

# **E-GRAMAM**

A PROJECT REPORT

submitted By

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**TVE20MCA-2003**

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in partial fulfillment of the requirements for the award of the degree

**of**

Master of Computer Applications



**Department of Computer Applications**

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# Declaration

I undersigned hereby declare that the project report titled "**E-GRAMAM**" submitted for partial fulfillment of the requirements for the award of degree of Master of Computer Applications of the APJ Abdul Kalam Technological University, Kerala is a bonafide work done by me under supervision of Smt.Sreerekha V K, Assistant Professor. This submission represents my ideas in my words and where ideas or words of others have been included. I have adequately and accurately cited and referenced the original sources. I also declare that I have adhered to ethics of academic honesty and integrity as directed in the ethics policy of the college and have not misrepresented or fabricated any data or idea or fact or source in my submission. I understand that any violation of the above will be a cause for disciplinary action by the Institute and/or University and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been obtained. This report has not been previously formed the basis for the award of any degree, diploma or similar title.

Place : Trivandrum

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Date : 12/07/2022

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CERTIFICATE

This is to certify that the report entitled **E-GRAMAM** submitted by **AISWARIYA K** to the APJ Abdul Kalam Technological University in partial fulfillment of the requirements for the award of the Degree of Master of Computer Applications is a bonafide record of the project work carried out by her under my guidance and supervision. This report in any form has not been submitted to any University or Institute for any purpose.

Internal Supervisor

External Supervisor

Head of the Dept

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# Abstract

E-Gramam is an online platform for surveying, announcing projects, sorting the beneficiaries of each project, implementing an e-commerce and accepting the complaints from the people in a village. Currently, there is no such system for managing the different activities within a village. The people in local rural area are still not fully aware of the services and benefits provided by the local self governance. Implementing a mobile application would be more effective rather than simply developing a web based application. E-Gramam system is flutter based mobile application which attempts to automate major tasks within a particular village. The system consists of 3 modules,

- Admin
- User
- Seller

Admin is the one who has overall control over the system. Admin adds new family to the system, sort the people based on various criteria, add new members, view the complaints and declare new projects. The user will be able to register in the system. User can add his/her family to the system and the members, Users can enter the details and know what are the concessions they can avail, and possible to post their complaints. The seller module enable the seller to sell his products by adding the products and the quantity. The users can check the availability of the product and buy it. Seller can add or edit product details, demonstrate the statistics of the products sold. Seller can also set up a payment gateway. These are the major functionalities provided by this system.

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# Chapter 1

## Introduction

E-Gramam is a system for automating the various services, functions and management activities within a particular village. A village is the most basic sector of the hierarchical governance and therefore there are only few areas that are concerned to be managed online while the majority of rest of the services are not very well taken care of. This system aims to address the difficulties that arise during the manual processing of every aspect of panchayath services to citizens and tries to make it more efficient, reliable, convenient and fast. The services provided by local self governance are still not easily accessible to public. Therefore providing services on time would be a challenge. This is addressed by the e-Gramam system and reduces human effort both by the public and government perspective. It may be difficult for the village officials to handle all the paper works that need to be generated and approved for different kinds of verification purposes. This system also tries to establish the basic commercial and public needs online by providing an option to integrate those systems by adding modules to facilitate the change for those purposes.

The living standard of a village needs to be analysed with proper statistics in order to identify what actions to be taken. It is achieved only through sufficient and accurate data of the people in a village. As the revolution of internet makes the digitalisation process to be spread very fast across the globe it is inevitable to take part in the process by making everything available everywhere at anytime.

# Chapter 2

## Problem Definition and Motivation

The people in local areas of a village are not often properly and timely informed about various government projects, benefits, and other valuable informations. Using this system we can collect and organise the records in a common platform, from all parts of the village ensuring its confidentiality and use the data to identify the people who are most eligible for particular benefits and to maintain an accurate statistics of the financial background and living standard.

The problems of some of the marginalised sections of the society are not yet fully addressed due to the lack of prior and reliable knowledge. This system can be used to collect true data that depicts the actual living standard and help to implement various plans to upgrade the living standard.

### 2.1 Existing System

The current system for handling the records of the people in the villages includes the huge manual processing as per different needs.

#### 2.1.1 Limitation of Existing System

- There is no a complete online solution to collect and handle the data of a village and process it accordingly.
- The people live in remote areas are not often able to do all the clerical works on time and they may be unable to register with the local self governance to avail the benefits they

deserve.

