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GIFTWINGS: A DONATION HUB FOR COMMUNITY SUPPORT

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ABSTRACT
Food, clothing, and books are fundamental for human well-being. Unfortunately, food insecurity, marked by the lack of safe, nutritious, and adequate food, remains a significant issue, particularly in low-income communities. These essentials represent basic human needs that must be addressed promptly. Yet, many individuals struggle to afford or access them. This Android application provides a solution by enabling users to donate food, clothing, and books at no cost, while allowing those in need to receive these donations when necessary. A key feature of this app is its ability to connect donors with recipients seeking the same type of donation. This sets it apart from other donation platforms that often focus solely on one specific need.

Key Words: donation platform, secondhand market, wastage reduction, donation catalog, affluent society, NGO's.

1. INTRODUCTION

In 2020, hunger statistics in India stood at 16.30%, indicating a 1.7% rise from the previous year. Additionally, it's troubling to see that roughly 25% of donated clothing ends up in landfills, while another 40 to 50% is shipped overseas to be sold in second-hand markets. Only 25% to 35% of these donations actually make it to stores, highlighting significant waste. Access to books, crucial for knowledge and enlightenment, is often overlooked, denying many this privilege. Food, clothing, and education are undoubtedly the three most essential necessities for humans. Ensuring access to these basics is crucial and requires urgent attention. Unfortunately, many individuals today cannot afford or access these necessities, while affluent individuals waste resources like food, clothing, and literature.

Our society's reliance on smartphones for daily tasks is undeniable. From basic communication tools, smartphones have evolved into indispensable personal assistants. Recognizing this evolution, we've created an innovative Android app harnessing the smartphone's potential as a personal assistant. Our platform caters to various needs, facilitating exchanges, borrowing, and sales of pre-owned items, fostering a more connected and sustainable community. Our app addresses these issues by enabling users to donate food, clothing, and books free of charge, and allowing others to collect these donations when needed. Unlike existing platforms focusing on a single need, such as food, clothing, or books, ours uniquely integrates all three essentials into one platform.

2. EXISTING SYSTEM

Current systems for donating food, clothing, and books involve a variety of organizations and initiatives dedicated to meeting societal needs. Non-profit organizations, community groups, and governmental agencies are central to coordinating these endeavors.

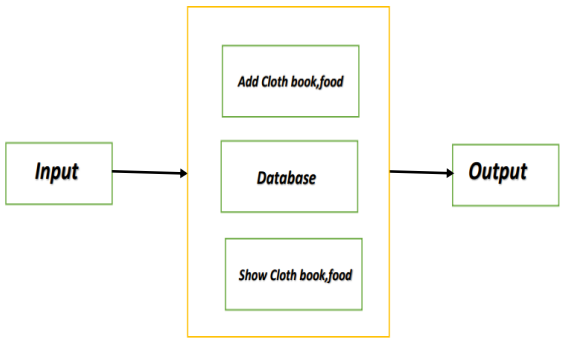

Fig.1 System Design

The research paper titled "An Examination on Food, Clothes, and Books Donation Based Android Application" [1] outlines the primary objective of the application: to connect individuals with surplus resources who are eager to contribute to the community with those in need who are willing to accept assistance. Through our application, users can freely donate items such as food, clothing, and books, while others can freely collect these goods as needed. The paper "Virtualizing Food Donation Distribution through Mobile Application and Cloud-Based Supply Chain Management" [2] presents DOVIR, an infrastructure facilitating precise food donation via a virtualization framework implemented through a smartphone app and cloud-based services. DOVIR utilizes analytics and smart sensors to automate donation requirement predictions, revolutionizing food donation by virtualizing the entire supply chain and maintaining donor engagement throughout the process. "FoodX, a System to Reduce Food Waste" [3]endeavors to develop an application model connecting food donors, humanitarian communities, and individuals facing food scarcity in Jakarta. It discusses existing social community business processes, the application's design, and offers future research suggestions. "SeVa: A Food Donation App for Smart Living" [4] focuses on designing, implementing, and evaluating the SeVa food donation app. It emphasizes the app's integration with other useful applications, its impact on AI for Smart Cities, its deployment on the Android platform, and positive user feedback. "Predicting Farms' Donations to Food Banks using the Analytic Hierarchical Process and Dempster Shafer Theory" [5] examines factors influencing annual sweet potato donations to Feeding the Carolinas from 2010 to 2016. "Forecast and Analysis of Food Donations Using Support Vector Regression" [6] explores the utilization of Support Vector Regression to predict monthly food donation quantities, demonstrating its potential in addressing food donation supply uncertainty.

