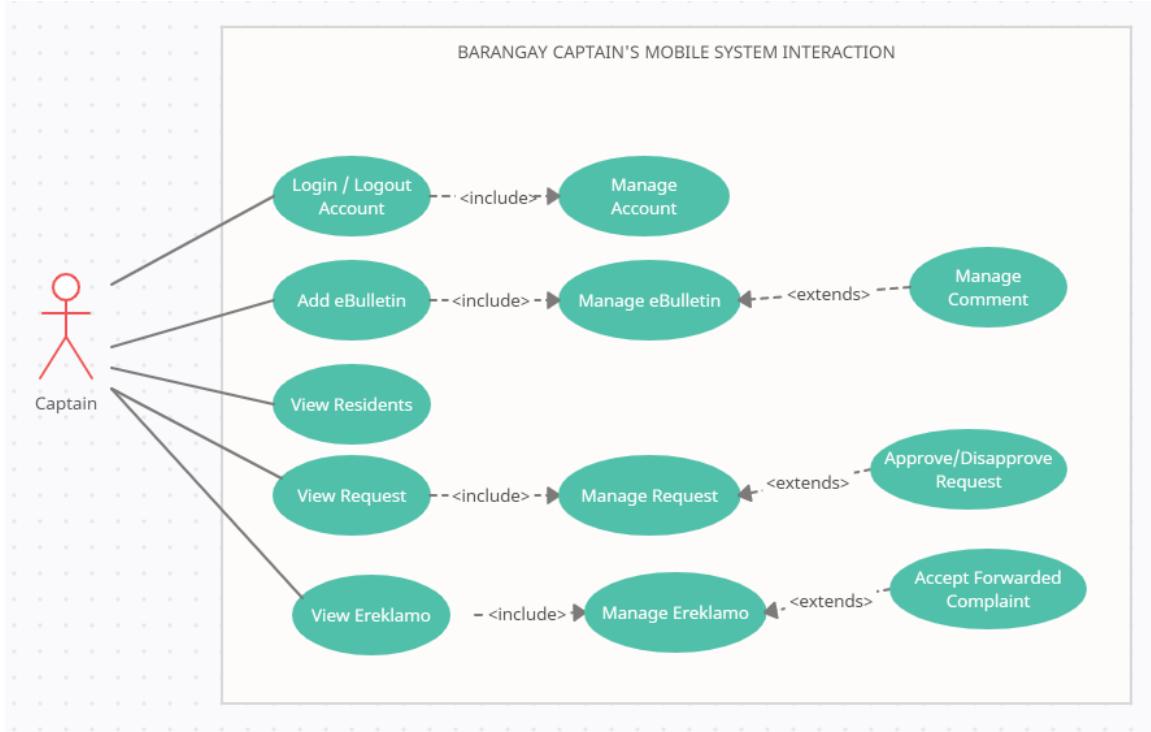


Figure 26: Captain – Use-Case Mobile

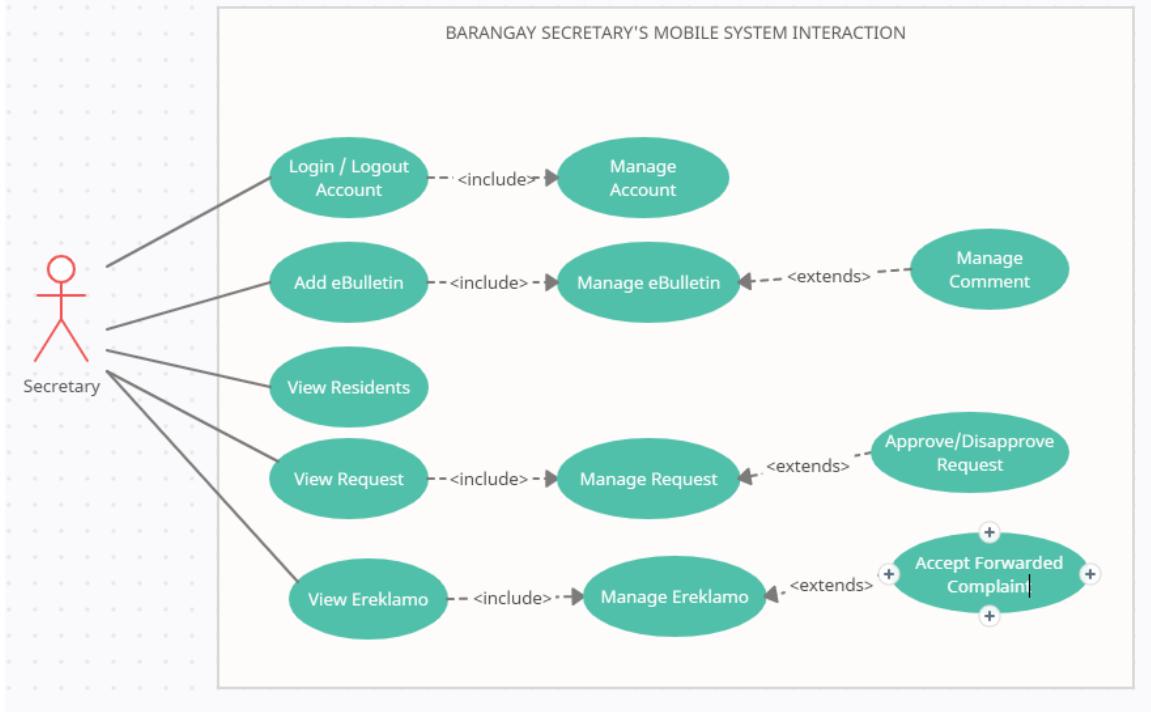


Figure 27: Secretary – Use-Case Mobile

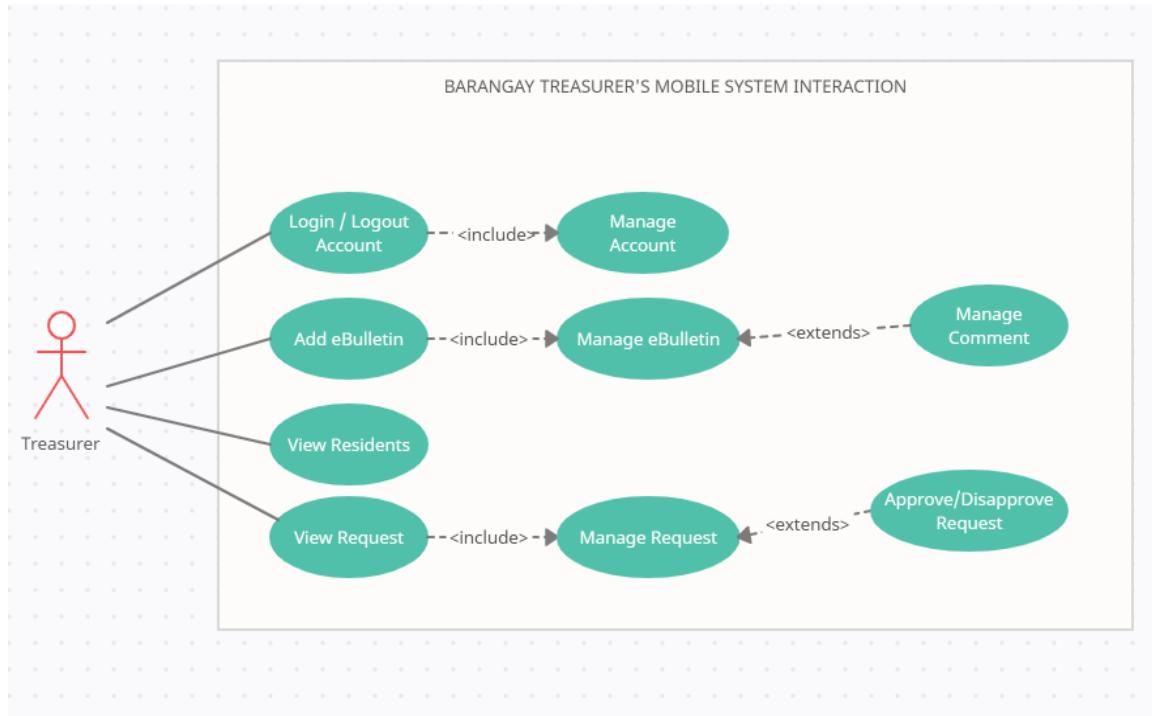


Figure 28: Treasurer – Use-Case Mobile

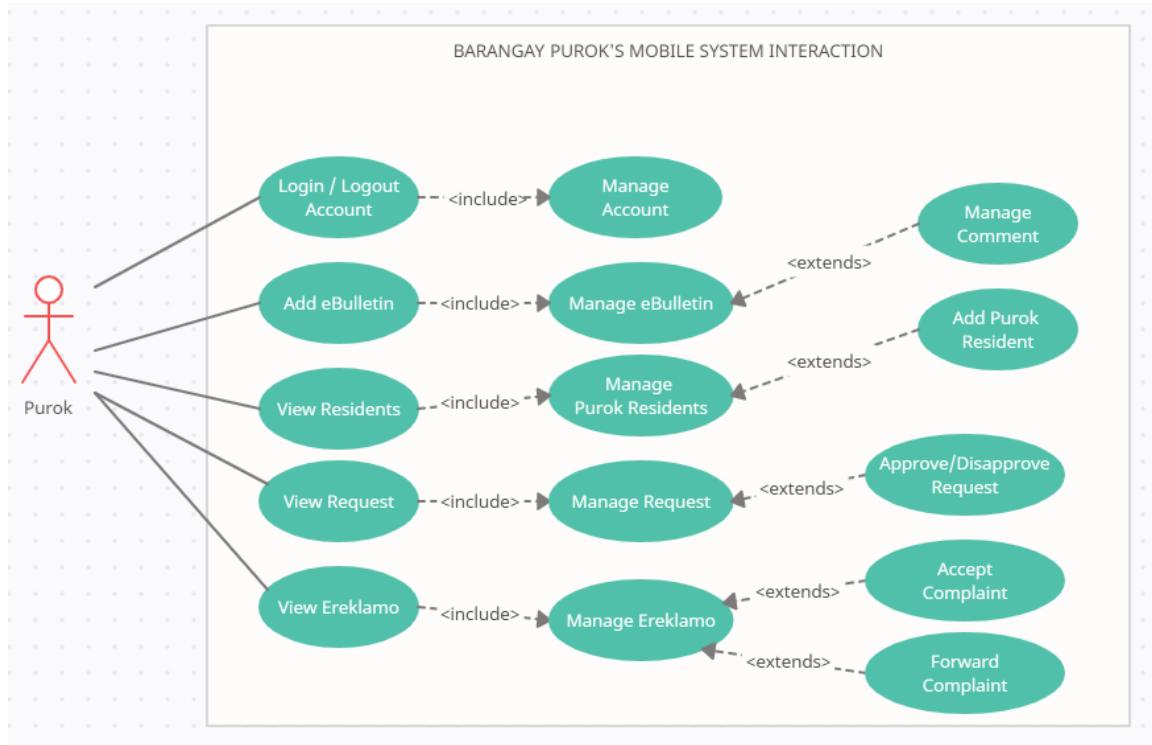


Figure 29: Purok Leader – Use-Case Mobile

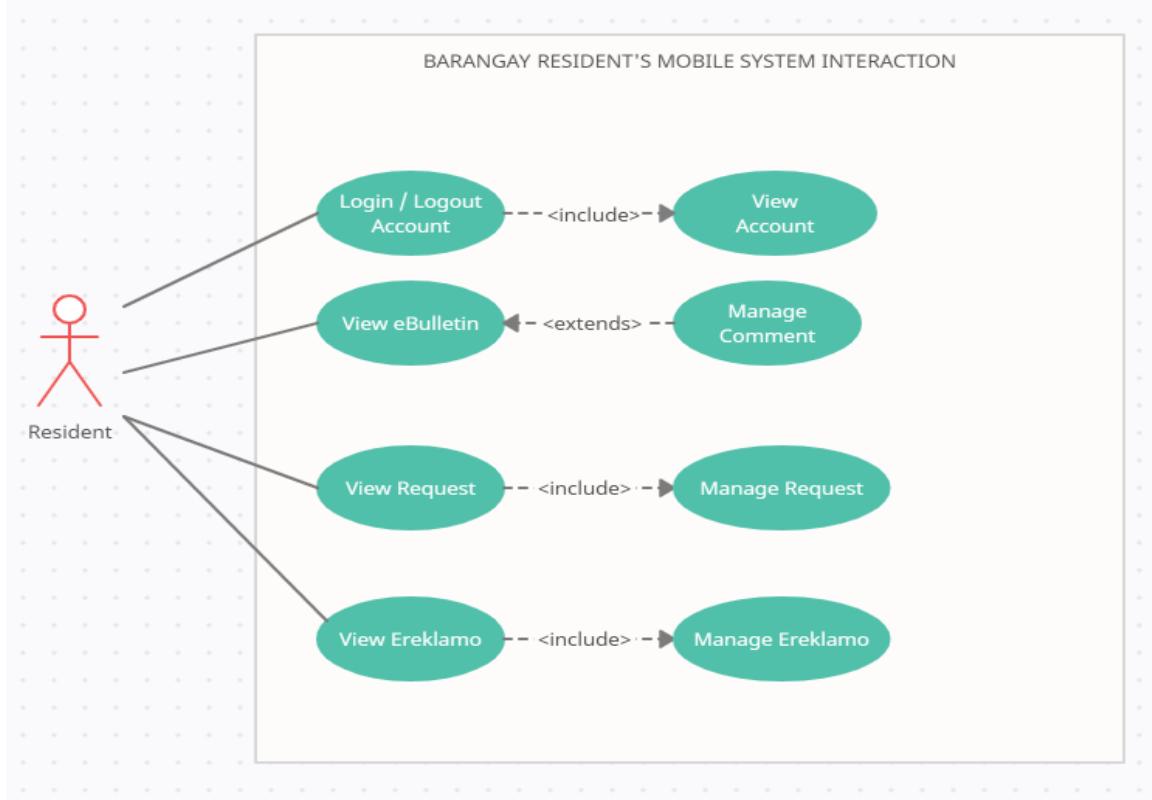
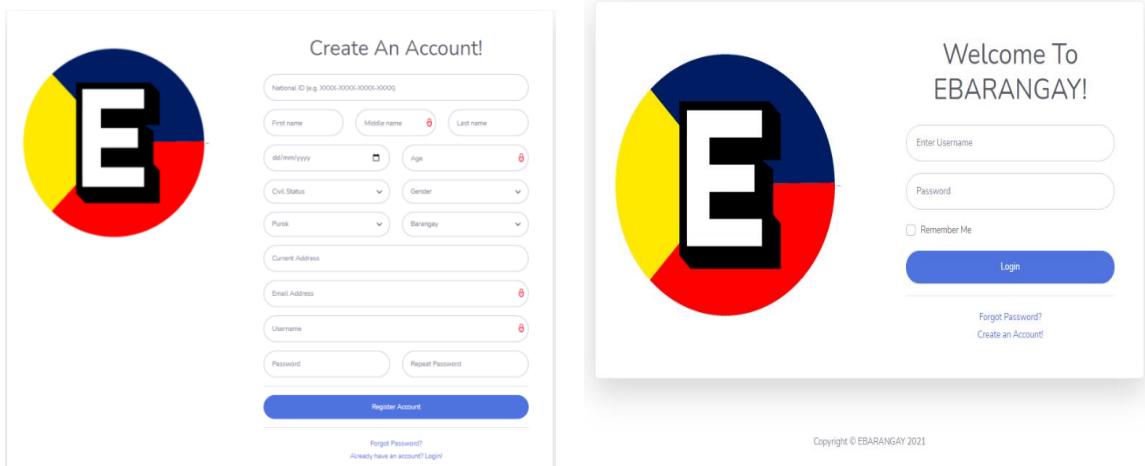