- Managing the data on paper for various purpose may compromise the confidentiality of the data.
- The amount of time to process huge amount of data is quite high.
- The private online service centres are the another way for helping the process. But it can not be considered as a complete solution as it is not cost effective and convenient for local people.

## 2.2 Proposed System

The proposed system minimizes the effort of handling the offline records and tries to organize the functionalities of the system as in a single common platform .

### 2.2.1 Advantages of Proposed System

- The proposed system tries to reduce the human intervention during the handling of the data of the people within a particular village.
- Data can be added by the people themselves ensuring its correctness and they will only be responsible for the correctness.
- It saves a lot of time to register with the system and it can be done anytime from anywhere.
- Proposed system handle data in a more organised way helping authorities and common users to access and process it more easily.

# Chapter 3

## Literature Review

Implementing and maintaining a cost effective system for the rural areas of a village is a very challenging task. The data we manage should be secured and the application should not give any scope for a failure. As part of the literature review, in order to establish such a complete system using flutter, the suggested technologies are firebase as back end and flutter and dart is used as front end.

There are different online solutions for performing some of the various activities of a village. It has huge restrictions and the implementation cost. In a country like India where there are numerous financial and social classifications, in order to ensure the precise data with no error an efficient system should be emerged. The proposed system make use pf the latest and innovative technologies and build a solution that fit to the current scenario.

Rahmath safeena, Hema Date and Abdulla k Muhammad who are the research scholars of the National institute of industrial engineering(NITIE), Mumbai held an exploratory study on e-governance in Kerala. It describes the need for digitalisation in the social sectors like rural development, civil supplies, police and trading..etc This study was aimed to integrate the different levels business sectors and the information communication technology. This paper discusses the incorporation of democracy and electronic co-operation of technology with public organizations. They conducted studies on literary and education, health sector, land reforms, and information communication technology. Major e-governance attempts in Kerala was also described they include Akshaya e-Kendra, FRIENDS(fast, reliable, instant effective network for disbursement of services, FREES, INSIGHT, SPARK, TETRAPADS, DC-Suite, FISHNET, IT@school, E-

Krishi,KISSAN,Thozhil,AIMS,rural soft..etc Their challenges,major milestones,and benefits are also described.The paper also tells how this was effectively implemented in Kerala which was a reason for the motivation of the project.

Samveg Shah,Naitik Jain of Sardar patel college of technology, Mumbai presented a paper entitled A flutter application for farmers.This study was helpful in identifying the scope of implementing a flutter app at the village level.The system was to assist farmers.It was aimed to assure the technological help to farmers which may produce a positive impact on farmers and agricultural sector.The application help to identify the plant disease from photographs of the leaf and an interface which is compatible with any language to provide valid suggestions.It describes some apps which can be native to particular villages. like Kisan suvidha,Social health card mobile app,Bhuvan hailstorm app, cane advisor,farmers grid..etc. This system make use of speech to text feature,web scraping, and translator feature.This study helped me to understand how to implement android apps in local areas and make maximum output from it.

In 2021,Patrick N. Navarrete,Arvin John M. Lanuza presented a paper namely 'Framework for the development of villiboard: A mobile and web management system for village, which implemented flutter based mobile application along with a web application. This system collect various user data that he/she use in a daily life.The system make use of these data and provide useful recommendations and way to organise the daily cycle of activities for the user to review later.This study helped me in the structured organisation and collection of data and its rearrangement and reuse for an improved implement on a later stage.It helped me to analyse the required features of a productive Flutter and to maintain ease of use and access.The control of data flow also analysed and the ways of overall performance evaluation has been identified.

# Chapter 4

## Requirement Analysis

### 4.1 Purpose

Every aspect of human life is now being digitalised by making all services online for everyone. Some categories of society are still deprived from being benefited from the services by timely knowing them and taking actions to correctly organising it.

### 4.2 Overall Description

The E-gramam system consist of mainly three modules. They are the admin, the common user and the seller. Each of the module have its own unique functions and relavance. They all together help to achieve the overall functionality of the system. Any user with valid registration details can register in the system. The various modules and its functions are,

#### 4.2.1 Admin

Admin is the user of the system who has an overall control of the operations. Admin perform the actions like,

- Adding families
- View the complaints put forward by user
- Sort the people based on different parameters.
- Add new members.

- Declare new projects
- Adding new surveys forms for conducting surveys.