"Implementing Android Application For Book Donation" [7] discusses the transformative potential of a book donation application, serving as a conduit between donors and those in need, particularly in regions like India. "Developing a Reliable Service System of Charity Donation during the Covid-19 Outbreak" [8] aims to establish a blockchain-supported solution integrating conventional web services and blockchain technology to ensure swift responses to user needs during the Covid-19 outbreak. "An Android Application Development for Food Donation: A Geographical Location Based Approach"

[9] underscores the reality that nearly one-third of the world's food is wasted annually. Due to its support for both consumers and developers, Android is one of the most popular mobile operating systems globally. "Donatify" is the app's name, aiming to connect the community of hungry individuals with food donors. "A Blockchain-based Material Donation Platform" [10] proposes a blockchain-based material donation platform designed and implemented on the Ethereum platform. It addresses demand acquisition challenges and enhances the donation process transparencythrough blockchain technology.

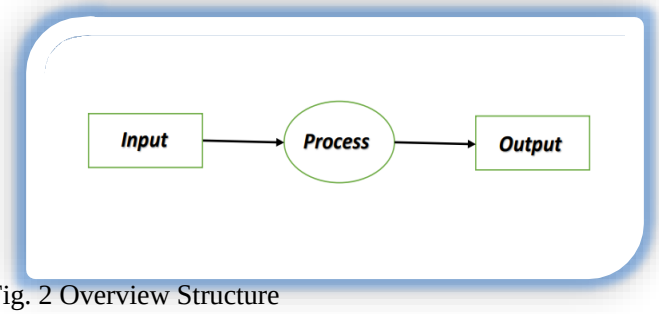

Fig. 2 Overview Structure

In summary, the referenced papers provide valuable insights and methodologies that significantly contribute to the development of the 'Donation' project.

3. METHODOLOGY

1) User Registration/Login:

The system allows users to register accounts or log in. User profiles store preferences and settings to enhance the personalized experience.

2) Donation Listings:

Donors have the ability to create listings for food, books, or clothing donations, providing details such as quantity, item name, and address. They can also upload images of the donated items to offer visual context and attract potential recipients.

3) Recipient Search and Request: Recipients can search for donation listings based on their location, preferences, and needs. The system employs geolocation services to identify the recipient's current location and display nearby donation listings. Recipients can access detailed information about available donations and submit requests for items they require.

4) Pickup/Delivery Logistics:

The system facilitates communication between donors and recipients to coordinate pickup or deliverylogistics.

Data Flow Diagram (DFD):

Below is a simplified Data Flow Diagram (DFD) depicting the flow of data and processes for the specified system functions:

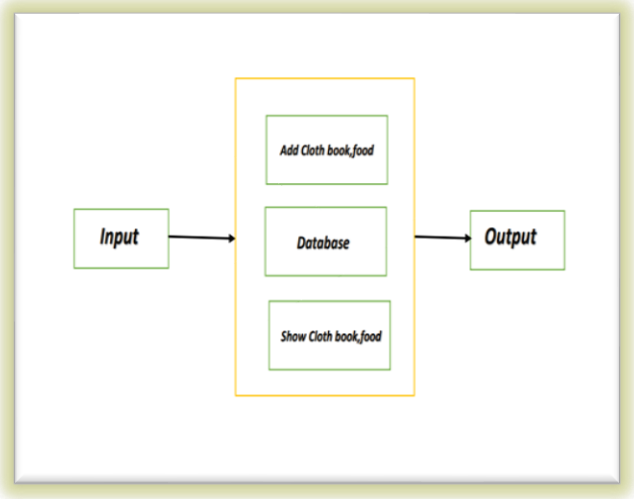

Fig.3 DFD Level 1

This DFD showcases the sequential flow of user interactions within the Food Book and Clothes Donation system, spanning from initial login to receiving notifications. It highlights the system's capability to deliver a personalized experience tailored to user preferences and location. By illustrating the seamless flow of data and processes, it provides a clear overview of the system's functionality and user journey.

