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FreeMorsel -Your Donation Makes a Difference

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Abstract : People nowadays should take advantage of current technology to search for the growing industry entirely. Waste worldwide is increasing day by day. The survey says there was a 5% increase in wastage every year till 2020. It has now increased to 7%. It includes food wastage, clothes, and other goods wastage. This project helps us to decrease wastage and even monitor the wastage in area-wise divisions. It tells all the users to donate food or any other goods like clothes, toys, and books by using the app. The FreeMorsel team handles the complete donation process. After logging in to the app the user can start donating with a single click and then the donation will be picked by the FreeMorsel rider and will be donated to the people in need. The information about the donation campaigns was made available to the user so that they can register themselves to volunteer in any campaigns if they wish to. The application's main goal is to connect registered non-profit organisations with people in order to prevent the misuse of funds. The application was built utilising the Flutter framework and the Firebase backend to give real-time results.

Keywords - Android Application Development, API, Blockchain, Firebase, cloud functions, Flutter, Ganache, Gcloud, Geolocation, Mobile application, NodeJS, Python Flask

I. INTRODUCTION

People's living standards are continually rising, sophisticated technology makes life easier, and media information can spread quickly over the world. Wasting resources (food, goods, etc.) is a widespread issue in our community. Handling those extraneous items is critical since it can enhance our environmental and economic sustainability. But nonetheless, these factors are accompanied by several societal difficulties like wars, genocide, resource depletion, and more. These issues contribute to a rise in the number of persons who do not have access to enough resources on a daily basis. An essential objective in our society today is to decrease waste by reusing accessible sources within local communities: leftover food in restaurants, additional commodities that may be approaching expiration, and any perishable things that are not consumed in their entirety within their intended term. [1]. In their daily lives, individuals have encountered several persons or organizations asking for donations. Governments and celebrities, for example, urge the public to give and assist people in need. This approach can reduce people's reluctance and boost their readiness to assist those in need. Pollution is an alarming issue in densely populated nations like India. There is plenty of data to back this up from roadways, garbage cans, and landfills. Bins, restaurants, social and family activities, and services trash too much food and commodities. Wastage is not just an indicator of hunger or pollution, but also of a wide range of monetary issues.

In the form of this initiative called "FreeMorsel," we have chosen a pathway to implement our innovative ideas. The essential objective that emerged from our effort is to supply essentials to those in need. 'FreeMorsel' is a cross-platform application that facilitates the donation of helpful products (food, clothing, etc.) to the nearest Charity. Many people and organisations seek to donate items to deserving organisations. Also, different organizations seek to request various things. Yet, there is no supply accessible that can meet their demands. As a result, a web-based tool that allows individuals to give products based on their ability will be helpful in bridging the gap between Donors and those in need.

II. LITERATURE SURVEY

C. Varghese et al., 2021 [1] It is fairly innovative in that it provides quite a distinct feature to aid food donation through the ubiquitous interactive display of important food facts for suppliers and consumers. It keeps track of restaurant waste food. H. Hajj Diab et al., 2018 [2] The Donor could also donate things and view all contribution requests. The Admin and Donor may both see the location of the Receiver and Donor. The Admin also may update and monitor the database. The Receiver can additionally perform things like request items, view requested commodities, and claim donations. Mrigank Mathur et al., 2021 [3] After donors and searchers have successfully enrolled into the system, the software provides a platform for them to contribute and collect food. The machine will remain operational, offering a 24-hour service. The machine can provide meals at a reasonable cost. S.Radhika et al., 2022 [4] The suggested system is an Android application built on Android Studio 4.1 using react-native, Nodejs, and MongoDB for data storage,

and it requires an internet connection. Fulfills the NGO's motto, Creates a positive vibe for donors by donating food so they feel happy.R.Adline Freeda et al.,2018 [5] All the processes are sorted according to the time. The waiting time, the availability time everything is calculated so that the food quality is not compromised. The donated food reaches the needful. Also, quality is checked and on time.Vidhi Panchal et al.,2020 [6] Here the donor and the people in need both get connected through the application. The leftover food from parties, hotels, and households is collected which ensures no wastage.