### 4.2.2 User

Users are the common folk who make use of the system. They can,

- User can store their basic details and register in the system.
- User will be informed about all the operations on time .
- User can ask their queries and concerns to higher officials using complaint form.
- Filling the survey forms added by the admin

### 4.2.3 Seller

Seller is another kind of user who can register in the E-Gramam system in order to make the trading related operations online which help to implement an e commerce in that particular village,

- Add the products he wish to sell and its quantity.
- Add the details of the product to be sold.
- Edit the details and quantity of the product and update it based on the varying amount of stock.
- Specify the count and the statistics of the products purchased for the users to identify the demand and overall rating of the product.

### 4.2.4 Hardware Requirements

- Processor : Intel Core i3
- Storage : 512 GB Hard Disk space
- Memory : 4 GB RAM and 8 GB recommended
- Display : Generic PnP Monitor



- Storage : 80 GB.

### 4.2.5 Software Requirements

- Operating System : Linux/Windows
- Code editor : VS Code/ Android Studio
- Libraries : Dart
- Back-end : Firebase

## 4.3 Functional Requirements

Functional requirements represent the intended behavior of the system. This behavior may be expressed as services, tasks or functions that the specified system is required to perform. These are the requirements that the end user specifically demands as basic facilities that the system should offer. All these functionalities need to be necessarily incorporated into the system as a part of the contract. These are represented or stated in the form of input to be given to the system, the operation performed and the output expected. They are basically the requirements stated by the user which one can see directly in the final product, unlike the non-functional requirements.

Functional Requirements of a system should include the following things: Details of operations conducted in every screen Data handling logic should be entered into the system It should have descriptions of system reports or other outputs Complete information about the workflows performed by the system It should clearly define who will be allowed to create/modify/delete the data in the system How the system will fulfill applicable regulatory and compliance needs should be captured in the functional document.

## 4.4 Non Functional Requirements

### 4.4.1 performance requirements

- Accuracy : Accuracy in functioning and the nature of user-friendly should be maintained by the system.

- Speed : The system must be capable of offering speed.
- Low cost: This system is very cheap to implement and is also user-friendly.
- User Friendly: This proposed system is highly user friendly they enables to create a good enviornment.
- Secure :The system handles the sensitive data in a very secured way.

# Chapter 5

## Design And Implementation

The system is designed in a way that it basically implementing three different modules. The user and the seller are the beneficiaries of the system for whom the services of the system intended for. The user and seller log in using his unique credential which is generated after registering in the system. User and seller can communicate for commercial purposes. Seller add his products and it can be viewed by the user and he can buy it if he desires. The seller can also edit the product open a payment option for the users to purchase the items. The admin have control over the overall flow of operations

### 5.1 Overall Design

As on overall view, the system has three modules. The admin, user and the seller. The admin can add new families and edit existing ones. Admin has the power to add new user and viewing and editing all data that reside in the system. Admin can declare new projects and also view the complaints from users and take actions accordingly. The user can register and after log in user can enter all data and view the projects declared ,fill the complaint form in order to convey his concerns, and add his family along with members and all the basic data of them.

### 5.2 System Design

The system is a mobile android application that can be installed on on android and iOS devices. The inputs are obtained using simple forms and they are displayed along with results with the help of different screens. Firebase is used as back end which ultimately stores the data

as collections.

## **5.3 Technologies used**

### **5.3.1 Font end : Flutter**

Flutter is a cross platform , mobile application development framework.Flutter consist of widgets that is able to customised by the developer, and it is ready to use.

### **5.3.2 Back end: Firebase**

Firebase is a Backend-as-a-Service (Baas). It provides developers with a variety of tools and services to help them develop quality apps, grow their user base, and earn profit. It is built on Google's infrastructure. Firebase is categorized as a NoSQL database program, which stores data in JSON-like documents.

### **5.3.3 Programming Language used : Dart**

Dart is a client-optimized programming language for apps on multiple platforms. It is developed by Google and is used to build mobile, desktop, server, and web applications Dart is an object-oriented, class-based, garbage-collected language with C-style syntax. Dart can compile to either native code or JavaScript. It supports interfaces.

### **5.3.4 IDE : Android studio**

Android studio is the standard development environment for flutter and android applications.Android studio provide a better option for analysing the syntax in a better,automatically completes the code,help to edit the widgets and provide support for running and debugging.

## **5.4 Methodology**

There are three modules admin, user and the seller.They collectively constitute the functionality of the system by directing the data flow and navigating the operations.It can be depicted by the following methods.