Figure 30: **Resident – Use-Case Mobile**

## Storyboard

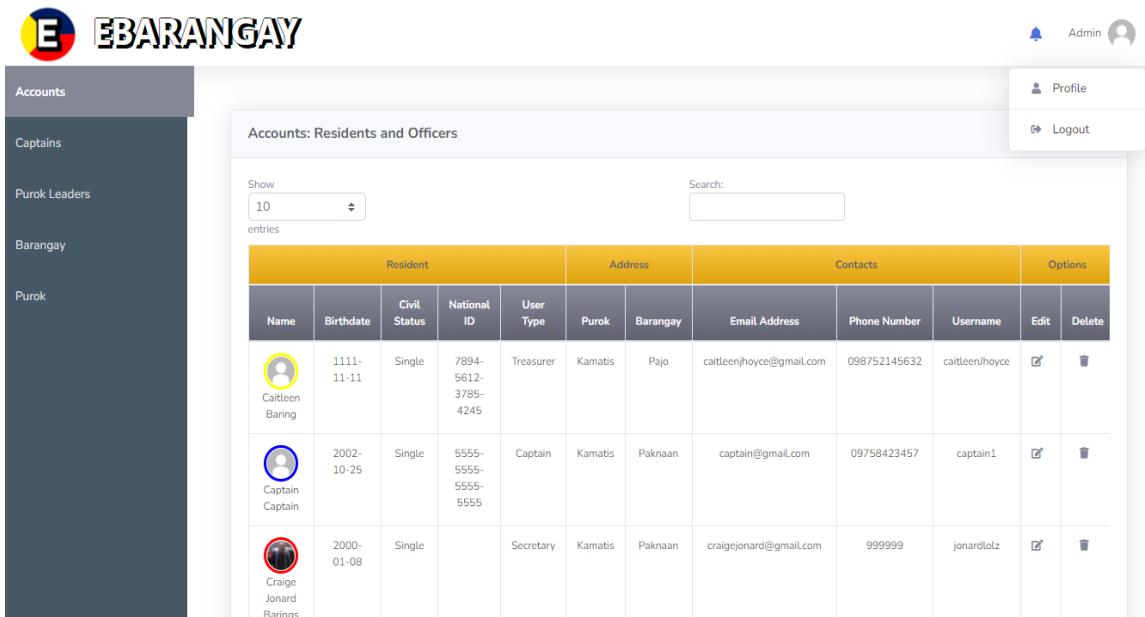
### Web



The storyboard for the register page is divided into two panels. The left panel shows the 'Create An Account!' form with fields for National ID, First name, Middle name, Last name, Date of Birth, Age, Civil Status, Gender, Purok, Barangay, Current Address, Email Address, Username, Password, and Repeat Password. It includes a large circular logo with a stylized letter 'E' in the center. The right panel shows the 'Welcome To EBARANGAY!' login form with fields for Enter Username, Password, and Remember Me, along with a blue 'Login' button. Both panels feature the same large circular logo at the top.

Figure 31: Storyboard – Register Page

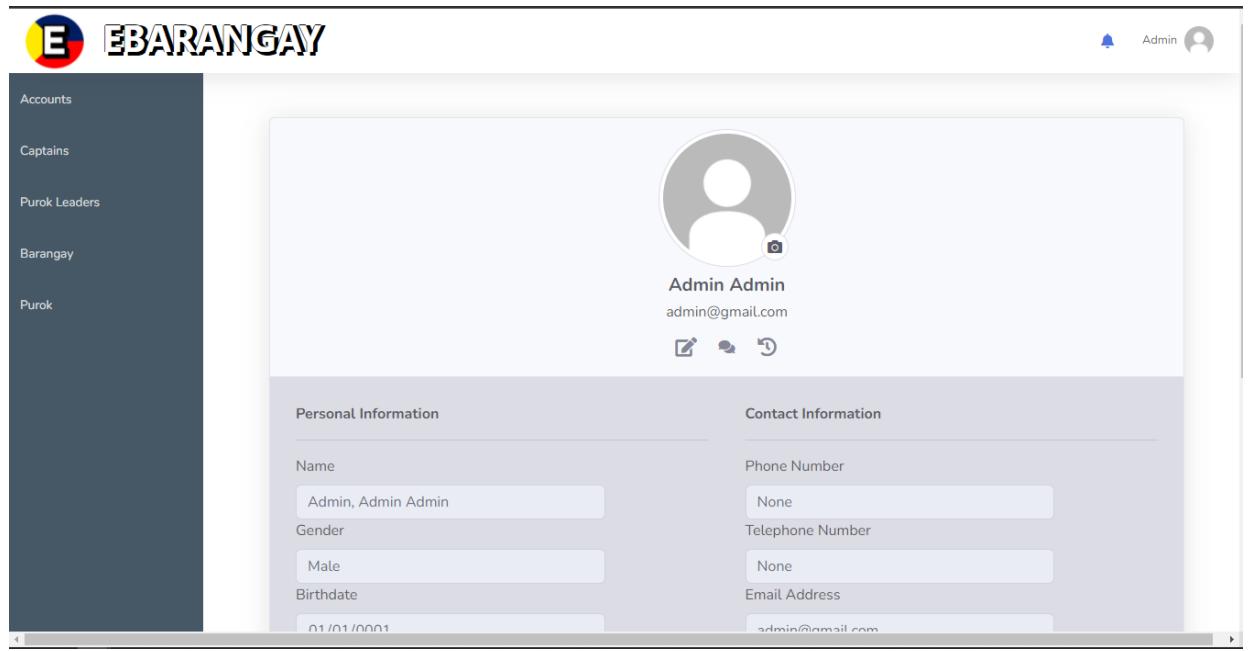
Figure 32: Storyboard – Register Page



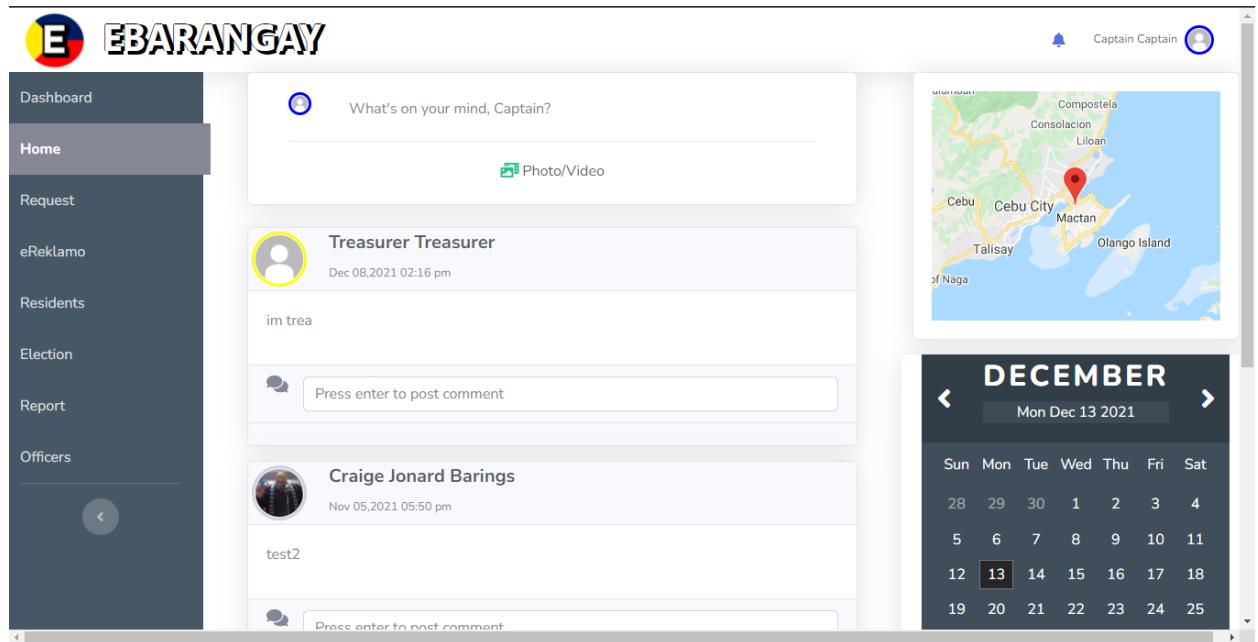
The storyboard for the admin page features a dark sidebar on the left with a navigation menu: Accounts, Captains, Purok Leaders, Barangay, and Purok. The main content area displays a table titled 'Accounts: Residents and Officers'. The table has columns for Resident, Address, Contacts, and Options. It lists three residents: Caitleen Baring, Captain Captain, and Craige Jonard Barings. Each row includes a profile picture, Name, Birthdate, Civil Status, National ID, User Type, Purok, Barangay, Email Address, Phone Number, Username, and edit/delete buttons. The top right corner shows a 'Profile' link, a 'Logout' link, and a notification bell icon.

Accounts: Residents and Officers											
Resident					Address		Contacts			Options	
Name	Birthdate	Civil Status	National ID	User Type	Purok	Barangay	Email Address	Phone Number	Username	Edit	Delete
	1111-11-11	Single	7894-5612-3785-4245	Treasurer	Kamatis	Pajo	caitleenjhoyce@gmail.com	098752145632	caitleenjhoyce		
	2002-10-25	Single	5555-5555-5555-5555	Captain	Kamatis	Paknaan	captain@gmail.com	09758423457	captain1		
	2000-01-08	Single		Secretary	Kamatis	Paknaan	craigjeonard@gmail.com	999999	jonardlolz		

Figure 33: Storyboard – Admin Page

d


The screenshot shows the profile page of the EBARANGAY application. At the top, there's a navigation bar with a bell icon and the word "Admin". On the left, a sidebar lists "Accounts", "Captains", "Purok Leaders", "Barangay", and "Purok". The main area features a placeholder profile picture and the user information for "Admin Admin" (admin@gmail.com). Below this, there are two tabs: "Personal Information" and "Contact Information". Under "Personal Information", fields include Name (Admin, Admin Admin), Gender (Male), and Birthdate (01/01/0001). Under "Contact Information", fields include Phone Number (None), Telephone Number (None), and Email Address (admin@gmail.com).

Figure 34: Storyboard – Profile Page


The screenshot shows the eBulletin page of the EBARANGAY application. The left sidebar includes "Dashboard", "Home" (which is highlighted in grey), "Request", "eReklamo", "Residents", "Election", "Report", and "Officers". The main content area has a text input field asking "What's on your mind, Captain?" with a "Photo/Video" button. Below it, a post from "Treasurer Treasurer" (Dec 08, 2021 02:16 pm) says "im trea". There's a comment input field with "Press enter to post comment". Another post from "Craige Jonard Barings" (Nov 05, 2021 05:50 pm) says "test2". To the right, there's a map of Cebu City and Mactan Island, and a calendar for December 2021 showing Monday, December 13, 2021, as the current date.