Pritom Kumer Rajvor et al.,2021 [7] There are three roles that help to interact with each other and get the donation drive completed. It helps to manage the donated food. Check whether the food is spoiled or not before getting donated. Mafishan Ali et al., 2019 [8] The application was to minimize food waste as much as possible and to feed those individuals who do not have enough food for one meal. It is a massive inconvenience for them to look for food every day in order to feed themselves and their families, as well as for donors to reach out to them.Shinta Oktaviana R et al.,2020 [9] This initiative intends to develop a platform that connects the community with people and organizations who wish to donate leftover food. This system was designed using the prototype method so that users could submit feedback more rapidly. This initiative intends to develop an application paradigm that may connect food donors, social networks, and Jakarta's hungry people.Suraya Masrom et al., [10] This article compares the characteristics of numerous charity mobile applications, defines the program's shortcomings, and introduces the F4U mobile charity application. The ideas offered in this article about system design, architecture, and testing are useful for researchers who want to create a different type of mobile application.Benjamin Brauer, et al.,2016[11]The essay defines suitable regions for the private usage of sustainable mobile applications and evaluates the sufficiency of existing commercial Green IS roles.Zibin Zheng et al.,2017[12]This research delves deeply into blockchain technology. It began by explaining blockchain architecture before analysing the common consensus methods utilised in various blockchains

III. PROPOSED SYSTEM

The envisioned Food Donation Portal System is an internet-based tool that allows anybody to contribute leftover food. The product has been deemed a strong means of giving products through the internet, among other things. Food waste has grown tremendously. According to the Food and Agriculture Organization, around 1.3 billion metric tons of food are wasted each and every year, accounting for one-third of all food produced for human use. On the other hand, as per WHO, 20% of the population faces extreme food shortages. As a result, it is essential to develop a solution that would reduce food waste while also assisting those in need. In India, about 40% of food is wasted, costing the country around Rs 92,000 crores each year.

Food contamination is a major problem in highly populated countries like India. Weddings, canteens, clubs, social and family gatherings, and events all waste a lot of food. Instead of losing these products, the initiative will put them to use by providing them to various individuals and organizations such as orphanages, nursing homes, and so on. Several people and companies wish to donate things to charitable foundations. As a result, a cross-platform application has been developed via which users can give food goods based on their ability. The food donation application connects people looking for a way to give without wasting excess food.

IV. SCOPE

This application has a broad potential use in emerging countries with both privileged and poor people. Some people have many advantages, but others are unable to buy even the most basic of necessities. If this donation service is put online, individuals may donate their spare goods without feeling awkward, and those in need can get these products. Furthermore, in the event of a natural disaster, such as an epidemic outbreak, individuals will be able to contribute food and clothing to those in need. Hundreds of thousands of pounds of food are wasted at festivities such as weddings or parties because no one wants to spend their time looking for people to donate their food, therefore our application will make their job easier since they don't have to do anything except register for our application and someone will pick up the products they want to give from their doorway. This tool can be quite useful in resolving food and good crisis issues.

V. METHODOLOGY

A. *PRODUCT DESIGN*

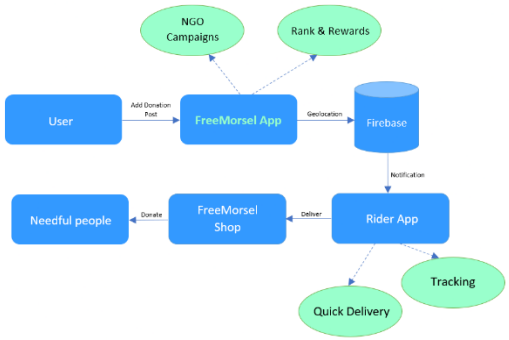

Fig 1.1 Basic flow of the application

The above Fig 1.1 shows the basic flow of the application which is shown as a single module. Right from the User side where they donate through the app, then proceeding towards the rider side where he comes to collect the order and hands it over to the nearest NGO/Shop, which is then distributed to the needy.

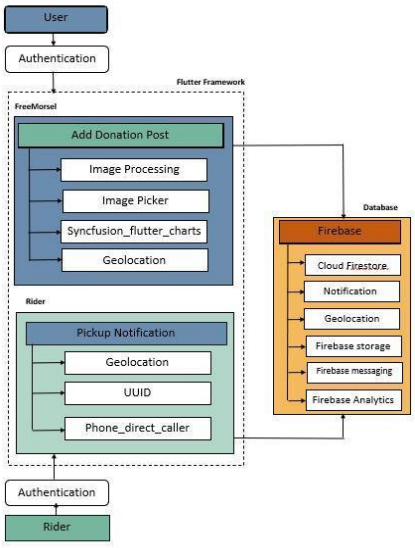

Fig 1.2 System Architecture of FreeMorsel

The above Fig 1.2 shows the system architecture where the flow is divided into sub-modules to understand them better. It shows the detailed features that the app provides like geolocation, unique Id generation(UUID), image processing, etc.