### 5.4.1 Use Case Diagram

A use case diagram can summarise the details of your system's users (also known as actors) and their interactions with the system in the Unified Modeling Language (UML). You'll need a collection of specialised symbols and connectors to make one. UML is the modeling toolkit that you can use to build your diagrams. Use cases are represented with a labeled oval shape. Stick figures represent actors in the process, and the actor's participation in the system is modeled with a line between the actor and use case. To depict the system boundary, draw a box around the use case itself.

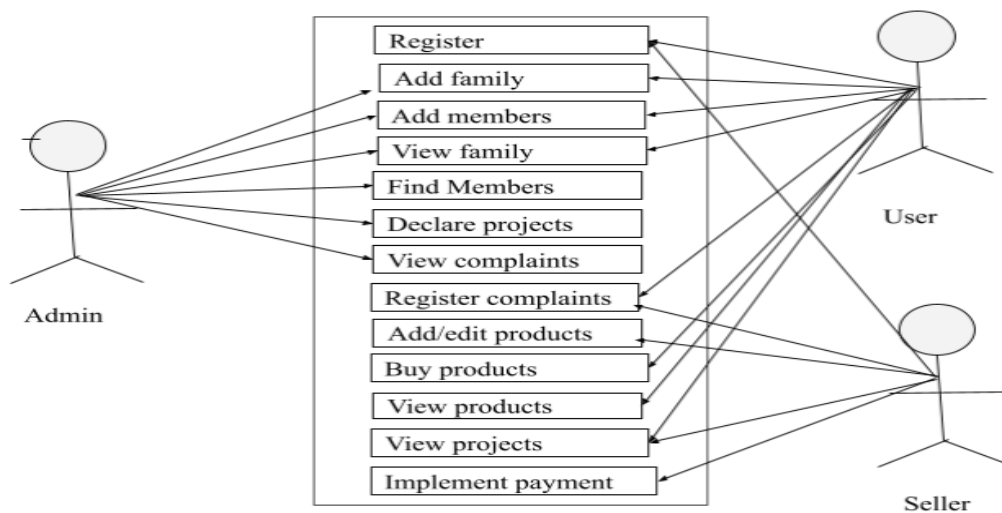


Figure 5.1: use case diagram

## 5.5 Data Flow Diagram

DFD is a graphical representation approach that is used in a project to demonstrate the data flow through a project. DFD assists us in gaining an understanding of the input, output, and process involved.

The fundamental data flow of the programme is demonstrated at level 0. It does not go much further into the data flow. It will be examined at the Data Flow Diagram's higher levels.

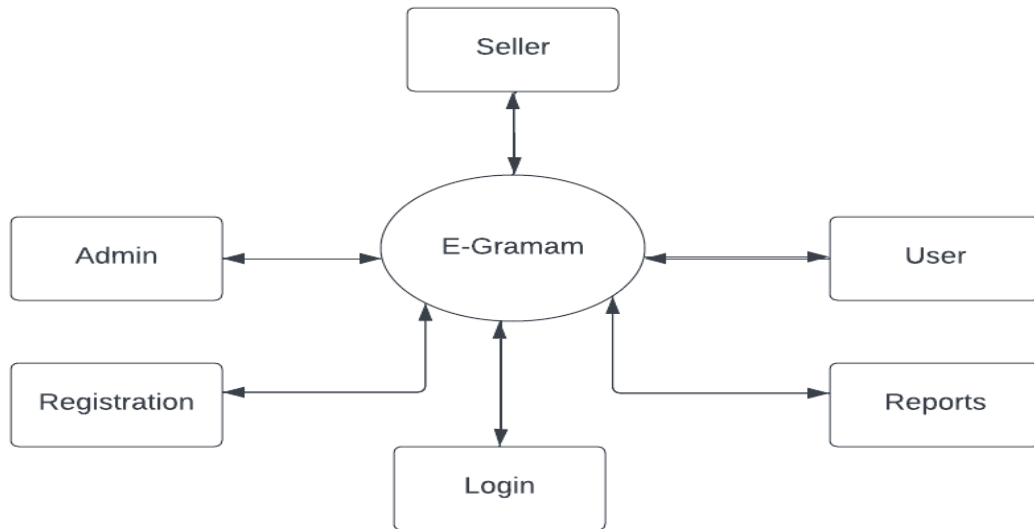


Figure 5.2: Level 0 DFD

The diagram shows Level 0 Data flow diagram, that shows the possible ways that may have interaction with the e-gramam system

