

Solving Food Issues in Government Schools and Tracking the School Location Through QGIS Mapping

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Abstract— The Andhra Pradesh government's midday meals program is a prestigious one. In the event that there is a food-related crisis, generally people consider making a complaint to government about the food issues in government schools as a time-taking task, but our platform simplifies it and keeps the process of giving feedback/suggestions about food issues in the finger tips of parents. Our paper's major goal is to enable parents of students attending public schools the opportunity to provide input regarding the food in the event that there is a food scarcity, malnutrition, or unhealthy food being supplied to their kids. We use FIREBASE to store the data and to track the location of the school, we use QGIS mapping. For one to use the app, they should first open the app, select the area(mandal) they belong to and then choose the government school where their children are studying, and then they will be allowed to make a complaint to the Higher Official of mandal. Their responses are recorded and are sent to Higher Official of the mandal so that the Higher Official can take appropriate action, to rectify the problem, thus we can ensure the children are fed with a nutritious food without any shortage.

Keywords: Firebase, QGIS Mapping, Flutter.

I. INTRODUCTION

Food plays a huge role in our daily lives. Without nourishment, one cannot survive. Therefore, in India, pupils in government schools are having a problem because of a lack of food or food that is malnourished. Therefore, students may experience health issues as a result. Therefore, the government is not caring for it. Despite the fact that the children can perceive it as a risk issue. Therefore, no one dared file a government complaint. There are several students that are dealing with the same issue. Therefore, our application gives the pupils a platform to solve it. Our program serves as a conduit between the Higher Official and the kids. Here, pupils can fix their issues with ease. When a student files a complaint through an application, the complaint is forwarded immediately to the Higher Officials, who then resolves the issue. QGIS mapping is utilized to pinpoint the school's precise location for Higher Official. So that Higher Official can be aware of the precise position and distance between the school and his office. So that he may locate the school with ease. Without any burden, the issue is quickly resolved.

A. Firebase

Firebase is necessary both to preserving and accessing the data[1]. Firebase is the best backup platform for mobile applications. It is possible to create and enhance the quality of both mobile and website apps due to a robust set of tools called Firebase. Firebase administers the dataset entirely in

real-time. As a result, data is transferred to and from the database is simple and fast. You may therefore leverage Firebase to build mobile apps. There are numerous benefits that use Firebase. The user is capable of developing applications without having to pay for a backend server. The performance of Firebase is unmatched to any other backend web service. It enables automated backup features. A broad range of functions and services are offered by Firebase.

The authentication enabled by Firebase technology makes it easier for developers to create security authentication solutions. It optimizes consumers' sign-in and training processes. Access to user information is available throughout all channels, including the web and mobile devices. The genuine database, which operates in offline mode, is immediately synced with adjustments implemented to the customer's application. Firebase also provides a wide range of storage options.

B. QGIS [Quantum Geographic Information System] MAPPING

Presentations can successfully reach a range of audiences[2]. One of the most prevalent sorts of visual information is mapping. Think about how often you use or come across maps during the course of a day. Nearly all planning and research-related occupations will benefit from learning about mapping and geospatial analysis to become more productive. Despite the abundance of mapping software solutions, the majority of them are expensive and have a steep learning curve. With QGIS, users may produce, edit, view, examine, and publish geographic data (Quantum Geographic Information System). There are many benefits to using QGIS. The software offers a tonne of free internet material and maps that can be downloaded to get you started. Furthermore, QGIS supports a wide range of vector file formats. In addition, new plug-ins are constantly being created. Several plug-ins are currently available for potential use. Plug-ins are supplementary programs that can be downloaded to do a specific task that would be challenging to complete otherwise. A sample map from QGIS is shown in the Figure 1.