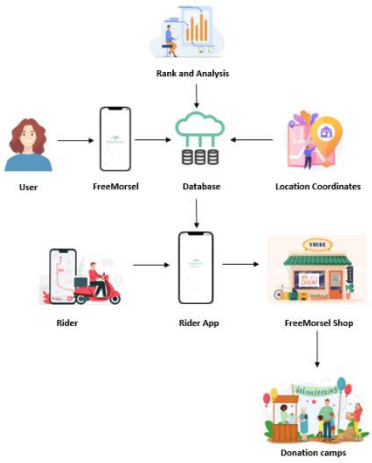

Fig 1.3 Graphical representation of the app

The above Fig 1.3 shows a graphical representation of the flow of the application. It shows the user-side application, the rider-side application that has been developed and also the FreeMorsel stores.

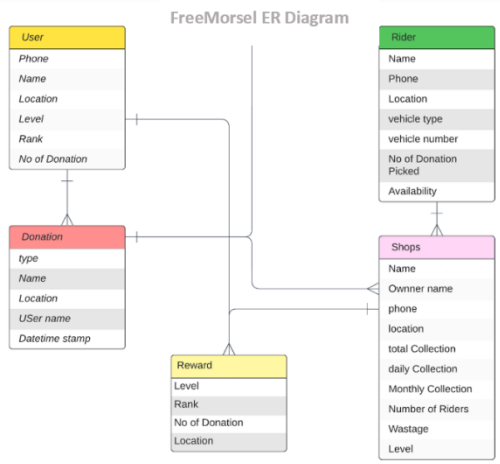

Fig 1.4 ER Model

The above Fig 1.4 is an ER diagram which shows the various entities like User, Rider, Donation, Shops, and Reward. Also, they contain various attributes eg. types, names, locations, etc. The above ER diagram is used to show the relationship between the entities.

VI. IMPLEMENTATION

This Software application consists of maintaining user information, maintaining receiver end details, retaining donation details, request for a donation, and delivering updates. It can be accessed from anywhere and anytime which makes the donation process less challenging. This is a mobile application developed with the use of Flutter and Firebase using Dart language.

A. Frontend

The User interface of the app should be user-friendly and easy to use so they may need a compatible device where they can take full advantage of the app. The user interface was developed using the Flutter framework which uses Dart language. It helps to build a cross-platform application using a single codebase. The user can use the app on ios as well as on Android phones. There is also an authentication feature where the user needs to verify themselves by entering the phone number with a One-Time Password.

```dart
import 'package:cloud_firestore/cloud_firestore.dart';
import 'package:firebase_auth/firebase_auth.dart';
import 'package:firebase_messaging/firebase_messaging.dart';
import 'package:freemorsel/data/userdata.dart';
import 'package:freemorsel/provider/notifcationprovider.dart';

Future<bool> checkLogin() async {
  try {
    bool newUser = true;
    String uid = FirebaseAuth.instance.currentUser!.uid;
    await FirebaseFirestore.instance
        .collection("Users")
        .doc(uid)
        .get()
        .then((docSnapshot) async {
      if (docSnapshot.exists) {
        getFCM(uid: uid);
        newUser = true;
      } else {
        newUser = false;
      }
    });
    return newUser;
  } catch (e) {
    return false;
  }
}

Future newUserLogin() async {
  String uid = FirebaseAuth.instance.currentUser!.uid;
  fcmToken = (await FirebaseMessaging.instance.getToken())!;
  FirebaseFirestore.instance.collection("Users").doc(uid).set({
    "userId": uid,
    "username": username,
    "PhoneNo": phoneNum,
    "email": email,
    "noOfDonation": 0,
    "profilePic": profilePicSelector,
    "Points": 0,
    "level": 0,
    "token": fcmToken,
    "notifiacation": false,
    "offernotification": false,
    "drivecampnotification": false
  });
}
```

Fig 2.1 Model code that checks whether the user is new or not

The above Fig 2.1 shows how to use code to identify whether a user is a new user or an existing user when they sign in.

B. Backend

For storing the data that is collected from the application by the user Firebase is used. It offers a NoSQL database, storage, authentication, notifications, etc. The data is stored in collections and documents in NoSQL format. NOSQL is the best and fastest way to retrieve data from the database.

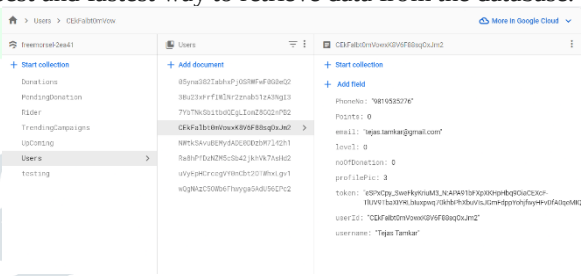

Fig 2.3.1 Users Collection in Firebase

The above Fig 2.3.1 shows the User's collection of Firebase where the user data and other details are stored.