Tools Used:

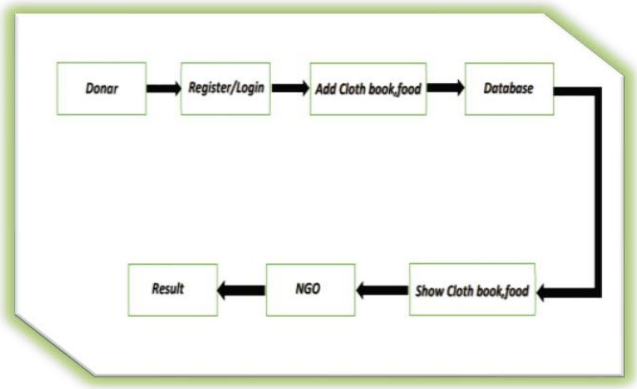

Fig. 4 DFD Level 2

The tools employed in this system include:

1) Firebase Realtime Database: This tool manages real-time data related to user accounts, donation listings, recipient requests, and facilitates communication between donors and recipients.

2) Google Maps API: Integrated for mapping functionality within the application, allowing users to view their current location, nearby shops, and obtain directions.

3) Android Studio: Utilized as the Integrated Development Environment (IDE) for Android app development, encompassing coding, debugging, andtesting.

4) Kotlin Programming Language: Employed for Android application development due to its concise syntax, null safety, and seamless interoperability with Java.

Algorithm Explanation:

1) K- Nearest Neighbor Algorithm:

The K Nearest Neighbors (KNN) algorithm is utilized in the Food Book and Cloth Donation system to pinpoint the nearest donation points (shops, drop-off centers, etc.) relative to a user's current location.

2) Geospatial Algorithm:

This algorithm optimizes the process of locating nearby

donation points by leveraging geospatial data structures and algorithms. It involves indexing donation points based on their geographical coordinates using techniques like R-trees or quad-trees for efficient spatial querying, ensuring resource optimization and accurate results for an improved userexperience.

3) Push Notification Algorithm:

The push notification algorithm enables real-time communication with users by delivering notifications regarding new donation listings, matched donation requests, and other pertinent updates.

4) Encryption Algorithm:

To uphold the security and privacy of sensitive data exchanged within the app, such as user credentials and personal information, an encryption algorithm is employed. This algorithm ensures that communication between users and the app remains secure and private.

These algorithms collectively enhance the functionality, efficiency, and security of the Food Book and Cloth Donation App, providing users with a seamless and secure donation experience.

4. SYSTEM ARCHITECTURE

The architecture of an Android application for book, food, and cloth donation is a complex framework integrating front-end UI, back-end server, user management, geolocation, and other components to establish a platform fostering charitable contributions and linking donors with recipients. Ensuring seamless user experience, robust security measures, and scalable infrastructure are paramount for the app to fulfill its mission effectively and cater to the diverse needs of its users. This multifaceted structure must harmonize various functionalities and data flows to create a cohesive and user-friendly donation platform.

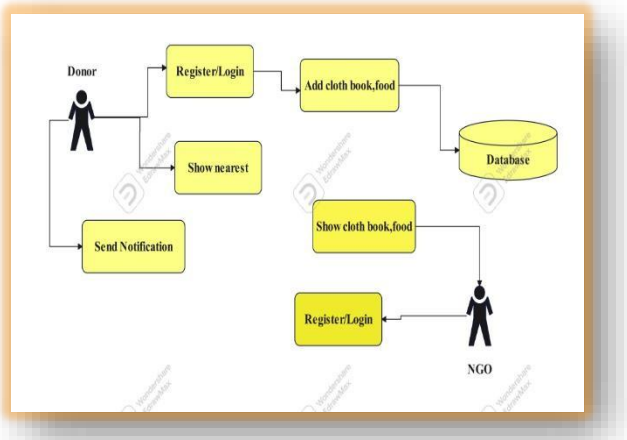

Fig.5 System Architecture

5. IMPLEMENTATION

Donor Section:

1) Donor Authentication:

Donors authenticate by logging in with their credentials (email/password) or register for a new account if they are new to the platform.