Figure 35: Storyboard – eBulletin Page

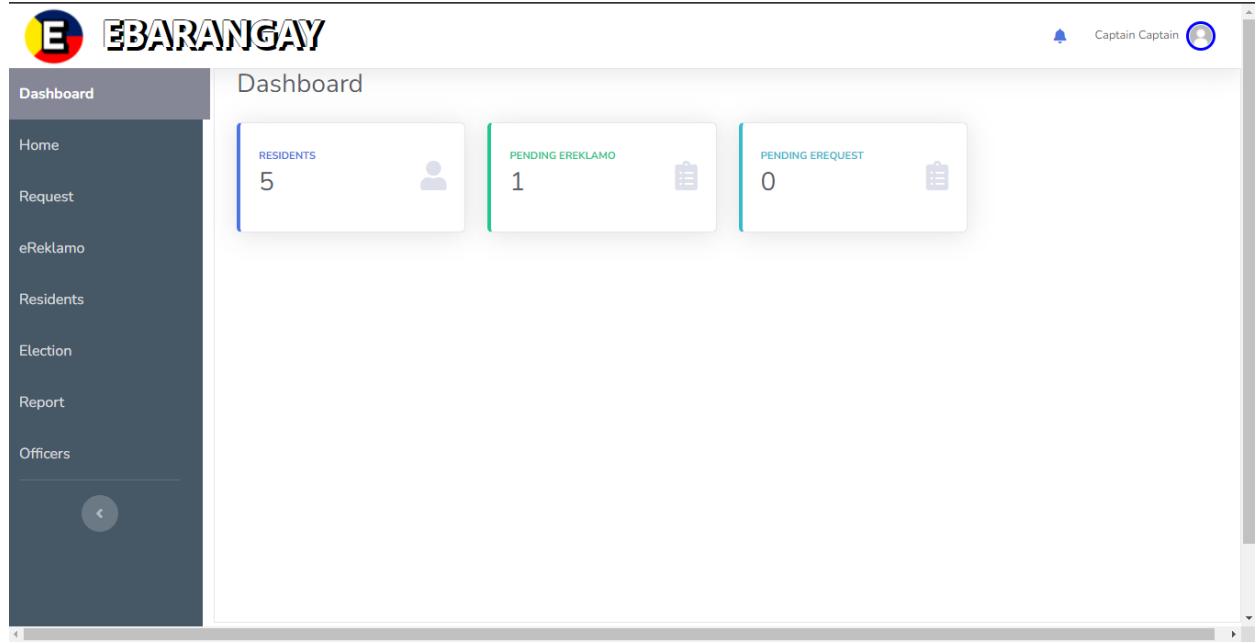


Figure 36: Storyboard – Dashboard Page

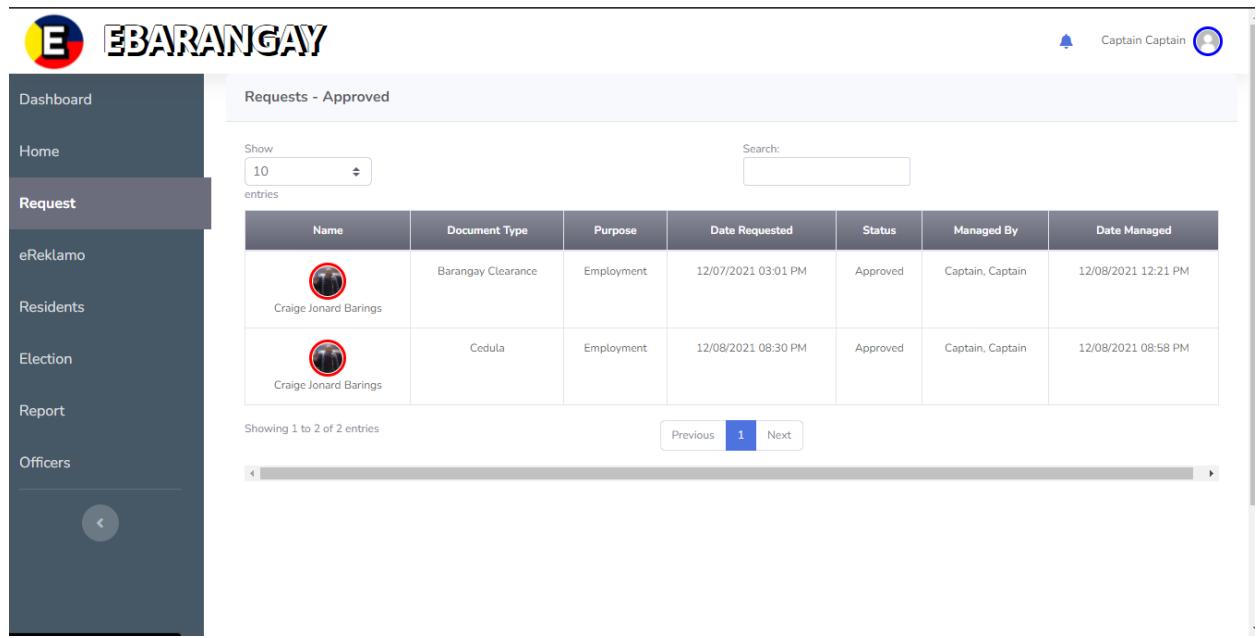


Figure 37: Storyboard – Request Page

The screenshot shows the 'eReklamo' page from the eBARANGAY application. The left sidebar has a dark blue background with white text and icons. The 'eReklamo' option is highlighted with a grey background. The main content area has a light grey header with the title 'eReklamo'. Below the header is a search bar with a dropdown for 'Show' set to '10 entries' and a 'Search:' input field. A table lists complaints with columns: Name, Reklamo Type, Detail, Comment, Status, Date Submitted, Managed By, Date Managed, and Manage. One entry is shown: 'Craigie Jonard Barings' (Kuryente type) with the comment 'No electricity in the area'. The status is 'Pending', and the date submitted is '12/09/2021 08:02 PM'. The 'Manage' column contains a checked checkbox icon. Below the table, it says 'Showing 1 to 1 of 1 entries' and has previous/next navigation buttons.

Figure 38: Storyboard – eReklamo Page

The screenshot shows the 'Residents' page from the eBARANGAY application. The left sidebar has a dark blue background with white text and icons. The 'Residents' option is highlighted with a grey background. The main content area has a light grey header with the title 'Paknaan Residents'. Below the header is a search bar with a dropdown for 'Show' set to '10 entries' and a 'Search:' input field. A table lists residents with columns: Name, National ID, User Type, Barangay, Purok, Email Address, Phone Number, and Manage. Four entries are listed: 'Craigie Jonard Barings' (Secretary), 'Purok Leader' (Purok Leader), 'Secretary Secretary' (Secretary), and 'Treasurer Treasurer' (Treasurer). Each row has an 'Edit' button in the 'Manage' column. Below the table, it says 'Showing 1 to 4 of 4 entries' and has previous/next navigation buttons.

Figure 39: Storyboard – Residents Page

The screenshot shows the 'ELECTION' section of the EBARANGAY application. On the left sidebar, 'ELECTION' is highlighted. The main area displays two tables: 'Elections' and 'Candidates'. The 'Elections' table lists two entries: 'Term 2023-2024' created by Rosvie Pepito on Nov 30, 2021, marked as 'Finish'; and 'Term 2025-2026' created by Captain Captain on Dec 10, 2021, marked as 'Active'. The 'Candidates' table lists five entries, each with a user ID, name, position, barangay, purok, phone number, and a 'Manage' button.

Election Title	Created By	Date Created	Status	Action	Manage
Term 2023-2024	Rosvie Pepito	Nov 30,2021	Finish	<input checked="" type="checkbox"/> Finish	<input type="button" value="Edit"/> <input type="button" value="Delete"/>
Term 2025-2026	Captain Captain	Dec 10,2021	Active	<input checked="" type="checkbox"/> Finish	<input type="button" value="Edit"/> <input type="button" value="Delete"/>

Candidates																																																
Show	Search:																																															
10																																																
entries																																																
1																																																
Showing 1 to 2 of 2 entries																																																
Previous	1	Next																																														
<input style="float: right;" type="button" value="+"/>																																																
<table border="1"> <thead> <tr> <th>Users ID</th> <th>Name</th> <th>Position</th> <th>Barangay</th> <th>Purok</th> <th>Phone Number</th> <th>Manage</th> </tr> </thead> <tbody> <tr> <td>11</td> <td></td> <td>Secretary</td> <td>Paknaan</td> <td>Kamatis</td> <td>999999</td> <td><input type="button" value="Change Position"/></td> </tr> <tr> <td>23</td> <td></td> <td>Treasurer</td> <td>Pajo</td> <td>Kamatis</td> <td>098752145632</td> <td><input type="button" value="Change Position"/></td> </tr> <tr> <td>26</td> <td></td> <td>Secretary</td> <td>Paknaan</td> <td>Kamatis</td> <td>(032)342-4587</td> <td><input type="button" value="Change Position"/></td> </tr> <tr> <td>27</td> <td></td> <td>Treasurer</td> <td>Paknaan</td> <td>Kamatis</td> <td></td> <td><input type="button" value="Change Position"/></td> </tr> <tr> <td>28</td> <td></td> <td>Purok Leader</td> <td>Paknaan</td> <td>Kamatis</td> <td></td> <td><input type="button" value="Change Position"/></td> </tr> </tbody> </table>							Users ID	Name	Position	Barangay	Purok	Phone Number	Manage	11		Secretary	Paknaan	Kamatis	999999	<input type="button" value="Change Position"/>	23		Treasurer	Pajo	Kamatis	098752145632	<input type="button" value="Change Position"/>	26		Secretary	Paknaan	Kamatis	(032)342-4587	<input type="button" value="Change Position"/>	27		Treasurer	Paknaan	Kamatis		<input type="button" value="Change Position"/>	28		Purok Leader	Paknaan	Kamatis		<input type="button" value="Change Position"/>
Users ID	Name	Position	Barangay	Purok	Phone Number	Manage																																										
11		Secretary	Paknaan	Kamatis	999999	<input type="button" value="Change Position"/>																																										
23		Treasurer	Pajo	Kamatis	098752145632	<input type="button" value="Change Position"/>																																										
26		Secretary	Paknaan	Kamatis	(032)342-4587	<input type="button" value="Change Position"/>																																										
27		Treasurer	Paknaan	Kamatis		<input type="button" value="Change Position"/>																																										
28		Purok Leader	Paknaan	Kamatis		<input type="button" value="Change Position"/>																																										

Figure 40: Storyboard – Election Page

The screenshot shows the 'Officers' section of the EBARANGAY application. On the left sidebar, 'Officers' is highlighted. The main area displays a table titled 'Paknaan Residents' listing officers. The table includes columns for User ID, Name, Position, Barangay, Purok, Phone Number, and a 'Manage' button. Each officer's name is preceded by a small profile picture with a red or yellow circle.

Paknaan Residents																																																
Show	Search:																																															
10																																																
entries																																																
1																																																
Showing 1 to 5 of 5 entries																																																
Previous	1	Next																																														
<input style="float: right;" type="button" value="+"/>																																																
<table border="1"> <thead> <tr> <th>Users ID</th> <th>Name</th> <th>Position</th> <th>Barangay</th> <th>Purok</th> <th>Phone Number</th> <th>Manage</th> </tr> </thead> <tbody> <tr> <td>11</td> <td></td> <td>Craige Jonard Barings</td> <td>Secretary</td> <td>Paknaan</td> <td>Kamatis</td> <td><input type="button" value="Change Position"/></td> </tr> <tr> <td>23</td> <td></td> <td>Caitleen Baring</td> <td>Treasurer</td> <td>Pajo</td> <td>Kamatis</td> <td><input type="button" value="Change Position"/></td> </tr> <tr> <td>26</td> <td></td> <td>Secretary Secretary</td> <td>Secretary</td> <td>Paknaan</td> <td>Kamatis</td> <td><input type="button" value="Change Position"/></td> </tr> <tr> <td>27</td> <td></td> <td>Treasurer Treasurer</td> <td>Treasurer</td> <td>Paknaan</td> <td>Kamatis</td> <td><input type="button" value="Change Position"/></td> </tr> <tr> <td>28</td> <td></td> <td>Purok Leader</td> <td>Purok Leader</td> <td>Paknaan</td> <td>Kamatis</td> <td><input type="button" value="Change Position"/></td> </tr> </tbody> </table>							Users ID	Name	Position	Barangay	Purok	Phone Number	Manage	11		Craige Jonard Barings	Secretary	Paknaan	Kamatis	<input type="button" value="Change Position"/>	23		Caitleen Baring	Treasurer	Pajo	Kamatis	<input type="button" value="Change Position"/>	26		Secretary Secretary	Secretary	Paknaan	Kamatis	<input type="button" value="Change Position"/>	27		Treasurer Treasurer	Treasurer	Paknaan	Kamatis	<input type="button" value="Change Position"/>	28		Purok Leader	Purok Leader	Paknaan	Kamatis	<input type="button" value="Change Position"/>
Users ID	Name	Position	Barangay	Purok	Phone Number	Manage																																										
11		Craige Jonard Barings	Secretary	Paknaan	Kamatis	<input type="button" value="Change Position"/>																																										
23		Caitleen Baring	Treasurer	Pajo	Kamatis	<input type="button" value="Change Position"/>																																										
26		Secretary Secretary	Secretary	Paknaan	Kamatis	<input type="button" value="Change Position"/>																																										
27		Treasurer Treasurer	Treasurer	Paknaan	Kamatis	<input type="button" value="Change Position"/>																																										
28		Purok Leader	Purok Leader	Paknaan	Kamatis	<input type="button" value="Change Position"/>																																										