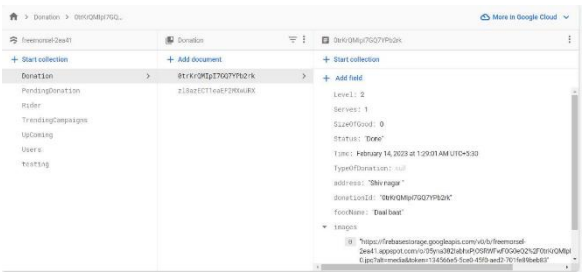

Fig 2.3.2 Donation Collection in Firebase

The above Fig 2.3.2 shows the Donation collection of Firebase where the details of the donation posted by users get stored.

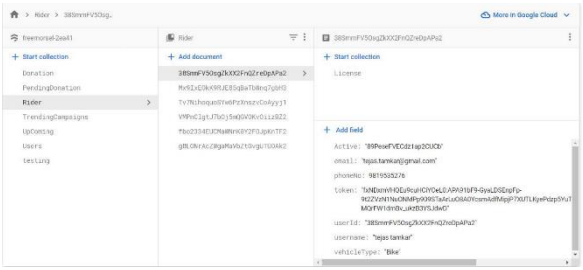

Fig 2.3.3 Rider Collection in Firebase

The above Fig 2.3.3 shows the Rider collection of Firebase where the details of the rider are stored.

VII. RESULT

FREEMORSEL

Fig 1:Splash Screen

Fig 2:Login Screen

Fig 3 Home Page

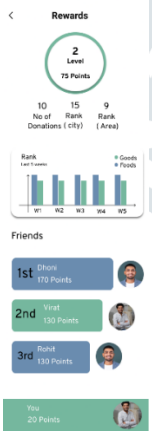

Fig 4 Rewards

The Splash Screen [fig 1] is the first page of the app which the user will see after opening the app and will be redirected to the Login page [fig 2] where the user has to enter their phone number and verify the OTP sent on the phone number provided by the user using the backend functions. If the user is new to the app then they will be redirected to the registration form where the user has to enter their basic details (name, phone number, etc). And in the case of existing users after the user verifies the OTP they will be directly redirected to the Home Page[fig 3] of FreeMorsel.

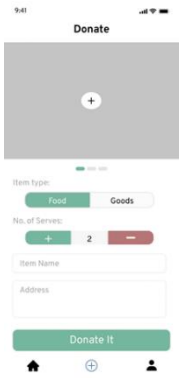

Fig 5:Add Donation

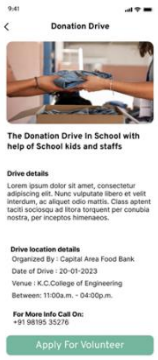

Fig6:NGO Information

Once the user is successfully logged in they will be redirected to the Home Page [fig3] where they can find the donation campaigns which are currently trending and also the upcoming campaigns that will be organanized.It also has a section where the user can view all their past donations altogether.

If the user wishes to donate[fig5] the items they can click on the plus(+) icon in the nav bar of the homepage and start the process of donation through a single click. The user just has to take a clear picture of the item they wish to donate and then mention some details like type of item, quantity, Name of item, and address of the user so that the FreeMorsel Rider can pick up the donation from the doorstep of the user after the user click on donate it button. If the user wants to know more about the campaigns they can click on the cards in the trending or upcoming campaigns and the NGO information[fig 6] with all the details will be available for the user if the user wishes to volunteer they can also apply for volunteer and help the NGO staff with the drive.

There's also a Rewards Page [fig4] where the user can get statistics about them which consist of donations made, Rank in their area city and it also shows their weekly activity in the app.

FreeMorsel Rider

Fig 7 : HomePage

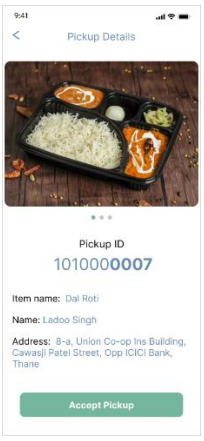

Fig 8: Order Details

FreeMorsel Rider app is where the rider will get notifications regarding the donations posted by the donors in the FreeMorsel app. Once the Rider log in to the rider app they will be redirected to the Home Page[fig 7]where they can get information about the number of pickups they had completed and they can also view the active and upcoming pickup based on the location of the rider at that time. The Rider has to confirm the pickup by clicking on the "Accept Pickup " button and then collect the donation from the 8]. Every Donation will have a unique pickup id which can be verified by the donor when the rider collects the food from them.