2) Donation Listing:

Donors can create listings for food, books, or clothes donations, providing item details such as quantity, condition, and description. They may also upload images if necessary. Additionally, donors can explore nearby donation points/shops, select a suitable one, and schedule drop-offs or pickups.

3) Donation History:

Donors have access to their donation history, enabling them to track past contributions including item details, donation dates, and recipient information.

Receiver Section:

1) Recipient Authentication:

Recipients (individuals or organizations in need) authenticate by logging in with their credentials or register as new users.

2) Donation Requests:

Recipients can search for donation listings based on their requirements (food, books, clothes), view available items, and submit requests for specific donations. Upon approval by the donor, recipients receive notifications and can arrange pickup or delivery.

3) Donation History:

Accessing donation history allows recipients to track received items and acknowledge the generosity of donors, fostering a sense of gratitude and accountability within the donation ecosystem..

6. RESULT:

Below is the snapshot of the application: -:

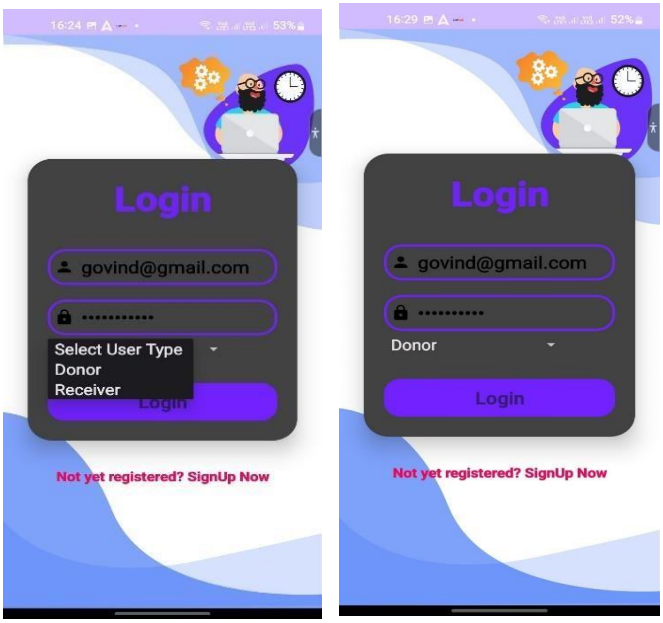

Fig.6 Login Page

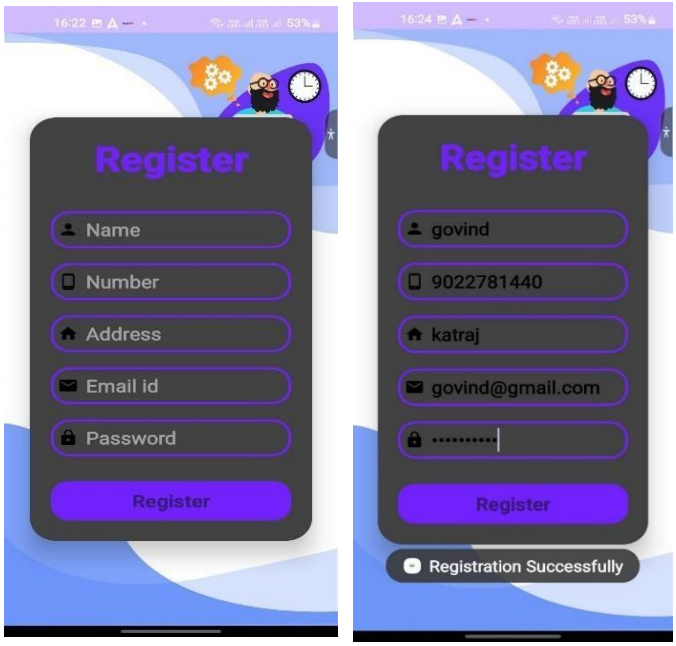

Fig.7 Registration Page

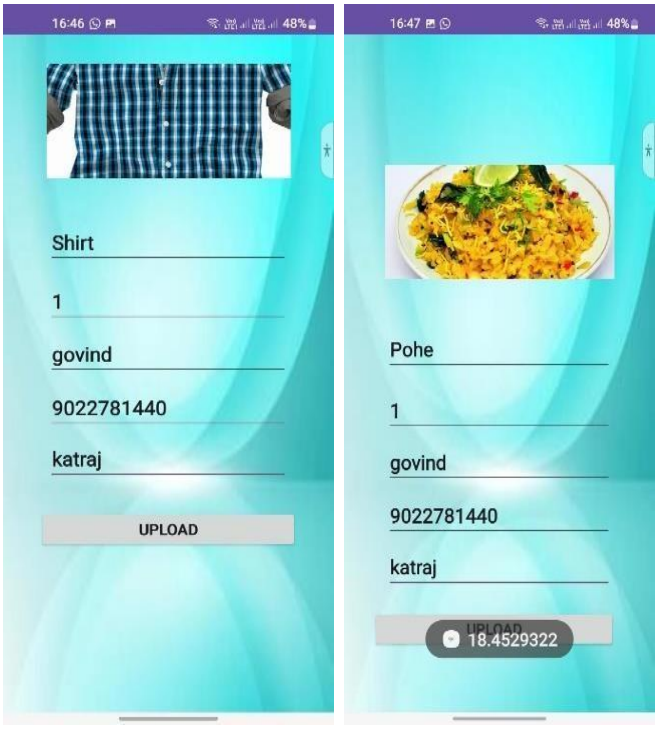

Fig.8 Adding Items

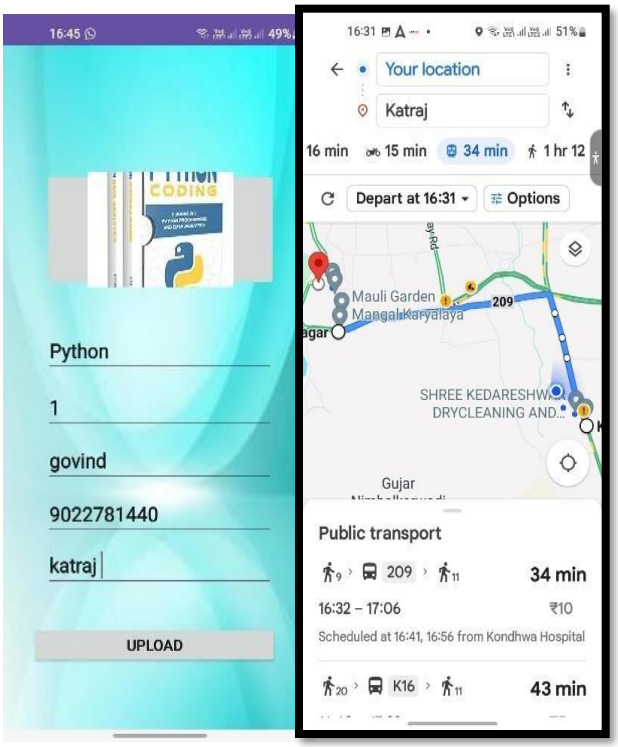

Fig.9 Navigation

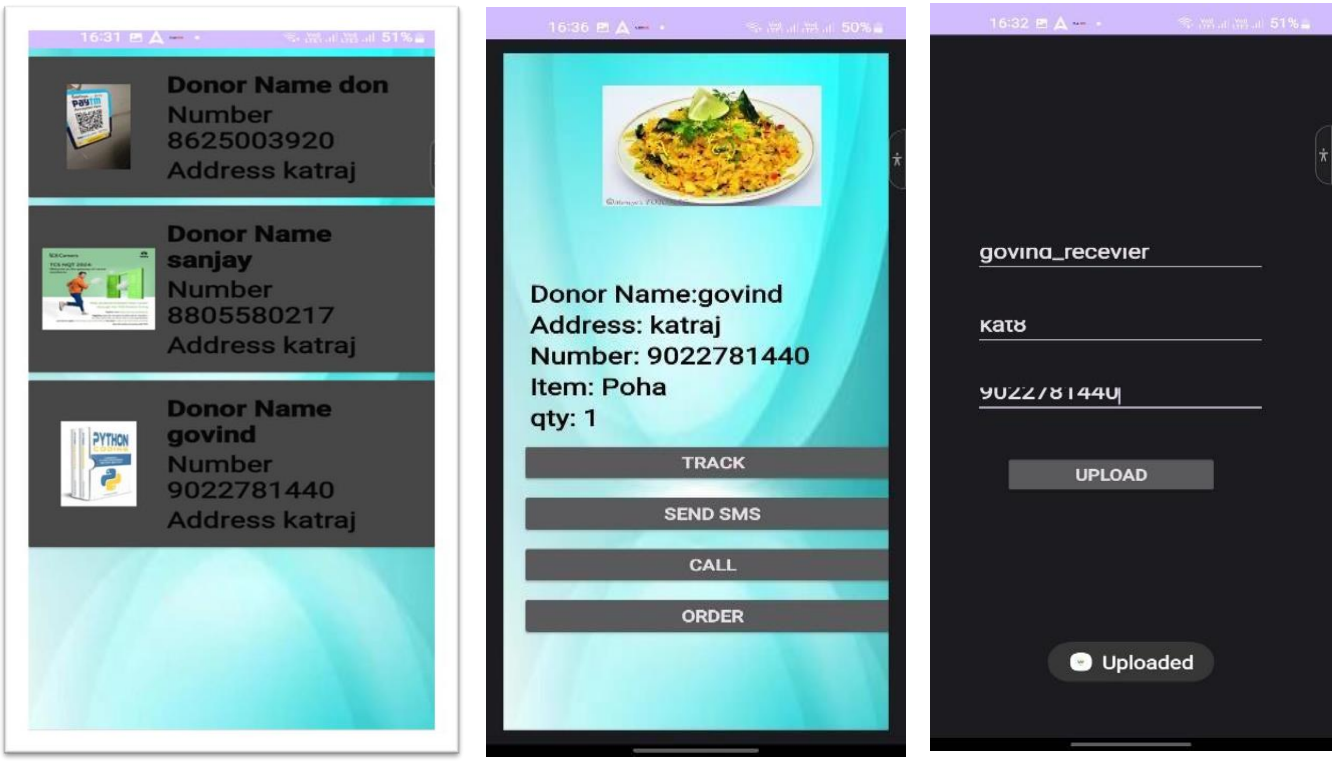

Fig.10 Donated list and Receiver functionality

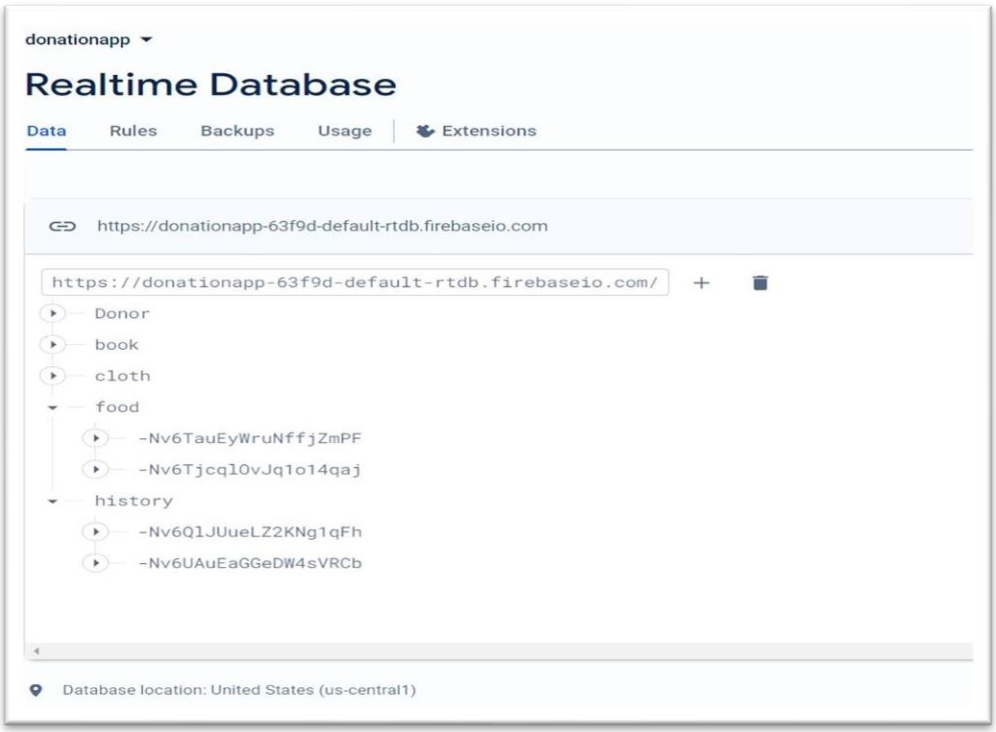

Fig. 11 Firebase

7. CONCLUSION AND FUTURE SCOPE

In conclusion, the Android application for food, clothing, and book donations provides a vital solution to addressing the immediate needs of underprivileged communities, reducing wastage, and fostering a culture of giving. Its future scope includes potential expansion to cover a wider range of essential items, partnerships with local entities, user engagement strategies, data-driven optimization, and a focus on sustainability and inclusivity. This application has the potential to make a lasting, positive impact on society by connecting donors with recipients and addressing fundamental necessities while adapting to evolving community needs and priorities.

8. REFERENCES