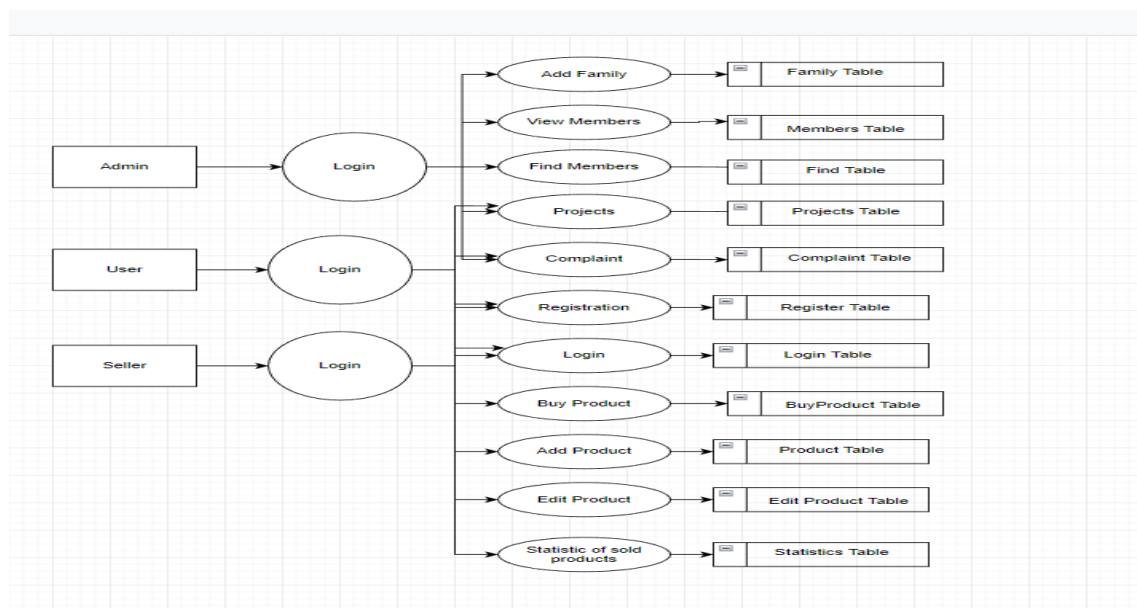


Figure 5.3: Level 1 DFD

The level-1 DFD elaborate overall flow of operation with more detailing of the data flow through the system. ]