Figure 41: Storyboard – Officers Page

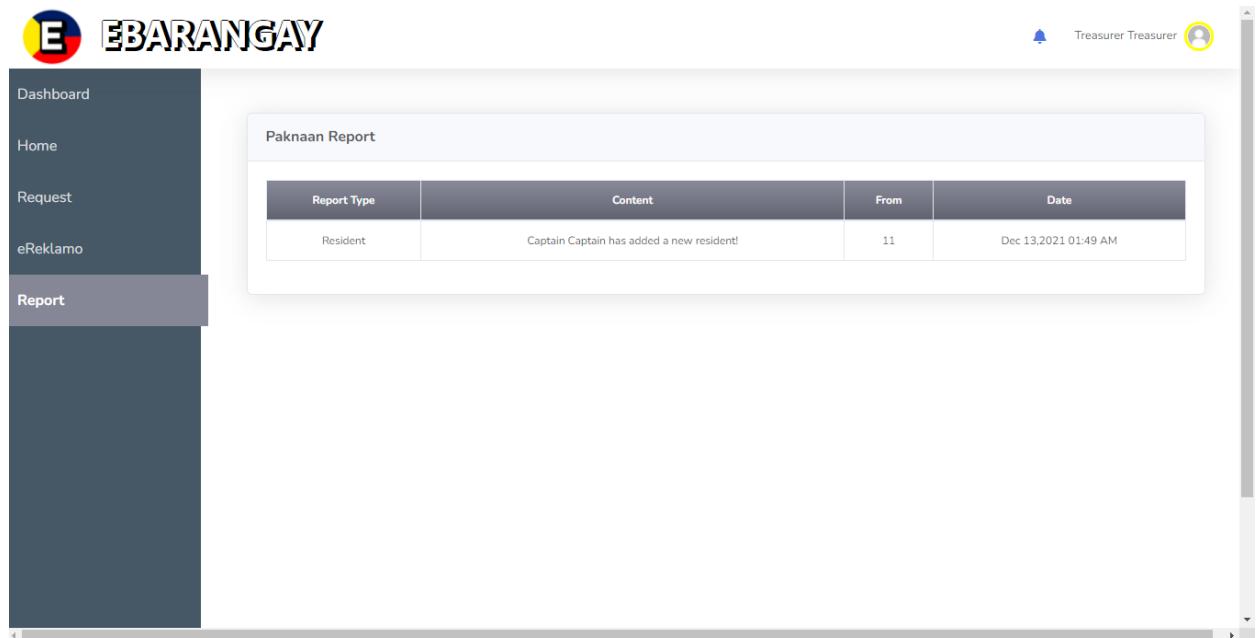


Figure 42: Storyboard – Report Page

## Mobile

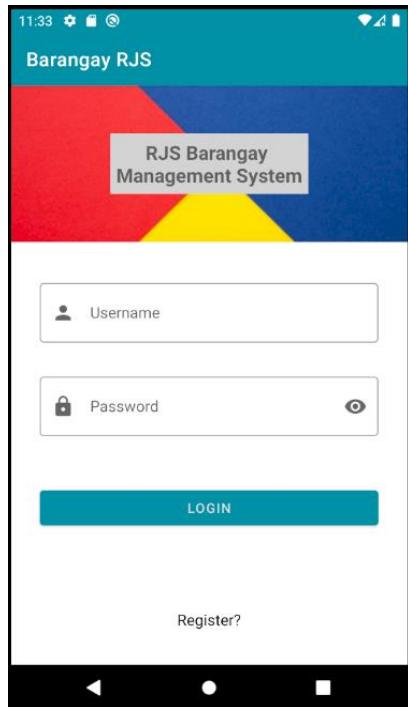


Figure 43: Storyboard – Login Page Mobile

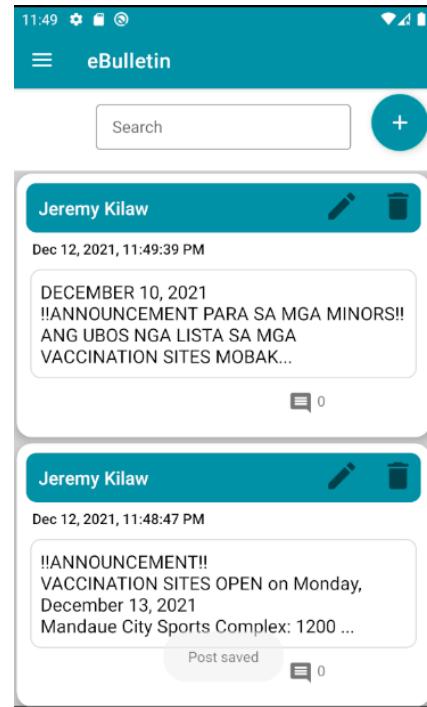
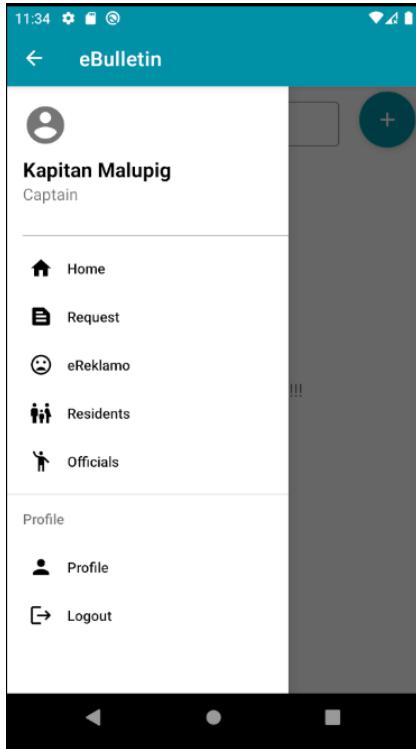
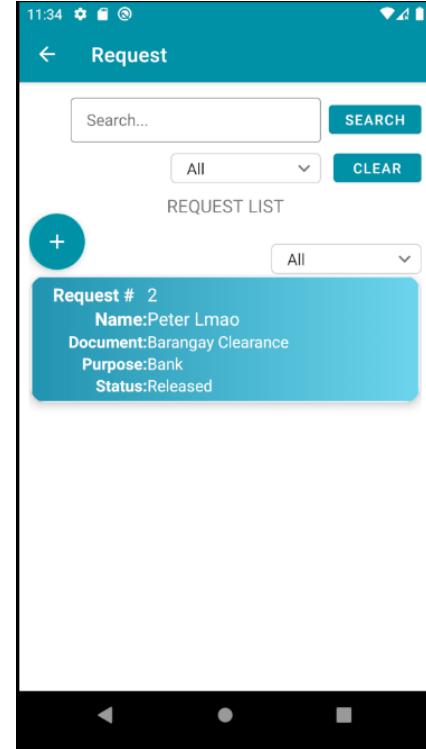
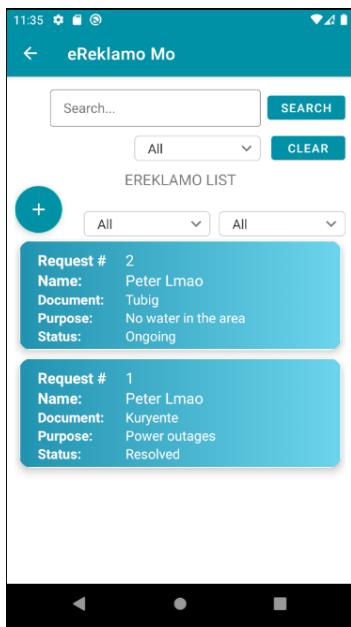
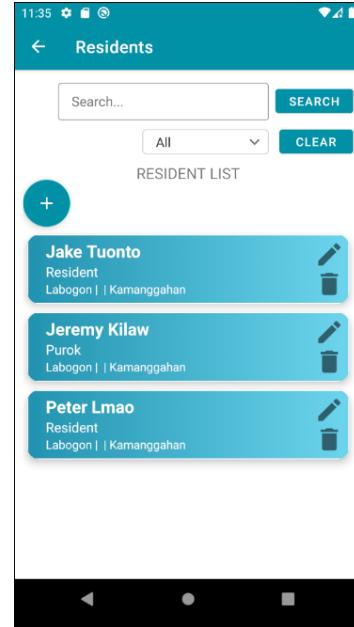


Figure 44: Storyboard – eBulletin Page Mobile

Figure 45: [Storyboard – Drawer Menu Page](#)Figure 46: [Storyboard – Request Page Mobile](#)Figure 47: [Storyboard – eReklamo Page Mobile](#)  
[Page Mobile](#)Figure 48: [Storyboard – Resident Page Mobile](#)

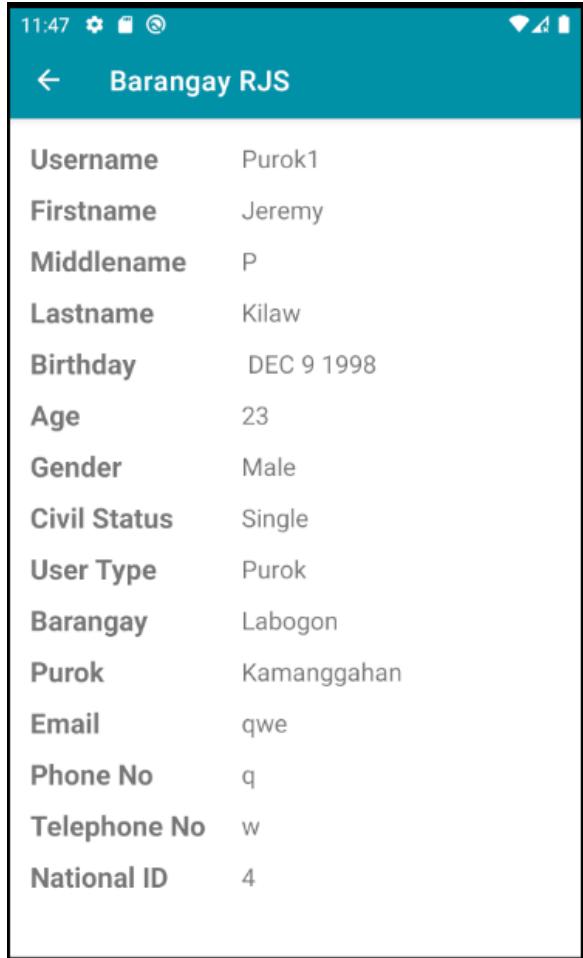


Figure 49: **Storyboard – Profile Page Mobile**

## **Database Design**

### **Entity-Relationship Diagram**

An entity relationship diagram (ERD) shows the relationships of entity sets stored in a database. An entity in this context is an object, a component of data. An entity set is a collection of similar entities. These entities can have attributes that define its properties.

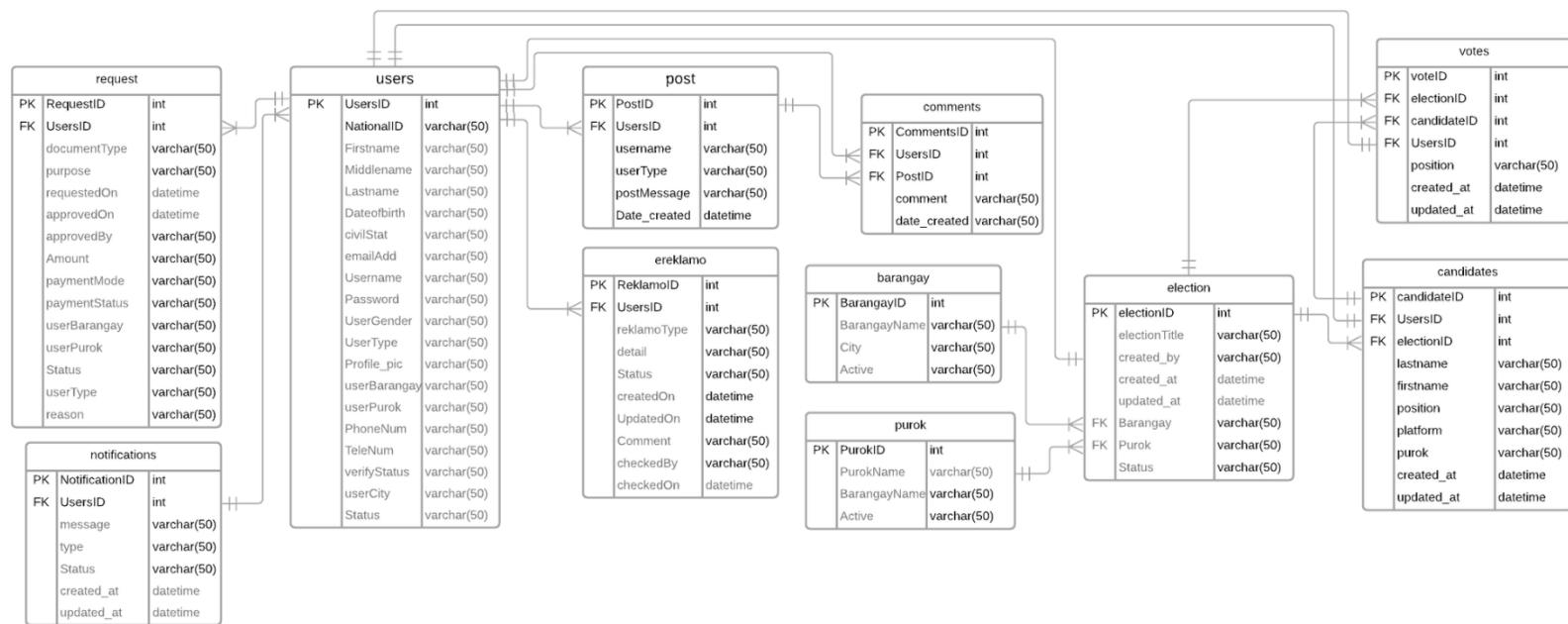


Figure 50: Entity-Relationship Diagram

## **Data Dictionary**

A data dictionary is a collection of the names, definitions, and attributes for data elements and models. The data in a data dictionary is the metadata about the database. These elements are then used as part of a database, research project, or information system.