C. Flutter

Despite being relatively new, the platform Flutter is intriguing and has already attracted the attention of big businesses.[3] Due to how simple and quick it is compared to developing web applications and native applications, it is appealing. Flutter employs a variety of techniques to attain great performance and productivity. Widgets, also referred to as "components" in the online world, are used by Flutter to design its user interface (UI) in a declarative manner that

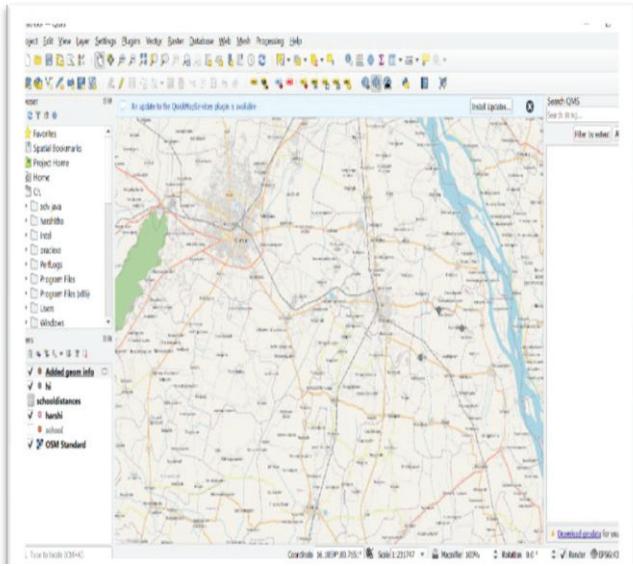


Fig. 1. Sample map on QGIS

was influenced by the React web framework. To make the most of widgets, they are only rendered when necessary, generally after their state has changed. A feature that is common on the web but absent from native applications is Hot-reload, which the framework integrates in addition to everything else described above. The Flutter framework thus immediately rebuilds the widget tree, allowing you to see the results of your changes right now.

D. Motivation

The countries' populations are currently growing. India is a populous nation where many individuals want to succeed in their careers and advance the development of the nation. We are setting up a lot of organizations to boost the growth of the nation. There needs to be a positive public reaction for those organizations to succeed. The organizers should speak with the public about their event and any issues they are having in order to receive a positive response from the nation. Based on the needs of the organization, we develop mobile or online applications for these draws.

E. Problem Statement

Our daily lives involve food to a great extent. One cannot survive without food. Due to a lack of food or food that is malnourished, students in government schools in India are suffering. As a result, pupils may encounter health problems. The government is not looking out for it as a result, even if children can view it as a risk problem. Nobody dared to protest to the authorities as a result. There are several pupils that are experiencing the same problem. Our application provides a venue for the students to address it as a result. The

Higher official for the district communicates with the children through our program. The problems of the students can be easily resolved here.

The scope of this project is limited to the schools present under the mandal. It may be extended to the district. The main objectives is to create an android mobile application. The objective of our application is parents of government school students can upload the details related to any food issues. To apply QGIS mapping to track the location of the school

Through this platform students can solve their problem without any burden. Can be used by the parents of students who are studying in government school to raise a complaint. Some government officials also need to use the application to solve the issue faced by students.

The structure of this essay is as follows: The literature reviews on QGIS mapping, Firebase, and complaint management system are described in Section 2. The recommended framework is explained in Section 3. Section 4 contains the findings and discussion. Section 5 contains Conclusion

II. RELATED WORK

The many literature survey articles that are used as references are described in this section.

The methodology in [4] describes about a clever complaint management strategy aids in preserving the positive relationship between the organization and the general public. They have a good rapport, which helps to solve public issues and improve the organization's reputation. A clever complaint management system may be a website(web application) or an app (mobile application).The general public can chat or talk with the organization about their issue.

The methodology in [5] describes about the general public has issues or challenges using the organization's services .Therefore, in order to address issues, we require applications. Customer service, or the help desk, is a crucial component of any service business. Good customer service and assistance improve the company's reputation. There are three steps to the methodology that was applied: Data gathering and analysis of the existing situation. Maximizing the situation Case studies, interviews, and direct observation are used to gather data.

The methodology in [6] describes about the project makes use of a NoSQL database with connections that let users access and retrieve data from the database. For the purpose of protecting the data it provides for the creation of cloud storage, Firebase primarily uses Firebase cloud and crash reporting. In addition, Firebase provides crash uncovering assistance.