## 5.6 Screenshots of user interface

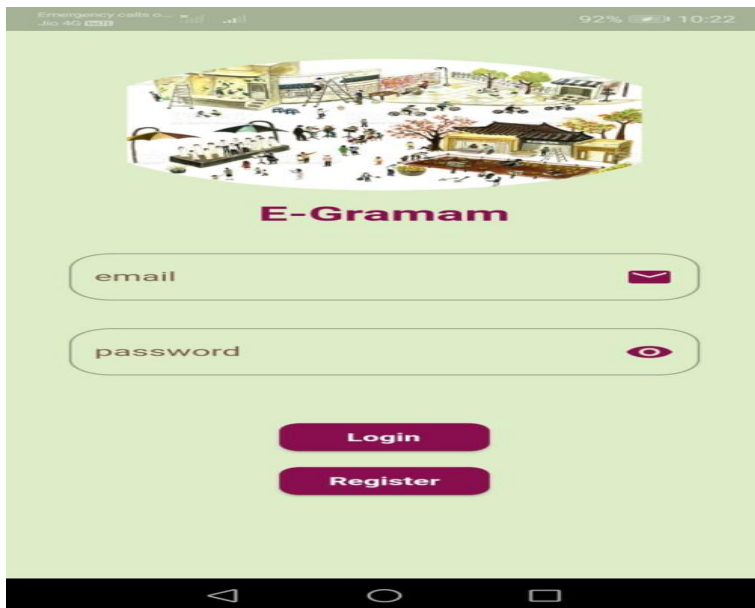


Figure 5.4: Login screen



Figure 5.5: Admin dashboard panel

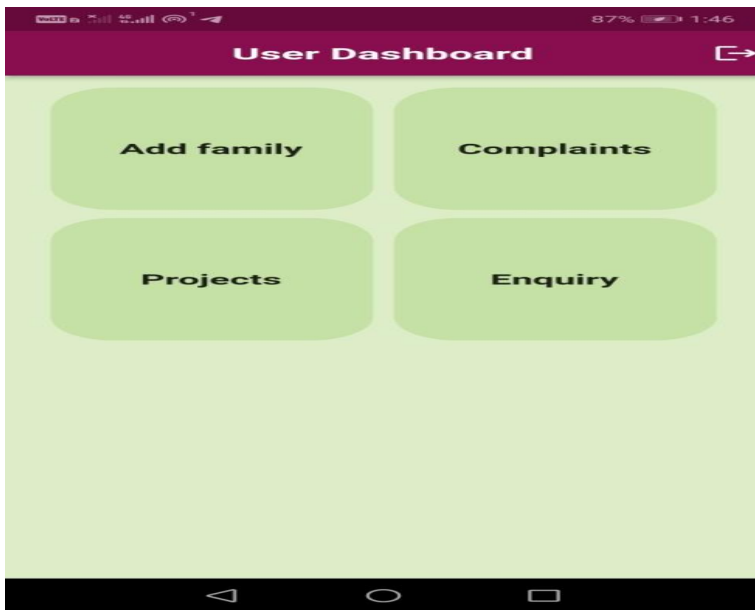


Figure 5.6: User dashboard



Figure 5.7: Add the family



Emergency calls only Jio 4G 92% 10:23

**Add Family**

Area

Name

Phone

House Name

House Number

Category

Ration card? ☐

Figure 5.8: Add the family

Airtel/Vega Mobile Jio 4G 78% 7:03

**Edit Family**

Area Kottoppadam

Name Ajith

Phone 9866425748

House Name Ajith nivas

House Number 26

Category ST

Ration card? ☒

Figure 5.9: Modifying the family data

Figure 5.10: Modifying the family data

Figure 5.11: Declaring projects

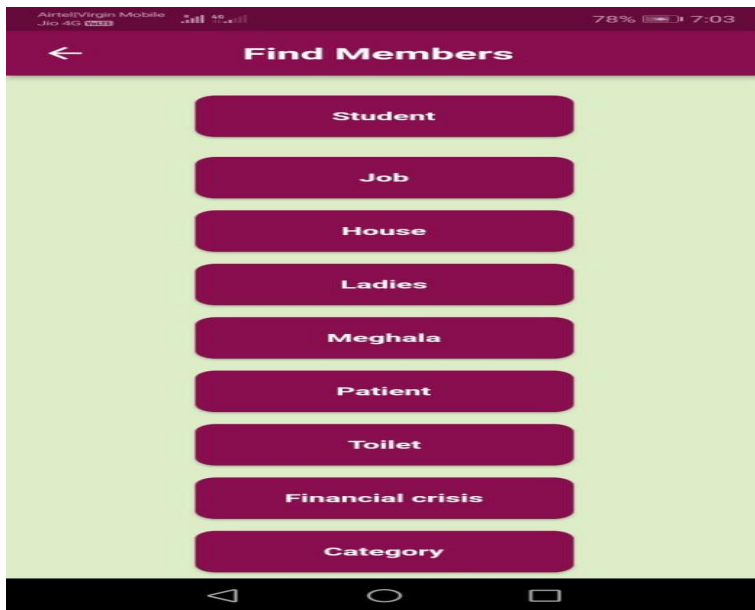


Figure 5.12: Find the members

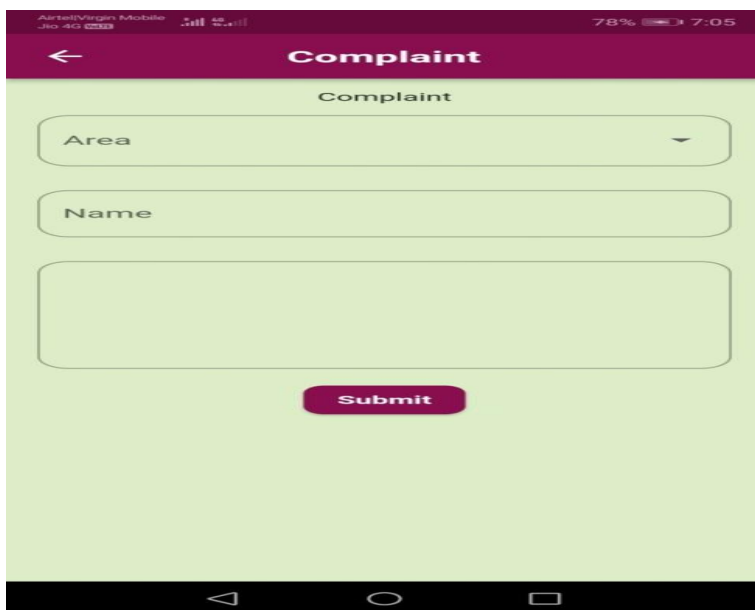


Figure 5.13: Complaint registration

# Chapter 6

## Coding and Implementation

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**Algorithm 1** Algorithm for firestore integration: Add Firebase to your Android project