Table 6  
Data Ditionary

Table Name	Attribute Name	Contents	Type	Format	Range	Required	PK or FK	FK REFERENCED TABLE
Users	UsersID	User ID	INT(11)	00000000000	00000000001-9999999999	Y	PK	
	NationalID	Resident's National ID	VARCHAR(50)	Xxxx xxxx		Y		
	Firstname	Resident's Firstname	VARCHAR(50)	Xxxx xxxx		Y		
	Middlename	Resident's Middlename	VARCHAR(50)	Xxxx xxxx		N		
	Lastname	Resident's Lastname	VARCHAR(50)	Xxxx xxxx		Y		
	Dateofbirth	Date of Birth	VARCHAR(50)	Xxxx xxxx		Y		
	civilStat	Civil Status	VARCHAR(50)	Xxxx xxxx		Y		
	emailAdd	Email Address	VARCHAR(50)	Xxxx xxxx		Y		
	Username	Username	VARCHAR(50)	Xxxx xxxx		Y		
	Password	Password	VARCHAR(50)	Xxxx xxxx		Y		
	userGender	Gender	VARCHAR(50)	Xxxx xxxx		Y		
	userType	User Type	VARCHAR(50)	Xxxx xxxx		Y		
	Profile_pic	Profile Picture	VARCHAR(50)	Xxxx xxxx		Y		
	userBarangay	User's Barangay	VARCHAR(50)	Xxxx xxxx		Y		
	userPurok	User's Purok	VARCHAR(50)	Xxxx xxxx		Y		
	PhoneNum	Phone Number	VARCHAR(50)	Xxxx xxxx		Y		

	TeleNum	Tele Number	VARCHAR(50)	Xxxx xxxx		Y		
	verifyStatus	Status of verification	VARCHAR(50)	Xxxx xxxx		Y		
	userCity	User's City	VARCHAR(50)	Xxxx xxxx		Y		
	Status	Account status, active or inactive	VARCHAR(50)	Xxxx xxxx				
Post	PostID	Post's ID	INT(11)	00000000000	00000000001-9999999999	Y	PK	Users
	UserID	User's ID	INT(11)	00000000000	00000000001-9999999999	Y	FK	
	Username	Username	VARCHAR(50)			Y		
	userType	User Type	VARCHAR(50)			Y		
	postMessage	Message of the post	DATETIME	MM/DD/YY hh:mm:ss		Y		
	Date_created	Date of creation of post	DATETIME	MM/DD/YY hh:mm:ss		Y		
Comments	CommentsID	Comment's ID	INT(11)	00000000000	00000000001-9999999999	Y	PK	Post
	UserID	Commentor's User ID	INT(11)	00000000000	00000000001-9999999999	Y	FK	
	PostID	PostID to where the comment was posted	INT(11)	00000000000	00000000001-9999999999	Y	FK	
	comment	Comment content	VARCHAR(50)			Y		
	Date_created	Date of creation	DATETIME	MM/DD/YY hh:mm:ss		Y		
Barangay	BarangayID	Barangay's ID	INT(11)	00000000000	00000000001-9999999999	Y	PK	
	BarangayName	Barangay Name	VARCHAR(50)			Y		
	City	City of the Barangay	VARCHAR(50)			Y		

	Active	If barangay is still active	VARCHAR(50)			Y		
Purok	PurokID	Purok's ID	INT(11)	00000000000	00000000001-9999999999	Y	PK	
	PurokName	Purok's Name	VARCHAR(50)			Y		
	BarangayName	Barangay's Name	VARCHAR(50)			Y		
	Active	Barangay's status on active or inactive	VARCHAR(50)			Y		
eReklamo	ReklamoID	ID for eReklamo	INT(11)	00000000000	00000000001-9999999999	Y	PK	
	UserID	UserID for the sender	INT(11)	00000000000	00000000001-9999999999	Y	FK	Users
	reklamoType	Type of Reklamo	VARCHAR(50)			Y		
	Detail	Detail of the reklamo submitted	VARCHAR(50)			Y		
	Status	Status of the reklamo	VARCHAR(50)			Y		
	CreatedOn	Date reklamo created	DATETIME	MM/DD/YY hh:mm:ss		Y		
	UpdatedOn	Date reklamo updated	DATETIME	MM/DD/YY hh:mm:ss		Y		
	Comment	Additional details of the reklamo	VARCHAR(50)			N		
	checkedBy	Barangay official name of who checked	VARCHAR(50)			Y		
	checkedOn	Date when it was checked	DATETIME	MM/DD/YY hh:mm:ss		Y		
request	RequestID	ID of the request	INT(11)	00000000000	00000000001-9999999999	Y	PK	
	UserID	ID of the User who submitted the request	INT(11)	00000000000	00000000001-9999999999	Y	FK	Users

	documentType	Type of document	VARCHAR(50)			Y		
	purpose	Purpose of the request	VARCHAR(50)			Y		
	requestedOn	Date when it was requested	DATETIME	MM/DD/YY hh:mm:ss		Y		
	approvedOn	Date approved	DATETIME	MM/DD/YY hh:mm:ss		Y		
	approvedBy	Name of who approved	VARCHAR(50)			Y		
	Amount	Amount to pay	VARCHAR(50)			Y		
	paymentMode	Cash on delivery or Cash on Claim	VARCHAR(50)			Y		
	paymentStatus	If paid or not paid	VARCHAR(50)			Y		
	userBarangay	Barangay name where requester lives	VARCHAR(50)			Y		
	userPurok	Purok name where requester lives	VARCHAR(50)			Y		
	Status	Status if it request is pending, approved, not approved, or released	VARCHAR(50)			Y		
	userType	User type	VARCHAR(50)			Y		
	reason	Reason of not approved	VARCHAR(50)			N		
Election	electionID	ID of election	INT(11)			Y	PK	
	electionTitle	Title of the election	VARCHAR(50)			Y		
	Created_by	Who created the election	VARCHAR(50)			Y		
	Created_at	Date of creation	DATETIME	MM/DD/YY hh:mm:ss		Y		
	Updated_at	Date of update	DATETIME	MM/DD/YY hh:mm:ss		Y		

	Barangay Purok status	Barangay name election is held Purok name election is held Status of the election On Going, Finished	VARCHAR(50) VARCHAR(50) VARCHAR(50)			Y Y Y		
candidates	candidateID	ID of the candidate	INT(11)	00000000000	00000000001- 99999999999	Y	PK	Users
	UserID	ID of the user	INT(11)	00000000000	00000000001- 99999999999	Y	FK	
	lastname	Lastname of candidate	VARCHAR(50)			Y		
	Firstname	Firstname of candidate	VARCHAR(50)			Y		
	Position	Position of candidate is nominated	VARCHAR(50)			Y		
	electionID	Election ID of which user is nominated	INT(11)			Y	FK	Election
	Platform	Candidate's platform	VARCHAR(50)			Y		
	Purok	Purok where candidate lives	VARCHAR(50)			Y		
	Created_at	Date when user is nominated	DATETIME	MM/DD/YY hh:mm:ss		Y		
	Updated_at	Date of update	DATETIME	MM/DD/YY hh:mm:ss		Y		
Votes	voteID	Vote ID	INT(11)	00000000000	00000000001- 99999999999	Y	PK	Election
	electionID	ID of election	INT(11)	00000000000	00000000001- 99999999999	Y	FK	
	candidateID	ID of candidate	INT(11)	00000000000	00000000001- 99999999999	Y	FK	Candidate
	usersID	ID of User	INT(11)	00000000000	00000000001- 99999999999	Y	FK	

	Position	Position of candidate	VARCHAR(50)			Y		
	Created_at	Date of creation	DATETIME	MM/DD/YY hh:mm:ss		Y		
	Updated_at	Date of update	DATETIME	MM/DD/YY hh:mm:ss		Y		
notifications	NotificationID	ID of notification	INT(11)	00000000000		Y	PK	
	message	Message of notification	VARCHAR(50)			Y		
	Type	Type of notification	VARCHAR(50)			Y		
	Status	Status if read or not read	VARCHAR(50)			Y		
	UsersID	ID of user to notify	INT(11)	00000000000	00000000001- 9999999999	Y	FK	Users
	Created_at	Date of creation	DATETIME	MM/DD/YY hh:mm:ss		Y		
	Updated_at	Date of update	DATETIME	MM/DD/YY hh:mm:ss		Y		

## Network Design

Network design is a representation of the implementation of the systems network infrastructure. This design includes Network Topology and Network Model.

### Network Model

The network model is a database model conceived as a flexible way of representing objects and their relationships. Its distinguishing feature is that the schema, viewed as a graph in which object types are nodes and relationship types are arcs, is not restricted to being a hierarchy or lattice.

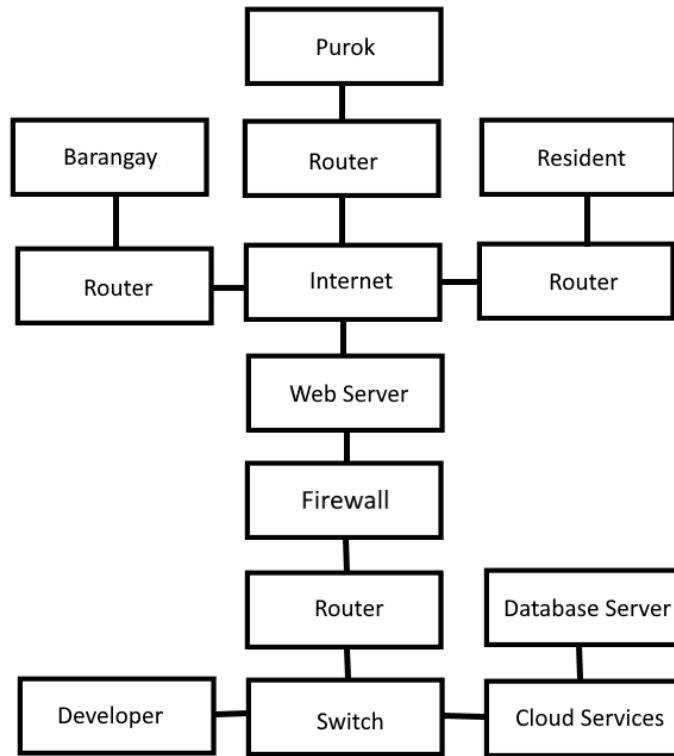


Figure 51: **Network Model**

eBarangay uses the TCP/IP as a framework for its network model. It serves as a peer-to-peer network connectivity for the developer, barangay, purok, and residents. It also uses Local Area Network (LAN) among computers and other devices that are connected within the same router.

## Network Topology

Network topology refers to the manner in which the links and nodes of a network are arranged to relate to each other. Topologies are categorized as either physical network topology, which is the physical signal transmission medium, or logical network topology, which refers to the manner in which data travels through the network between devices, independent of physical connection of the devices.

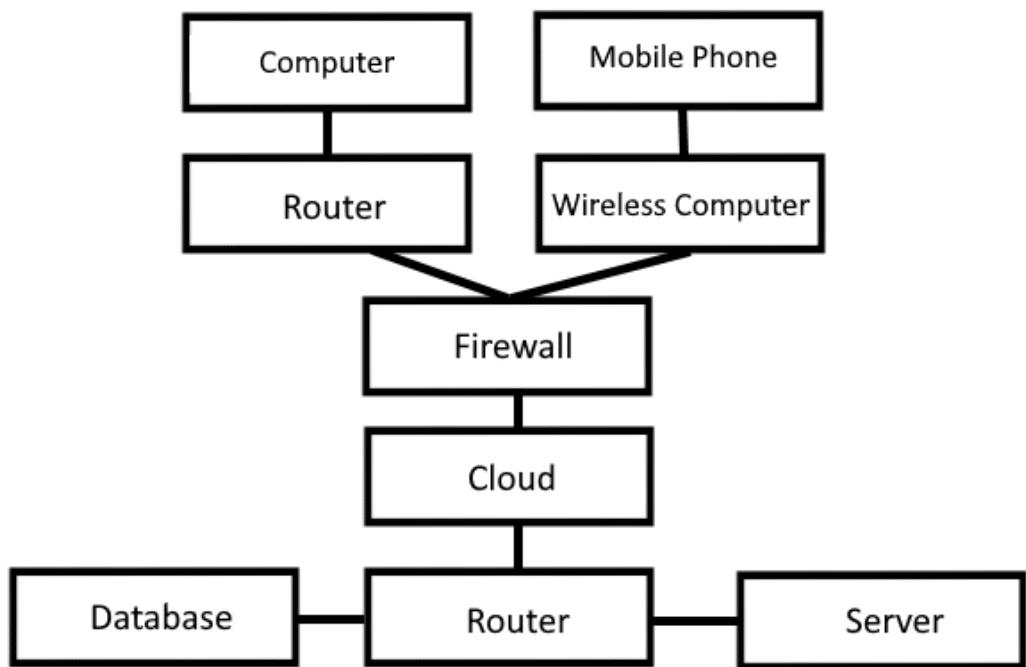


Figure 52: Network Topology

eBarangay uses a Star topology as its Network Topology. Users, such as the residents, purok leaders, and barangay officials can use can access the system online through desktop computers, and through their mobile devices such as laptops and mobile phones utilizing the accessibility of the internet.