The FreeMorsel app permits the user with a simple one-click-one-tap Donation feature anytime and anywhere. In order to assess user reactions to the functionality of the FreeMorsel system, 30 volunteers were approached to test the system's features as well as provide feedback on the app. The feedback were taken into consideration and new updates were made in the app and many volunteers registered for the upcoming donation campaigns organized by NGOs through FreeMorsel.

VIII. CONCLUSION

The proposed application avoids food waste and consequently meets additional requirements, such as food commodities from disadvantaged groups. The planned system is now targeted at eliminating the considerable waste that exists in India, which can include any item. The framework is necessary to upgrade and improve the same system, which will increase the app's dependability and usefulness. As a result, the utilisation of valuable things through donations will further help with the growth of NGOs. In the future, we may make our application more user-friendly by adding features like :

- As supplementary features, a study of areas where donations were commonly made, a chat function, ratings, and so on can be implemented.
- The FreeMorsel can organize campaigns of their own
- Information of NGOs connected with FreeMorsel can be made available to the user.
- This app can be grown on a large scale and spread across other states in future.

REFERENCES

[1] C. Varghese, D. Pathak, and A. S. Varde, "SeVa: A Food Donation App for Smart Living," 2021 IEEE 11th Annual Computing and Communication Workshop and Conference (CCWC), 2021, pp. 0408-0413, doi: 10.1109/CCWC51732.2021.9375945.

[2] H. Hajjdiab, A. Anzer, H. A. Tabaza, and W. Ahmed, "A Food Wastage Reduction Mobile Application," 2018 6th International Conference on Future Internet of Things and Cloud Workshops (FiCloudW), 2018, pp. 152-157, doi 10.1109/W-FiCloud.2018.00030.

[3] Mrigank Mathur, Ishan Srivastava, Vaishnavi Rai, Assistant Prof. Mr S. Kalidass, "Aahar - Food Donation App", May-June-2021, International Journal of Scientific Research & Engineering Trends

[4]S.Radhika, S. Ravi Kumar, V. Prasanth,N. Nikhil Varma, R. Akhil, "Share Your Food-A Food Donation App For User And For Society", 6 June 2022, International Journal of Creative Research Thoughts (IJCRT)

[5] R.Adeline Freeda, M.S.Sahlin Ahamed, "Mobile Application for Excess Food Donation and Analysis", April 2018, International Journal of Innovative Research in Science, Engineering, and Technology

[6] Vidhi Panchal, Kajal Kuchekar, Snehal Tambe, "Availability of food for NGO through Mobile Application: FOOD FOR ALL", March 2020, International Research Journal of Engineering and Technology (IRJET)

[7] Pritom Kumer Rajvor, Md. Shafiqul Islam Shovon, MiniraAkter, Farzana Nawrin, Suraiya Yasmin, "Reduction Of Food Wastage Through Donation Using Online Food Management System For Orphanage", February 2021, in IJEAST

[8] Mafishan Ali, Sana Sheikh, Yumna Sohail, "Reduction of Food Wastage through Android Application – Make You Smile", October 2019, International Journal of Scientific & Engineering Research

[9] Shinta Oktaviana R, Diana Ambarwati Febriani, Intan Yoshana, LR. Payanta "FoodX, a System to Reduce Food Waste",2020 3rd International Conference on Computer and Informatics Engineering (IC2IE)

[10] Suraya Masrom, Abdullah Sani Abd. Rahman, Farah Norliyana Azahar, Nasiroh Omar, "Food for You (F4U) Mobile Charity Application", International Journal of Engineering & Technology, 7 (4.19) (2018) 520-523

[11] Benjamin Brauer, Carolin Ebermann, Björn Hildebrandt, Gerrit Remané, Lutz M. Kolbe, "GREEN BY APP: THE CONTRIBUTION OF MOBILE APPLICATIONS TO ENVIRONMENTAL SUSTAINABILITY", July 2016, Conference: Proceedings of 20th Pacific Asia Conference on Information Systems (PACIS 2016)

[12] Zibin Zheng, Shaoan Xie, Hongning Dai, Xiangping Chen, and Huaimin Wang, "An Overview of Blockchain Technology: Architecture, Consensus, and Future Trends", June 2017, 6th IEEE International Congress on Big Data