---

- 1: Start.
  - 2: Install or update Android Studio to its latest version.
  - 3: Make sure that your project meets these requirements.
  - 4: Set up a physical device or use an emulator to run your app.
  - 5: Add Firebase using the Firebase console
  - 6: Create a Firebase project.
  - 7: Register your app with Firebase.
  - 8: Add a Firebase configuration file.
  - 9: Add Firebase SDKs to your app.
  - 10: Stop.
- 

---

**Algorithm 2** Algorithm for the mobile application:

---

- 1: Read the input details from the user interface.
  - 2: On button click the value in the page is passed to the server program for the evaluation of details.
  - 3: From the server program, access the details and perform the processing tasks on it.
  - 4: The newly input data is stored and the results are displayed using output screens.
  - 5: The operations to occur at every module runs as per the flow of data and the intended functionality is achieved by the proper running of all modules.
  - 6: Stop.
-

# Chapter 7

## Testing and Maintenance

### 7.1 Testing and various types of testing used.

Since a software is developed, the major activity is to test whether the actual results match with the experimental results. This process is called testing. It's used to make sure that the developed system is defect free. The main aim of testing is to find the errors and missing operations by executing the program. It also ensure that all of the objectives of the project are met by the developer. The objective of testing is not only to evaluate the bugs in the created software but also finding the ways to improve the efficiency, usability and accuracy of it. It aims to measure the functionality, specification and performance of a software program. Tests are performed on the created software and their results are compared with the expected documentation. When there are too much errors occurred, debugging is performed. And the result after debugging is tested again to make sure that the software is error free. The major testing processes applied to this project are unit testing, integration testing and system testing. In unit testing, our aim is to test all individual units of the software. It makes sure that all of the units of the software works as it intended. In integration testing, the combined individual units are tested to check whether it met the intended function or not. It helps us to find out the faults that may arise when the units are combined. In system testing the entire software is tested to make sure that it satisfies all of the requirements.

### 7.1.1 Unit Testing

During development, unit testing is performed on each module or block of code. Unit testing is usually done by the programmer who wrote the code. It concentrates on the tiniest aspect of software development. This is where we test a single unit or a collection of interconnected units. Programmers frequently achieve this by using sample input and observing the outputs. The basic goal is to isolate each system unit in order to find, analyse, and correct faults.

SLNO	PROCEDURE	EXPECTED RESULT	ACTUAL RESULT	PASS OR FAIL
1	Create a user interface.	Need to load the login screen.	Same as expected	Pass
2	Dashboard panel interface.	List the tasks to be performed by each user.	Same as expected	pass
3	Redirection from the dashboard to specific activity.	Do the operations on data or using the data without any fail.	Same as expected	pass
4	Performing the user specific functionality.	Do the operations on data or using the data without any fail.	Same as expected.	pass
5	Log out the user.	Close all the screens of a particular user and go back to the home page correctly.	Same as expected	pass

Table 7.1: Unit test cases and results

### 7.1.2 Integration Testing

The definition of integration testing is simple: integrate/combine the unit tested modules one by one and test the behaviour as a whole. The interfaces between the units/modules are the key function or goal of this testing. After "Unit testing," we usually undertake Integration testing. We combine those "Unit Tested" modules and begin integrated testing once all of the component units have been generated and tested. Individual modules are tested separately initially. After the modules have been unit tested, they are merged one by one until all of them have been integrated in order to check the combined behaviour and confirm whether the requirements have been implemented correctly.

SLNO	PROCEDURE	EXPECTED RESULT	ACTUAL RESULT	PASS OR FAIL
1	Load the UI components	The user interface will be loaded.	Same as expected	Pass
2	Pass input from the page to back end server	List the tasks to be performed by each user.	Same as expected	pass
3	Collecting the data from all modules and process it for as per operations required.	All forms submitted successfully and the operations carried out	Same as expected	pass
4	Display the results and output	Show every result screen without any fail	same as expected.	pass

Table 7.2: Integration test cases and results

### 7.1.3 System Testing

System Testing is a black box testing approach used to assess the overall system's compliance with defined requirements. System testing involves testing the system's functionalities from beginning to end. System Testing is done by a team separate from the development team in order

to assess the quality of the system is fair. Both functional and non-functional testing are included.