## Development Phase

Technology Stack Diagram

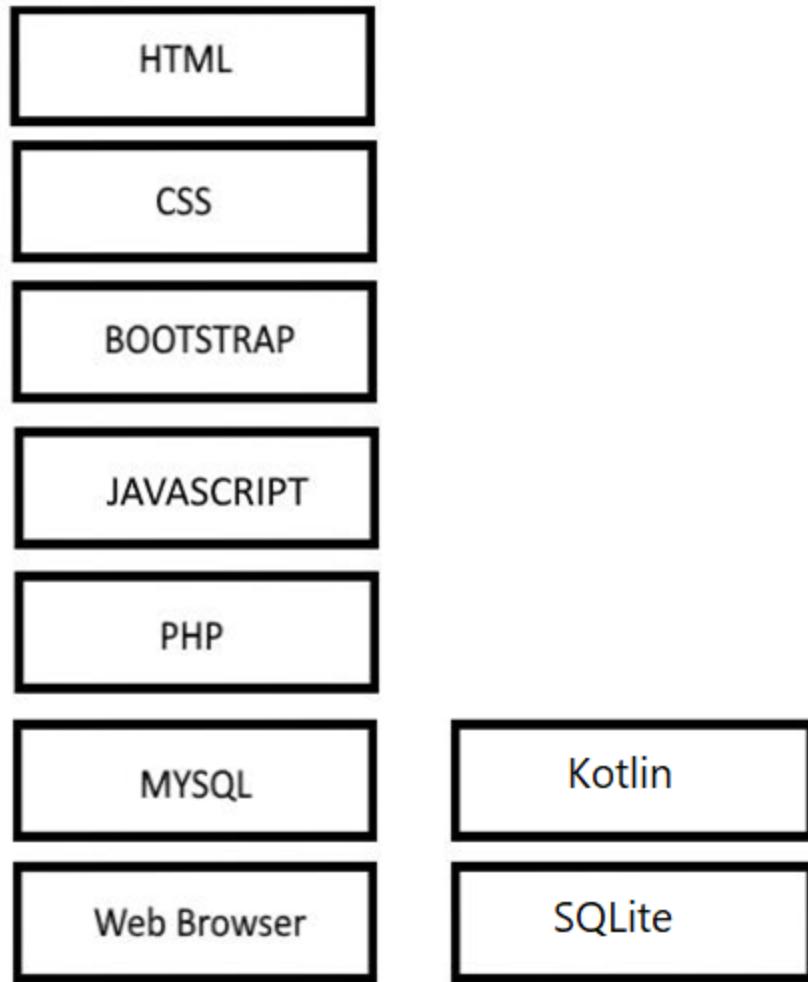


Figure 53: Technology Stack Diagram

The eBarangay will be developed with a sufficient amount of software. The software will be used in web developing for front end are Bootstrap 4, CSS 3, Javascript, and HTML 5. The backend of the web system will be using PHP and MYSQL while Kotlin and SQLite for mobile.

## **Software Specification**

### **SYSTEM SPECIFICATION DEVELOPMENT STAGE**

#### **Software Specification Development**

Browser: Google Chrome, Mozilla Firefox, and/or Microsoft Edge

Operating System: Windows 7 or up

Internet Speed: 3 Mbps or higher

Application Tools: Visual Studio 2019

## **Hardware Specification**

Hardware Specification refers to the requirement of the device hardware in order to perform functions.

<b>Processor</b>	Intel® Core™ i5-4460 CPU @3.20GHz 3.20GHz
<b>Memory/RAM</b>	8192mb or Higher
<b>Hard Disk Drive</b>	500gb or Higher
<b>Monitor</b>	15 inches 1366x768 60Hz
<b>Video Adapter</b>	Intel ® HD Graphics 3000
<b>Keyboard</b>	Generic Keyboard
<b>Mouse</b>	Generic Mouse
<b>Ethernet Adapterx</b>	Realtek PCIe FE Family Controller
<b>Disk Drive</b>	DVD-R/W Driver
<b>USB Port</b>	2.0 USB port or 3.0 USB port

## Program Specification

### List of Modules

Table 7

Manage Account Module - Web

Programmer	MODULES	RESI DEN	PUROK R	TREASURE TS	SECRET ARY	CAP TAIN	AD MI N
MANAGE ACCOUNT							
Craigie Jonard N.	CREATE ACCOUNT	*					*
Baring	VIEW ACCOUNT	*	*	*	*	*	*
Rosvie R. Pepito	UPDATE ACCOUNT	*	*	*	*	*	*
	DEACTIVATE ACCOUNT						*
<b>Number of Points</b> <b>(1 Point per module per user)</b>		1	1	1	1	1	1

Table 8

Request Document Module - Web

Programm er	MODULES	RESID ENTS	PUROK RER	TREASU RER	SECRE TARY	CAPT AIN	AD MIN
Request Document							
Craigie Jonard N.	CREATE REQUEST	*					
Baring	VIEW REQUEST	*	*	*	*	*	
Rosvie R. Pepito	CANCEL REQUEST	*					
	APPROVE/DISAP PROVE REQUEST		*	*	*		

	RECORD REQUEST		*	*	*		
<b>Number of Points</b> <b>(1 Point per module per user)</b>		1	1	1	1	1	0

Table 9

## eBulletin Module - Web

Programmer	MODULES	RESIDEN TS	PUROK ER	TREASUR ER	SEC RET	CAP TAIN	AD MIN
eBulletin Module							
Craigie	VIEW POST	*	*	*	*	*	
Jonard N.	CREATE POST		*	*	*	*	
Baring	UPDATE POST		*	*	*	*	
Rosvie R.	DELETE POST		*	*	*	*	
Pepito							
<b>Number of Points</b> <b>(1 Point per module per user)</b>		1	1	1	1	1	0

Table 10

## Manage Complaints Module - Web

Programmer	MODULES	RESIDE NTS	PURO K	TREASUR ER	SEC RET	CAP TAIN	ADM IN ARY
MANAGE COMPLAINTS							
Craigie	CREATE COMPLAINT	*					
Jonard N.	VIEW COMPLAINT	*	*		*	*	
Baring	CANCEL COMPLAINT	*					
Rosvie R.	SEND COMPLAINT	*					
Pepito	RESOLVE / UNRESOLVE COMPLAINT		*		*	*	
	RECORD COMPLAINT		*		*	*	
<b>Number of Points</b> <b>(1 Point per module per user)</b>		1	1	0	1	1	0

Table 11

## Manage Residents Module - Web

Programmer	MODULES	RESIDE NTS	PURO K	TREASU RER	SEC RET	CAP TAIN	ADM IN ARY
MANAGE RESIDENTS							
Craigie	VIEW RESIDENTS	*	*	*	*	*	
Jonard N.	ADD RESIDENTS		*			*	
Baring	DEACTIVATE RESIDENTS		*			*	
Rosvie R.	VERIFY RESIDENTS		*				
Pepito							
<b>Number of Points</b> <b>(1 Point per module per user)</b>		1	1	1	1	1	0

Table 12

## Manage Notification/Messages Module - Web

Programmer	MODULES	RESIDEN TS	PUROK RER	TREASU RER	SECR ETA	CAP TAIN	ADM IN RY
MANAGE NOTIFICATION/MESSAGES							
Craigie	PUSH	*	*	*	*	*	
Jonard N.	SEND MESSAGE	*	*	*	*	*	
Baring							
Rosvie R.							
Pepito							
<b>Number of Points</b> <b>(1 Point per module per user)</b>		1	1	1	1	1	0

Table 13

## Voting Module - Web

Programmer	MODULES	RESIDENTS	PUROK RER	TREASU R	SECRETARY ETA	CAP TAIN	ADM IN RY
VOTING							
Craigie	ADD CANDIDATE					*	
Jonard N.	UPDATE CANDIDATE					*	
Baring	REMOVE CANDIDATE					*	
Rosvie R.	VIEW CANDIDATE	*	*	*	*	*	
Pepito	VOTE CANDIDATE	*	*	*	*		
<b>Number of Points (1 Point per module per user)</b>		1	1	1	1	1	0

Table 14

## Manage Account Module - Mobile

Programmer	MODULES	RESIDENTS	PUROK R	TREASURE	SECRETARY ARY	CAP TAIN	ADMINISTRATION
MANAGE ACCOUNT							
Sajid Cadavero	CREATE ACCOUNT		*				
	VIEW ACCOUNT	*	*	*	*	*	
	UPDATE ACCOUNT	*	*	*	*	*	
<b>Number of Points (1 Point per module per user)</b>		1	1	1	1	1	0

Table 15

## Request Document Module - Mobile

Programmer	MODULES	RESID ENTS	PUROK RER	TREASU RY	SECRE TARY	CAPT AIN	AD MIN
	Request Document						
Sajid Cadavero	CREATE REQUEST	*					
	VIEW REQUEST	*	*	*	*	*	
	CANCEL REQUEST	*					
<b>Number of Points</b> <b>(1 Point per module per user)</b>	1	1	1	1	1	1	0

Table 16

## eBulletin Module - Mobile

Programmer	MODULES	RESIDEN TS	PUROK ER	TREASUR ER	SEC RET	CAP TAIN	AD MIN
	eBulletin Module						
Sajid Cadavero	VIEW POST	*	*	*	*	*	
	CREATE POST		*	*	*	*	
	UPDATE POST		*	*	*	*	
	DELETE POST		*	*	*	*	
<b>Number of Points</b> <b>(1 Point per module per user)</b>	1	1	1	1	1	1	0

Table 17

## Manage Complaints Module - Mobile

Programmer	MODULES	RESIDE NTS	PURO K	TREASUR ER	SEC RET	CAP TAIN	ADM ARY
Sajid Cadavero	MANAGE COMPLAINTS						
	CREATE COMPLAINT	*					
	VIEW COMPLAINT	*	*		*	*	
	CANCEL COMPLAINT	*					
	SEND COMPLAINT	*					
<b>Number of Points</b> <b>(1 Point per module per user)</b>		1	1	0	1	1	0

## **Testing Phase**

### **Unit Testing**

The developers have tested each module and inputs required for its functions. The developers recommend using PHP unit as a tool for unit testing. It is a programmer-oriented testing framework for PHP. It is an instance of the unit architecture for unit testing frameworks.

### **Integration Testing**

The developers tested each module and how they interact and communicate with each other. The purpose of this test is to check how each modules interact and expose any defects that might occur from performing certain actions in between modules once they are integrated.

## **Implementation/Development Phase**

### **Software Specification**

#### **SYSTEM SPECIFICATION DEVELOPMENT STAGE**

Software Specification Development

Browser: Google Chrome, Mozilla Firefox, and/or Microsoft Edge

Operating System: Windows 7 or up

Internet Speed: 3 Mbps or higher

Application Tools: Visual Studio 2019

### **Hardware Specification**

Hardware Specification refers to the requirement of the device hardware in order to perform functions.

<b>Processor</b>	Intel® Core™ i5-4460 CPU @3.20GHz 3.20GHz
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<b>Monitor</b>	15 inches 1366x768 60Hz
<b>Video Adapter</b>	Intel ® HD Graphics 3000
<b>Keyboard</b>	Generic Keyboard
<b>Mouse</b>	Generic Mouse
<b>Ethernet Adapterx</b>	Realtek PCIe FE Family Controller
<b>Disk Drive</b>	DVD-R/W Driver
<b>USB Port</b>	2.0 USB port or 3.0 USB port

## User-Guide

1. Input the link to the browser
2. Log in the default username and password is **admin**.

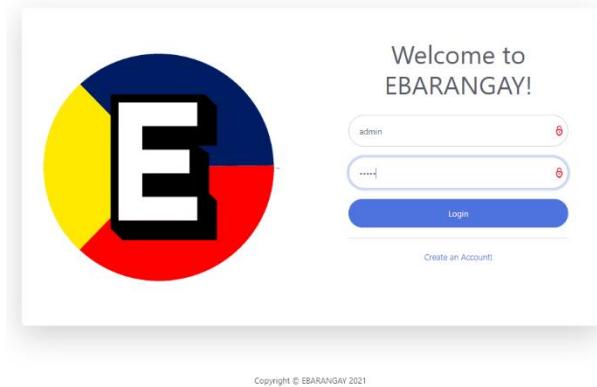


Figure 54: **Login-User Guide**

Name	Birthdate	Civil Status	National ID	User Type	Purok	Barangay	Email Address	Phone Number	Username	Edit	Delete
Caitleen Baring	1111-11-11	Single	7894-5612-3785-4245	Treasurer	Kamatis	Pajo	caitleenjhoyce@gmail.com	098752145632	caitleenjhoyce		
Captain Captain	2002-10-25	Single	5555-5555-5555-5555	Captain	Kamatis	Paknaan	captain@gmail.com	09758423457	captain1		
Craige Jonard Barings	2000-01-08	Single		Secretary	Kamatis	Paknaan	craigejonard@gmail.com	999999	jonardlolz		

Figure 55: **Admin Page – User Guide**

3. **Label 1** is where admin can see all accounts of the barangay captain, secretary, treasurer and purok leader. Admin can add, edit and deactivate an account.

Figure 56: **Buttons – User Guide**    Figure 57: **Add Barangay/Purok Name– User Guide**

4. **Label 2** is where admin can see all accounts of the barangay captain within their barangay area. Admin can add, edit and deactivate an account.
5. **Label 3** is where admin can see all accounts of the purok leader within their purok and barangay area. Admin can add, edit and deactivate an account.