The Flutter Clean Architecture package was used to implement the Clean Architecture, and it was very successful and beneficial, according to the methods described in [7].

The methodology in [8] gives an overview In developed regions like Europe and the United states, noise maps are frequently employed. Forecasting is the first task ,and precise and effective prediction results are the fundamental tenet of traffic planning and management ,regardless of whether the task is urban traffic planning or city traffic management. In our nation ,noise map research and application have barely begun. China has some software for managing urban traffic, but overall there is a severe lack of high-level software and a disproportionate amount of low-level repetitious software. This study looked at the primary noise prediction model and addressed the traffic forecast system based on GIS. Following a through design, we had created a unique software system based on the demand.

With a case study in the city of Cirebon, the methodology of [9] provides Application for discovering schools using LBS. The target market for this application is those who are

looking for information on the locations of educational institutions, such schools. This application enables the general public to learn the location of the closest school using the user's location. The Java programming language and NetBeans were used to construct this application. Java is simple to use, adaptable, and compatible with a wide range of hardware systems.

The Advanced Traveler Information System (ATIS), which is a type of intelligent installation application, is described by the methodology in [10]. To effectively provide traveller information to users, a sizable volume of information must be processed, analysed, and stored. Large amounts of data can be efficiently processed, stored, analysed, logically associated, and graphically displayed using a geographic information system (GIS). The ArcView GIS environment has been used to develop this GIS-based ATIS. Throughout this ATIS, GIS-enabled modules for the shortest path, closest facility, and city bus routes are included. This user-friendly system offers comprehensive information about Hyderabad City, including road networks, hospitals, government and personal offices, stadiums, bus and railway stations, and tourist attractions within the town limits. In addition to these characteristics, location-based data and intercity traveller data, such as bus, train and airways.

According to the methods in [11], GIS can be utilised to use the data's existing information, such as addresses and zip codes. Between items, we can establish spatial relationships that we can then employ for analysis. GIS is more than just a straightforward mapping tool; we can also use it to analyse spatial data and learn important things. The attribute information and the map are connected. Facts based solely on geographical criteria can be called into doubt using GIS. Using GIS, many layers of data can be shown on the map.

III. METHODOLOGY

This section outlines the system's architecture and the techniques used.

A. Architecture

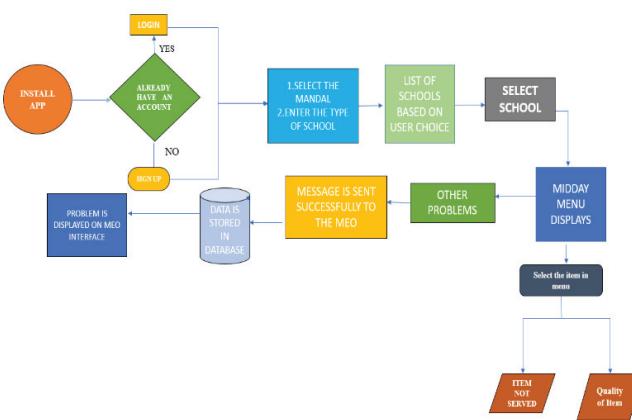


Fig. 2. Proposed System Model of the Application

The proposed system lays out step-by-step exactly how the program will operate from beginning to end.

B. Methodology

This chapter describes the several modules, including the registration module, where both users and the higher official must register.

1) Registration Module

Users and authorities register in this module by entering personal information such as an email address, phone number, address, name etc. There is no need to register again each time the application is opened if the user or authority has already done so. The user or authority only needs to log in using their email address or phone number and the password they were given when they registered.

2) Login Module

This module now has an authentication wrapper that uses a Firebase author instance to listen and determine whether the user is signed in or not. If the user is not logged in, he or she is taken to the sign-up page where they can log in using the provided credentials. The user is taken to the Home Page if logged in. After logging in successfully, the user is taken to the main page.