[1] G. Pandey and A. Kumar, "An Examination on Food, Clothes and Books Donation Based Android Application," 2022 Fourth International Conference on Emerging Research in Electronics, Computer Science and Technology (ICERECT), Mandya, India, 2022, pp. 1-6, doi:10.1109/ICERECT56837.2022.100597.

[2] D. Chhibber, A. Tripathi and S. Ray, "Do VIR: Virtualizing Food Donation Distribution through Mobile Application and Cloud-Based Supply Chain Management," 2021 IEEE International Conference on Consumer Electronics (ICCE), LasVegas, NV, USA, 2021, pp. 1-
5, doi:10.1109/ICCE50685.2021.9427641.,

[3] R. Shinta Oktaviana, D. A. Febriani, I. Yoshanaand L. R. Payanta, "FoodX, a System to Reduce Food Waste," 2020 3rd International Conference on Computer and Informatics Engineering (IC2IE), Yogyakarta, Indonesia, 2020, pp. 361- 365, doi:10.1109/IC2IE50715.2020.9274576.

[4]
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), NV, USA, 2021, pp. 0408-0413, doi: 10.1109/CCWC51732.2021.9375945.

[4] K. Kyei, A. Esterline and J. Mason, "Predicting Farms' Donations to Food Banks using the Analytic Hierarchical Process and Dempster Shafer Theory,"2020 Southeast
Con, Raleigh,NC,USA,2020,pp.18 doi:10.11 09/SoutheastCon44009.2020.9368280.