The screenshot shows a modal window titled "Add Account". It contains several input fields: "National ID (e.g. XXXX-XXXX-XXXX-XXXX)", "First Name", "Middle Name", "Last Name", "dd/mm/yyyy" (date of birth), "Civil Status" (dropdown), "Gender" (dropdown), "Email Address", "User Type" (dropdown), "Username", and "Password". At the bottom right are "Save" and "Cancel" buttons.

Figure 58: Add Account – User Guide

6. **Label 4** is where admin add a barangay name. Admin can also edit and deactivate a barangay name.
7. **Label 5** is where admin add a purok name. Admin can also edit and deactivate a purok name.
8. **Label 6** is where admin can logout or view profile.

For the captain, secretary, treasurer, purok leader and resident users.

9. Sign up the captain/secretary/treasurer/purok leader account and log in.

The screenshot shows the Captain Page interface. On the left is a sidebar with a navigation menu: Dashboard (7), Home (8), Request (9), eReklamo (10), Residents (11), Election (12), Report (13), Officers (14). The main area has a header with a profile picture and the text "Captain Captain" (15). Below the header is a message input field (16) with the placeholder "What's on your mind, Captain?". To the right is a map of Cebu City, Mactan, and Olango Island. Below the map is a post from "Treasurer Treasurer" dated Dec 08, 2021 02:16 pm, with a comment input field (17). Another post from "Craige Jonard Barings" dated Nov 05, 2021 05:50 pm is also shown with a comment input field. At the bottom right is a calendar for December 2021, with the 13th highlighted.

Figure 59: Captain Page – User Guide

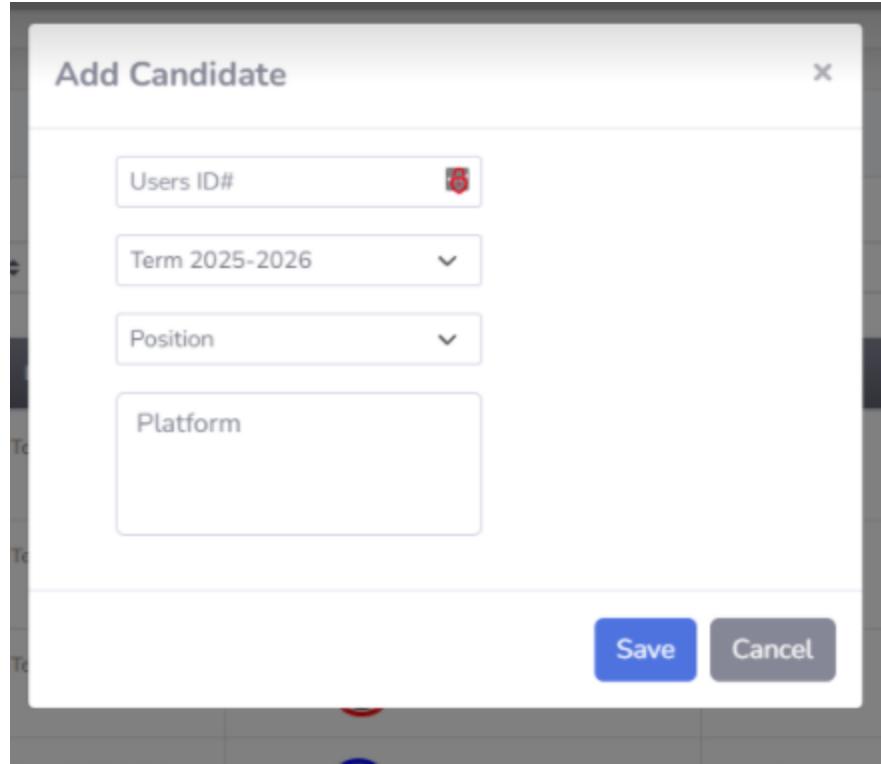


Figure 60: Add Candidate – User Guide

10. **Label 8** shows the home page of the captain/secretary/treasurer/purok leader page. This is where captain/secretary/treasurer/purok leader can post announcements in **Label 16** and comment in **Label 17**.
11. **Label 7** is where the captain/secretary/treasurer/purok leader dashboard. It shows the number of pending documents and number of residents.
12. **Label 9** is where the list of requested documents of captain/secretary/treasurer/purok leader by users. While resident can request document.
13. **Label 10** is where the list of eReklamo of captain/secretary/treasurer/purok leader by users. While resident can send complaints.
14. **Label 11** is where the list of residents of the captain/secretary/treasurer/purok leader.
15. **Label 12** is where the captain held the election. Captain can add candidate to nominate. While secretary/treasurer/purok leader/resident can vote.
16. **Label 13** is where the reports of captain/secretary/treasurer/purok leader are located.
17. **Label 14** is where the list of officers all users is located.
18. **Label 15** is where captain/secretary/treasurer/purok leader/resident can logout or view profile.

## Mobile

Login with the credentials given by the Purok.

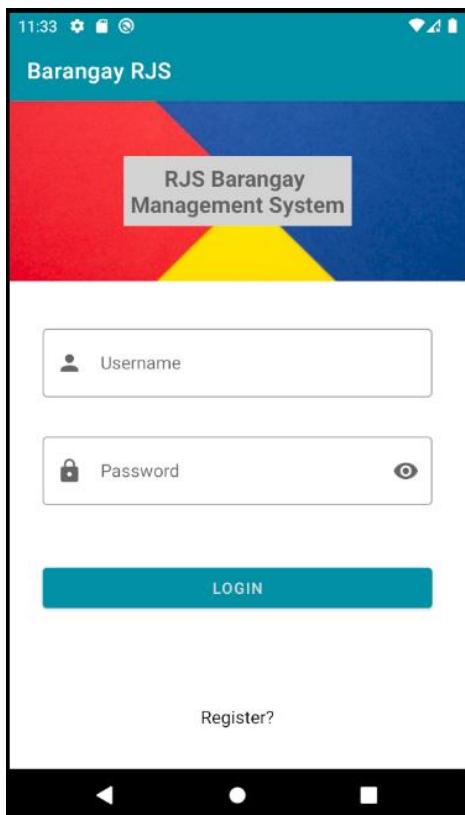


Figure 61: [Login Page – User Guide](#)

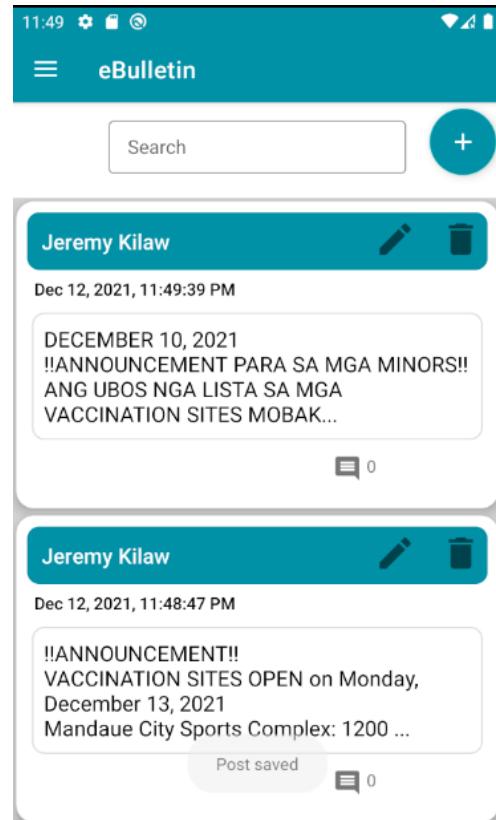


Figure 62: [eBulletin – User Guide](#)

The user logs in with their account credentials given to them by the purok.

The first thing they will encounter will be the eBulletin. The only people who can post to the eBulletin will be barangay officials, which are the purok, treasurer, secretary and the captain. Here they will receive information about all the events of the barangay down to the general information of the city.

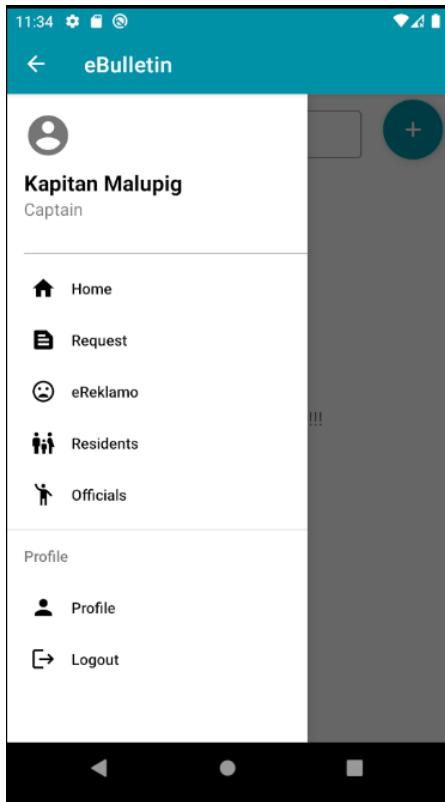


Figure 63: [Navigation – User Guide](#)

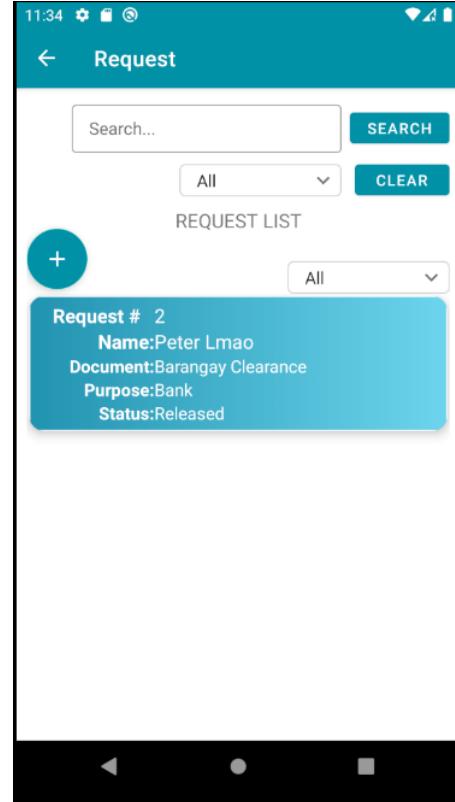
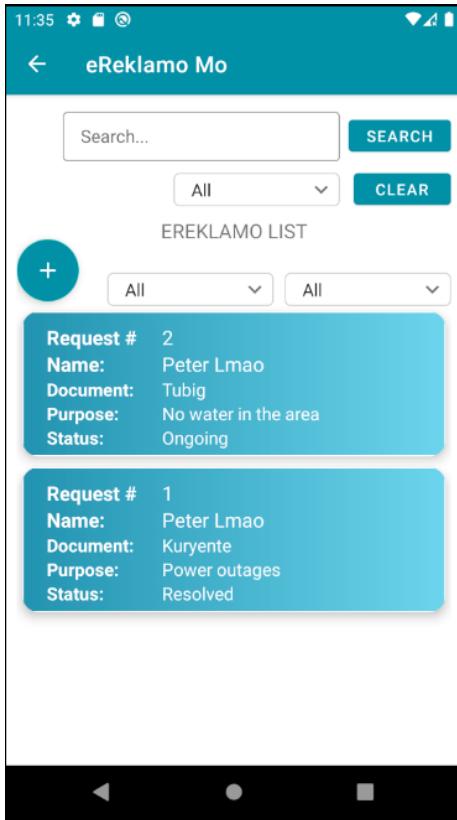
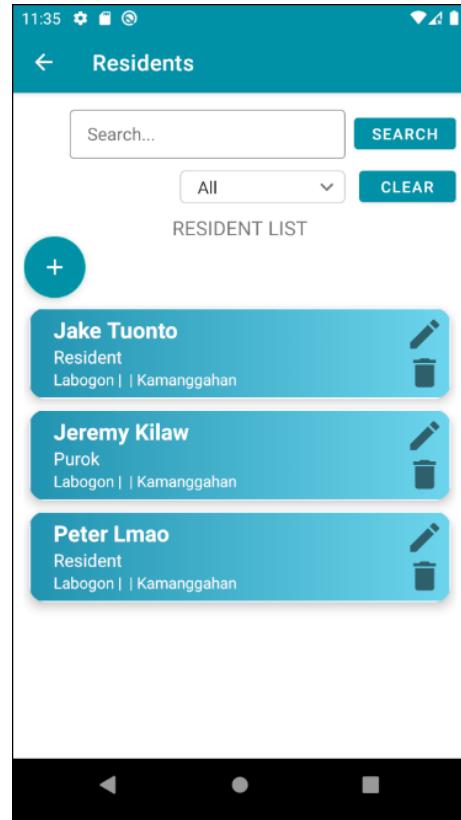


Figure 64: [Request – User Guide](#)

In the drawer menu, you will see a list of items that will direct you to different activities. There is the Request, eReklamo, Residents, Officials, Profiles and Logout button.

For the Request Activity, they will be able to ask for documents that are normally given to residents. They can request for available documents with their details.

Figure 65: [Complaint – User Guide](#)Figure 66: [Residents – User Guide](#)

Another activity is the eReklamo, it consists of the complaints you want to report to the barangay. Depending on the situation of the problem, it will be handled either by the purok first, or the higher ups of the barangay. If the problem can be handled easily, by conversation and negotiations, it won't have to be redirected to the higher officials of the barangay.

Then there's the Resident Activity. It shows all the residents of the barangay, if the officials are purok leaders, they will only have access to the information of the residents assigned to them. Higher officials have access to all the residents of the barangay. You can search and filter out the residents for you to have easy access to specific people.