3) Selection Module

There are 2 screens in this module. The screens are shown in Figure 3 and 6

For Users:

First, after logging in, the user must select whether they are a member of the public or an official. If we are the user, we must offer information like the student's location of study. Details such as the kind of school, its name, and the day on which the issue is occurring should be provided. After then ,they must describe the issue they are having. Then send the issue. The student interface is shown in the following Figure 3.

The figure shows four sequential screens of a mobile application interface:

- Select the type of school:** A dropdown menu with a green header.
- Select School:** A dropdown menu with a green header.
- Select the day:** A dropdown menu with a green header.
- NEXT:** A large green button at the bottom.

Fig. 3. Student Interface

For Authorities:

After logging in, the user must first select whether they are an official or a member of the public. If we are the authorities, we will find out more about the particular problem the child brought up. Along with details about the problem and its origin, like the village's name, the school's

name, and the type of school, The location and the distance to the official's location can then be found on a map.

C. Proposed Algorithm

1) Plotting The Locations on QGIS[Quantum Geographic Information System] mapping

Using QGIS, a mapping method, it is possible to determine the school's location and how far it is from the Higher Official office. Prior to anything else, we need to know the exact latitude and longitude of the school[12], after which complete the excel sheet with the data and save the .csv file. You must take the required actions in order to plot the locations on a map.

To plot the points on the map the user need to open the layer which is present at the top of the window .and then the user need to click the add layer and then need to search the delimited layer and then browse the required csv file and and select x axis as longitude and y axis as latitude and then click on ok button .the plots are pointed on the QGIS map as shown in the Figure 4.

Below table represent the exact location of the school which is imported in QGIS map and should be saved with .csv extension

TABLE I. EXACT LOCATION OF THE SCHOOL

id	Name	xcoord	ycoord
1	Champadu	80.716242	16.178699
2	Jampani	80.701679	16.195173
3	Chavali	80.735223	16.137754
4	Peravali	80.716123	16.138471
5	Kodiparru	80.765185	16.128563
6	Penumarra	80.773899	16.134292
7	Kuchchellap	80.749212	16.218895
8	Chadalawada	80.729769	16.23384
9	Vellabodu	80.765173	16.210624
10	Varahapuram	80.742102	16.194083
11	MEO Office	80.739636	16.178122

The locations of the schools are depicted in the following Figure 4 using QGIS mapping.

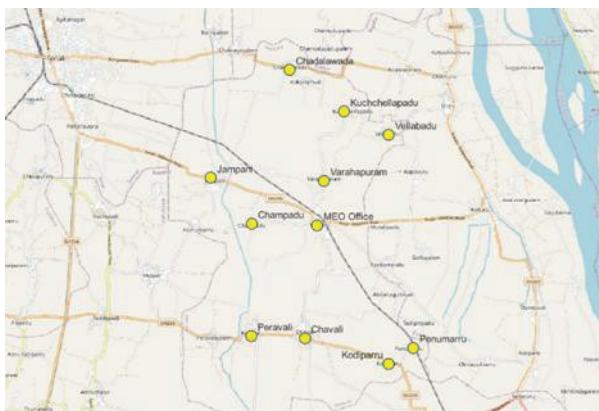


Fig. 4. School locations plotted on QGIS map

2) Finding the distance from school to higher official office

And the next step is to find the distance of the school from Higher Official office[13]. The following figure and shows the distance the school from Higher Official office Follow these steps in order to determine the distance between two points on a QGIS map:

1. Click layer, add layer, add vector layer, and then click done.
2. A pop-up window appears, requiring you to access the file.
3. Then, you must choose the scale form icon that is located at the window's top.
4. At the top, a pop-up box appears. When the user moves the pointer between two places in the backend, a popup window displaying the distance between the two spots displays.
5. Distance may be found quite easy with the use of the QGIS technology.

The distance between two schools is depicted in the following Figure 5 using QGIS mapping.