[5] N. Pugh and L. B. Davis, "Forecast and analysis of food donations using support vector regression," 2017 IEEE International Conference on Big Data (Big Data), Boston, MA, USA, 2017, pp.
3261-3267,doi: 10.1109/BigData.2017.
8258309.

[6] A. Singh and S. Sharma, "Implement Android Application For Book Donation," 2020 International Conference on Intelligent Engineering and Management (ICIEM), London, UK, 2020, pp. 137-141, doi: 10.1109/ICIEM48762.2020. 9160283.

[7] H. Wu and X. Zhu, "Developing a Reliable Service System of Charity Donation During the Covid-19 Outbreak," in IEEE Access, vol. 8, pp.154848-154860, 2020, doi: 10.1109/ACCESS.2020.3017654.

[8] A. Kumar Pandey and P. Patel, "An Android Application Development for Food Donation: A Geographical Location Based Approach," 20233rd International Conference on AdvanceComputing and Innovative Technologies inEngineering (ICACITE), Greater Noida, India,2023, pp. 2137-2140, doi: 10.1109/ICACITE57410.2023.10183202.

[9] T. Li, D. Hu, M. Li, Y. Li and S. Zheng, "A Blockchain-based Material Donation Platform," 2022 International Conference on Blockchain Technology and Information Security (ICBCTIS), Huaihua City, China, 2022, pp. 246- 254, doi: 10.1109/ICBCTIS55569.2022.00061.