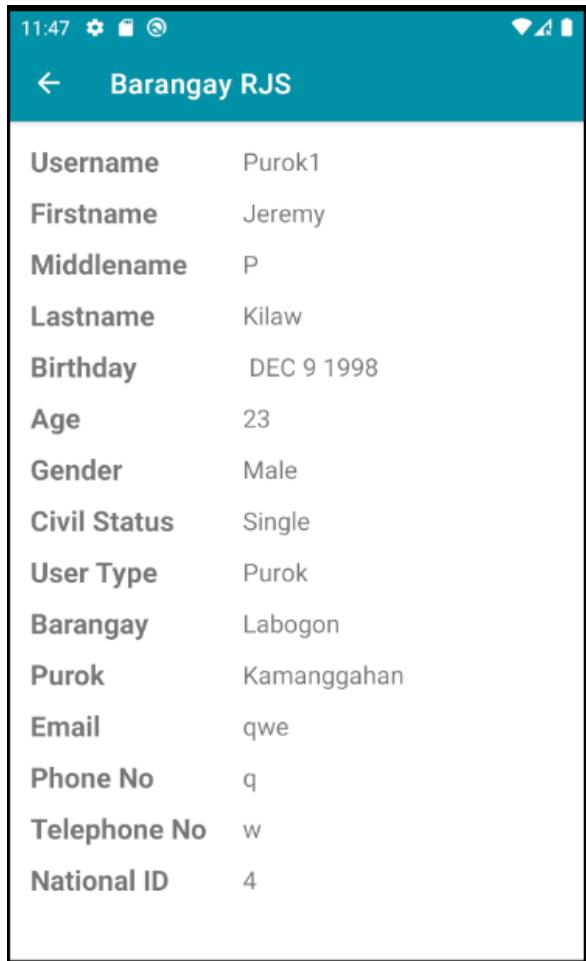


Figure 67: **Profile – User Guide**

Lastly, is the Profile Activity. In this activity, it is simple, it shows the user's information for them to see. They can use this if any barangay official wants to verify if the people in the barangay are residents or not.

## Installation Guide

### Web

With our system, the eBarangay, does not need to be installed since it will be published on a hosting service. If the user plans on using or testing the system using a local server then follow these steps:

1. First, the user will be required to install a software that mimics a local server. The researchers recommend the user to install and use XAMPP as it is easier and simpler to use, and it utilizes the power of the MySQL database.
2. After installing your XAMPP server, move the ebarangay folder to xampp/htdocs and simply open up XAMPP and click “Start” on both Apache and MySQL to start your local server.
3. On a browser, type in the URL: “localhost/phpmyadmin” and you’ll be redirected to your MySQL database.
4. Inside the MySQL database, click the “Import” button located at the top of the webpage.
5. Inside the webpage, click on “Choose File” and upload the ebarangaydb.sql file located in eBarangay > database.
6. After it finishes uploading, scroll down you’re the webpage and click on “Go” and this will import the database files the system uses.
7. Lastly, simply go to “localhost/ebarangaydb” and you’ll be redirected to the login page of our system. Enter the credentials admin for user, and admin for password.

### Mobile

The mobile version of the eBarangay Management System is a way of the user to the opportunity to have easy to use device when they want to have an update to some of the information you want to know when viewing or scrolling that concerns you, the barangay or sometimes, the city itself.

With the mobile application, the actions that are available are limited. You can mostly view to gain information like events or updates.

This document is to guide the user of what the application is all about and how to install it successfully.

**Pre-installation Requirements.** The following prerequisites and requirements must be satisfied in order for the to install successfully.

Mobile Prerequisites. Phone must be smartphones. Technology and applications nowadays are reliant to smartphones because of the functions that are present that are only available to them.

Platform Version must be above Android 7.0. Again, there are only functions that are available to updated versions, making it easier for both the users and the developers when using or developing the application.

The API level is at least 24, version code is Nougat.

### **Installing the application**

For the installation, you need to download the application first. The application will be available in APK file and possibly be available to Google Play Store.

After downloading, install the application and wait for it to be done installing. After installing, the application will be ready to use as soon as you enter your credentials that was given to you by your respective purok leaders. Then the application is now ready to use for your convenience, to scroll for updates of your concerns, your request of documents, or the updates of the barangay or the city.

## CONCLUSION

To conclude the study, the aim of this study is to:

- The system will help residents be able to disseminate their needs and concerns they have to their barangay easily with just a few clicks.
- The system allows the residents to request documents more easily and hassle-free.
- The system aids the barangay to communicate their announcements and information directly to their respective residents.
- The system will allow the barangay to have an accessible list of their residents, down to which Purok they live in.

To reach the goal in implementing these features into the system, the researchers/developers needed to communicate and interview their local barangays on what they need and seek from a barangay system. From what the researchers have gathered, most barangays lack the tools and equipment to perform profiling on their residents, and some outright not having a list of their own residents.

With our first aim of the study, the researchers observed that the residents experience a difficulty in communicating their concerns to their barangay. Although suggestion/complaint box exist in the barangay halls, not everyone can take the time and travel to their local barangay just to submit a complaint that is unlikely to be even heard of, or even taken action.

For our second of the study, the researchers found out how unlikely some barangay residents intend to travel far just to submit a complaint, but with barangay documents where they're required for employment and other important uses. Luckily, the barangay halls have a functioning system when it comes requesting a document in person, but we intend to help the residents who cannot make time to travel to their barangay hall, especially during the time of the pandemic.

With our third aim of the study, barangays have a hard time communicating their announcements and information to their very own residents. One option they have is to announce it via social media platforms like Facebook, which worked for them. Although, from observing the residents, there was only a low rate of people who knew their barangay has a group page, nor do they know how to navigate and find their own barangay group page. Our intention is to give barangays and residents a more convenient and faster way to send and see announcements.

For our fourth aim of the study, we intend to give the barangay who lack the list and details of their residents by providing a way for residents to easily submit their information directly to the barangay, having the less need to go door-to-door. The obstacle the researchers have found is the difficulty to identify which information submitted by the resident is authentic.

The results from our research have shown evidence on the importance of the eBarangay system to the community. The barangay and residents can greatly benefit from the system by providing a more healthy ecosystem of information between the barangay, purok and their residents.

## **RECOMMENDATION**

The researchers' recommendation to the future researchers is to find a system that helps the system detect which information submitted by their residents is authentic, or in the least, limit the submission of 'trash data' into the system. Second is to provide a payment option to the residents when they request a document from the app. Third is to question and interview your own local barangay and what tools they need to perform better as a barangay, as each barangay has their own different needs. This way, the ebarangay can slowly grow with additional features. Fourth is to have an better overall mobile and web Human Computer Interaction to lessen the confusion that users experience from using the system.

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## APPENDICES

### **Appendix N. Capstone 2 Oath of Confirmation**

Date: October 6, 2021

#### **OATH OF CONFIRMATION**

This is to confirm that I, Craige Jonard N. Baring, a BSIT-3 student, currently enrolled in the course of Capstone Project and Research 2, have aptly received a copy; religiously read and understood its contents; and openly submit to the terms, rules, conditions and regulations stated in the Capstone Project Manual document implemented by the Subject Teacher.

This is also to affirm that said guidelines were judiciously discussed and explicitly elaborated in a forum conducted by the Subject Teacher.

CONFORME:



Craige Jonard N. Baring

(Signature of Student over Printed name) / Date

---

Date: October 6, 2021

#### **OATH OF CONFIRMATION**

This is to confirm that I, Craige Jonard N. Baring, a BSIT-3 student, currently enrolled in the course of Capstone Project and Research 2, have aptly received a copy; religiously read and understood its contents; and openly submit to the terms, rules, conditions and regulations stated in the Capstone Project Manual document implemented by the Subject Teacher.

This is also to affirm that said guidelines were judiciously discussed and explicitly elaborated in a forum conducted by the Subject Teacher.

CONFORME:



Craige Jonard N. Baring

(Signature of Student over Printed name)/ Date

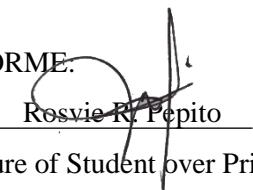
Date: October 6, 2021

**OATH OF CONFIRMATION**

This is to confirm that I, Rosvie R. Pepito, a BSIT-3 student, currently enrolled in the course of Capstone Project and Research 2, have aptly received a copy; religiously read and understood its contents; and openly submit to the terms, rules, conditions and regulations stated in the Capstone Project Manual document implemented by the Subject Teacher.

This is also to affirm that said guidelines were judiciously discussed and explicitly elaborated in a forum conducted by the Subject Teacher.

CONFORME:

  
Rosvie R. Pepito

(Signature of Student over Printed name) / Date

---

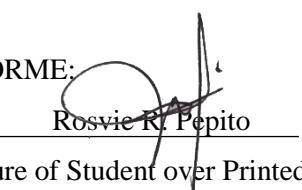
Date: October 6, 2021

**OATH OF CONFIRMATION**

This is to confirm that I, Rosvie R. Pepito, a BSIT-3 student, currently enrolled in the course of Capstone Project and Research 2, have aptly received a copy; religiously read and understood its contents; and openly submit to the terms, rules, conditions and regulations stated in the Capstone Project Manual document implemented by the Subject Teacher.

This is also to affirm that said guidelines were judiciously discussed and explicitly elaborated in a forum conducted by the Subject Teacher.

CONFORME:

  
Rosvie R. Pepito

(Signature of Student over Printed name) / Date

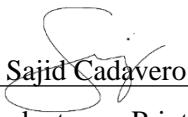
Date: October 6, 2021

### **OATH OF CONFIRMATION**

This is to confirm that I, Sajid Cadavero, a BSIT-3 student, currently enrolled in the course of Capstone Project and Research 2, have aptly received a copy; religiously read and understood its contents; and openly submit to the terms, rules, conditions and regulations stated in the Capstone Project Manual document implemented by the Subject Teacher.

This is also to affirm that said guidelines were judiciously discussed and explicitly elaborated in a forum conducted by the Subject Teacher.

CONFORME:

  
Sajid Cadavero

(Signature of Student over Printed name) / Date

---

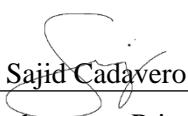
Date: October 6, 2021

### **OATH OF CONFIRMATION**

This is to confirm that I, Sajid Cadavero, a BSIT-3 student, currently enrolled in the course of Capstone Project and Research 2, have aptly received a copy; religiously read and understood its contents; and openly submit to the terms, rules, conditions and regulations stated in the Capstone Project Manual document implemented by the Subject Teacher.

This is also to affirm that said guidelines were judiciously discussed and explicitly elaborated in a forum conducted by the Subject Teacher.

CONFORME:

  
Sajid Cadavero

(Signature of Student over Printed name) / Date

## Appendix B. Research Working Title Form

### Appendix E: Research Working Title Form

Name of the Proponents	
1. Rosvie R. Pepito	
2. Craige Jonard N. Baring	
3. Sajid Cadavero	
4.	
Proposed Research Title:	
eBarangay: Application management system with Purok integration and flow of workload	
Date: April 10, 2021	Date: April 10, 2021
Submitted by: Team RJS	Noted and Approved by: Narcisan Galamiton
 Craige Jonard N. Baring (Signature of Project Leader over Printed Name)	 Narcisan Galamiton (Signature of Adviser over Printed Name)

## Appendix O. Capstone 2 Consultation Logs Form

### Research/Capstone Project Title

<b>E BARANGAY</b> An application management system with Purok integration and Flow of Workload
---

### Name of the Proponents

Craige Jonard N. Baring

Sajid Cadavero

Rosvie R. Pepito

Total Number of Modules:

Noted by Subject Teacher:



Prototype	Date of Consultation	# of Modules Fully Implemented	# of Modules Partially Implemented	Running Score	%	PM Signature	Adviser Signature
Remarks:							
<b>1<sup>st</sup> Prototype</b>							
consider the non-residential (mangabang); every residents the purok must confirm that the user is the from purok; date of posting; consider pagination in post;							
30% - 50% of the modules must be running							
Remarks:							
<b>2<sup>nd</sup> Prototype</b>							
51% - 70% of the modules must be running							

	<u>Remarks:</u>							
<b>3<sup>rd</sup> Prototype</b>								
<b>71% - 100% of the modules must be running</b>								
	<table border="1"><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>							

This is to certify that I have been regularly consulted by my advisees; have reviewed their system output as well as the required manuscript of the above-stated study. As their adviser, I, therefore, submit them ready for **Oral Defense** as their third prototype is within the required percentage.

---

(Signature of Adviser over printed name)

## CURRICULUM VITAE

Name : CRAIGE JONARD N. BARING

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### **PERSONAL DATA**

Gender : MALE

Age : 21

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Civil Status : SINGLE

Citizenship : FILIPINO

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Place of Birth : LAPU-LAPU CITY

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 Civil Status : SINGLE  
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 Date of Birth : JUNE 28, 1999  
 Place of Birth : CEBU CITY

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#### **JUNIOR HIGH SCHOOL**

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 Year Graduated : 2015-2016

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Gender : FEMALE  
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Religion : ROMAN CATHOLIC  
Civil Status : SINGLE  
Citizenship : FILIPINO  
Date of Birth : AUGUST 23, 1999  
Place of Birth : BORBON, CEBU

### **EDUCATIONAL BACKGROUND**

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Year Graduated : 2017-2018

#### **JUNIOR HIGH SCHOOL**

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Year Graduated : 2015-2016

**ELEMENTARY**

School : LAAW ELEMENTARY SCHOOL

Address : LAAW, BORBON, CEBU

Year Graduated : 2011-2012