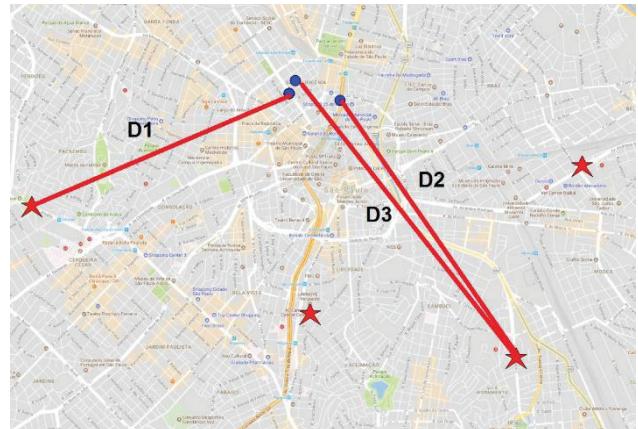


Fig. 5. Distance from Higher Official office to school[14]

The Table 2 displays the distance in metres between higher official office and schools.

TABLE II. DISTANCE FROM HIGHER OFFICIAL OFFICE TO SCHOOLS IN [METRES]

1	id	Name of the school	Distance from MEO office
2	1	Champadu	1200
3	2	Jampani	1567
4	3	Chavali	3400
5	4	Peravali	2567
6	5	Kodiparru	2345
7	6	Penumarra	1232
8	7	Kuchchellapadu	3213
9	8	Chadalawada	2134
10	9	Vellabodu	1256
11	10	Varahapuram	2314

This is how we can quickly determine how far the school is from the Higher Official office. and Higher Official is able to accurately determine how long it takes. Higher Official work may be completed quickly and safely.

The name of the school, the fact that poor food is supplied, the distance between the school and the Higher Official office, and any other issues relating to the pupils' suffering in the public school may all be included in the Higher Official interface. There could be issues with the fan, the lighting, the number of teachers, or the timing of belt and uniform distribution. By using our program, these issues can also be quickly resolved.

IV. RESULTS AND DISCUSSION

The output and findings of the suggested system are presented in this section. When a student registers a complaint in an application, the Higher Official receives the findings. The Higher Official interface is depicted in the following Figure 6.

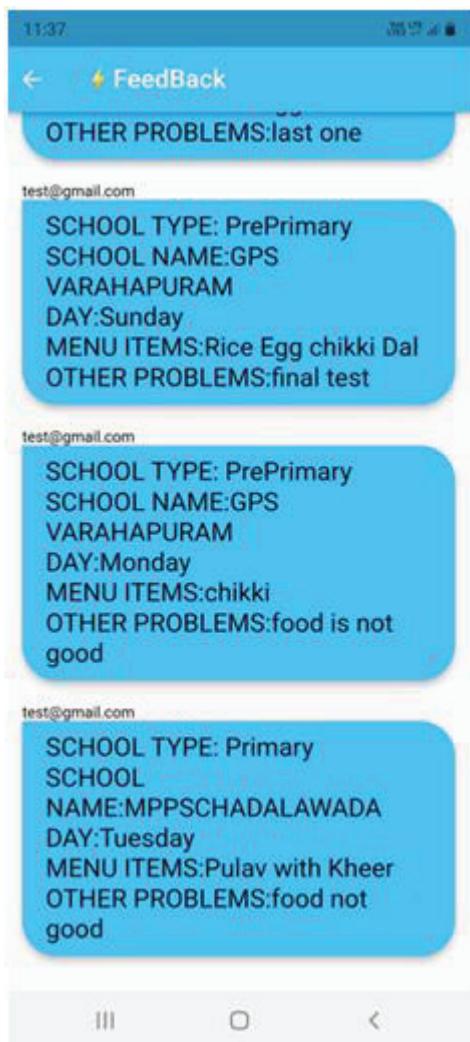


Fig. 6. List of complaints displays on Higher Official interface

V. CONCLUSION

For a person to survive, food is essential. Without the ability to survive, a person is powerless. Our program addresses the food-related problems in schools, ensuring that pupils are healthy and free from illness. They can quickly and safely solve it themselves. Our project can be expanded so that students can also report issues with their coursework. This will boost the value of the government school and enable Higher Official to respond to the student's complaint as soon as possible. Finding the distance between the Higher

Official office and the school is made much easier with QGIS technology. It may be expanded to state level

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