SLNO	PROCEDURE	EXPECTED RESULT	ACTUAL RESULT	PASS OR FAIL
1	Log in all module as in a whole system and run it as va whole.	All modules need to login and achieve the functionalities.	Same as expected	Pass
5	Run all modules in connection with back end	All modules and functions are integrated together as a single system.	Same as expected	pass

Table 7.3: System test cases and results

## 7.2 Other test methods

### 7.2.1 Functional testing

Functional testing ensures that the system achieve the basic required functionality that the user want to accomplish.

Procedure	Result
The application installs and launches correctly.	Pass
The users can sign up and login	Pass
Text boxes and buttons work properly	Pass
Push notifications render correctly	Pass

### 7.2.2

sectionCompatibility testing This type of testing is used to analyse how far the system is compatible with varying conditions.

Procedure	Result
The app is compatible with different operating systems and their various versions	yes
The app performs well with varying networks and their parameters	yes
The app performs well with varying networks and their parameters	yes
The app is compatible with different devices (screen size, data storage)	yes

### 7.2.3 Performance testing

This testing help to measure the performance of the application on varying workload. Here what is tested with more priority is the performance of the application with a particular device, the performance of the application under a specific network at varying band widths, and the API/Server performance when the server program is connected with the application. These parameters are found to be good when running on mobile device under varying conditions.

Procedure	Result
Device performance	Good
Network performance	Good
API/Server performance	Good



### 7.2.4 Usability testing

This testing is used to identify the ease of usability of the system.

Procedure	Result
Layout and design	Good
Intuitive	Good
Response time	Good

## 7.3 System Maintenance

software system should be properly maintained after being developed and deployed. The system should not crash very soon when huge and complex data are handled. The system backup always need to be maintained and proper backup strategies have to be established. It should not compromise reliability and accuracy under varying conditions. The system must be able to maintain the capability and be available. The problems and bug issues need to be identified and resolved in a timely manner, and continue a constant monitoring over the system.

# Chapter 8

## Results and Discussion

This project was an attempt to make all services at the basic level of a citizen's daily life easily accessible and manageable at any time with less implementation cost. The system is modified as per the novel requirements of the new technological era that need to be met.

### 8.1 Advantages and Limitations

All the sectors of local self governance are currently facing too much problems as it includes heavy paper work that require manual processing. It consumes a considerable amount of human wThe proposed system has its own limitations and strengths.

#### 8.1.1 Advantages

- It organises all the basic activities of the human living and ensures its correct working.
- It can be helpful in assessing the living standard of the common people and bring improvements wherever necessary.
- Ensures the timeliness, quality and efficiency of the services.
- The system keep track of all records and its processing which makes the working more convenient and understandable.
- Implementation cost can be reduced by a great amount.

- All services which are possible to provide in a community can be make online for a village and can be developed as a stand-alone system and integrate to the proposed system.

### 8.1.2 Limitations

- As this system stand as a solution for making the services to be provided online, the users must be will aware of how to use the system perfectly which needs some training methods for some particular users.
- The data used includes very sensitive information and small breakage to the system may cause to lose valuable data of the citizen.
- As the integration of more services occur, the system will be more complex and it is required to have more processing capacity.
- Implementing everything online has its own drawbacks.It will eliminate the common market places and spaces for human interaction and the liveliness of living.

# Chapter 9

## Conclusion and Future Scope

### 9.1 Conclusion

The project entitled “E-GRAMAM” is an online platform for the purpose of handling the data of the people in a village in an effective manner and organising it in productive way. It helps the local self governance authorities to conduct survey of the people in the village in an effective way. It also helpful for the people in the village who can easily know and contribute to the developmental process of the particular village. The application was implemented and tested in real time on the server and it works error free. The system is really user-friendly and it has high protection. All necessary validations are carried out and it is made very attractive with the help of dart and flutter.

The proposed system is a better way of digitalising the villages and creating the new era of technology even in the villages. As the technology improves the way of implementing the online solutions also needs to be updated. This notion is tried to address by the system.

### 9.2 Future Scope

The proposed system can be extended further in order to make it more productive and useful. The disadvantages that came to understand can be rectified and build a better version of the system. The major extensions that are possible include,

- It is possible to empower the people in the village by integrating more e commerce start up proposals which are aided by government and their subsidy can be provided through

online payment just by adding their account details which ensures its transparency.

- An addition to the system is by integrating a job portal system to help the the people and can minimise the rate of unemployment.
- It can be used to conduct various surveys within a village just by adding a survey form for any project establishments.
- Along with the above mentioned functionalities, there is more tasks that can be managed using an android application.Small financial institutions in a village plays a major role in stabilising the overall economy.Their operation can be made more transparent and effective using this system.

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