

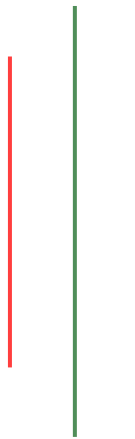


CAROLINA UNIVERSITY

School of Computing, Applied Science, & Engineering

Computer Science Department

Name of Project: Development of Mobile App- HelpDepot



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1. Abstract

HelpDepot is a mobile application. Its purpose is to build a community platform where people of the community especially neighbourhoods do exchange professionals' skills and services as a motive to help each other. HelpDepot - Empowering Communities through Collaboration and Resource-Sharing. It is an innovative mobile app designed to bridge the communication gap within communities by providing a unified platform for residents to share resources, seek assistance, and engage in collaborative efforts. This proposal presents the app's mission, key objectives, and development plan aimed at fostering stronger, more resilient, and connected communities. The app leverages user-friendly technology to streamline communication and collaboration, empowering individuals and businesses to contribute to the collective well-being of their community.

1.1 Scope

The HelpDepot mobile application aims to create a community-driven platform where individuals can exchange professional skills and services within their neighborhoods. It fosters collaboration, making it easier for people to seek and offer help, strengthening local connections and support networks.

1.2 Technologies Used

HelpDepot is developed using React Native for the frontend, ensuring a seamless cross-platform experience. The backend is powered by Node.js with Express, while MySQL is used for data storage. Axios facilitates API communication, and JWT authentication secures user access.

1.3 Key Findings:

The development of HelpDepot highlighted the importance of community engagement in skill and service exchange. User feedback emphasized the need for a simple and intuitive UI for better accessibility. Implementing secure authentication and real-time updates significantly improved user trust and interaction within the platform.

2. Acknowledgments

I sincerely thank our university, mentors, and peers for their guidance and support throughout the development of HelpDepot. Special appreciation goes to our instructors for their valuable insights and feedback, which helped shape the project. We also acknowledge the community members whose input inspired and refined the app's features.

3. Introduction

3.1 Background of the Project

HelpDepot is basically a community app that provides help within the community. It's like give and take between the neighbors. It involves the concept that a community has different individuals working with multiple professions. So, why don't they help each other? For example: There could be a doctor staying beside a car mechanic neighbor. There are situations where a car mechanic needs help, guidance, support from the Doctor's family and so do the Doctor's family. Hence, there can be collaboration between neighbors in many possible ways. So, HelpDepot can be an intermediary between them. Let's be social and help each other.

3.2 Problem Statement

In many communities, individuals possess valuable skills but lack a platform to share them effectively. Finding reliable local services can be challenging, and professional help is often expensive or inaccessible. HelpDepot aims to bridge this gap by providing a community-driven platform where neighbors can exchange skills and services, fostering collaboration, trust, and mutual support within local communities.

3.3 Objectives

The primary objectives of the HelpDepot mobile application are:

- To create a community-driven platform for exchanging professional skills and services.
- To foster collaboration and strengthen neighborhood connections.

- To provide a user-friendly and secure environment for skill-sharing.
- To implement an efficient system for users to request and offer help seamlessly.
- To enhance community support through real-time interaction and engagement.

3.4 Scope of the Software

Functionalities:

- Users can register, create profiles, and list their skills or services.
- A request-and-offer system allows users to seek or provide help.
- Secure authentication ensures user safety and data protection.
- Real-time notifications keep users informed of requests and responses.
- A rating and review system helps build trust within the community.

3.5 Limitations:

- The platform is currently limited to local community interactions.
- Users must have an internet connection to access services.
- Verification of skills and service quality depends on user ratings and reviews.
- The app does not facilitate direct payment transactions between users.

3.6 Significance of the Study

HelpDepot addresses the growing need for community-based skills and service exchange by providing a digital platform that fosters local collaboration. This project is significant as it:

- Encourages stronger neighborhood connections by promoting mutual assistance.
- Provides an accessible and cost-effective alternative to traditional service providers.
- Empowers individuals by giving them opportunities to showcase and utilize their skills.
- Enhance community resilience by creating a support network for various needs.
- Demonstrates the potential of technology in solving real-world social challenges.

4. Literature Review, System Analysis and Design

4.1 Literature Review:

The development of community-based mobile applications has gained significant attention in recent years, driven by the increasing demand for local connectivity and mutual support. Various studies highlight how digital platforms can strengthen neighborhood ties by enabling residents to share resources, skills, and services.

Research on Collaborative Economy and Peer-to-Peer (P2P) platforms shows that apps like Nextdoor, TaskRabbit, and OfferUp have successfully promoted community engagement and resource exchange. These platforms demonstrate the value of trust, user verification, and ease of communication in building sustainable local networks.

The concept of User-Centered Design (UCD) is also crucial in developing such applications. Prior studies emphasize that intuitive interfaces and personalized experiences significantly impact user satisfaction and retention. HelpDepot incorporates these principles by focusing on a simple, accessible interface tailored for diverse users.

Moreover, the use of mobile technology and real-time systems in community apps has proven effective in facilitating fast and responsive interactions. Literature supports the integration of features like push notifications, secure authentication, and feedback systems to maintain user trust and engagement.

In summary, the literature supports the idea that a well-designed mobile platform can enhance local collaboration, promote skill-sharing, and create a supportive environment—goals that align closely with the vision of HelpDepot.

5. Prerequisites

5.1 Theoretical Framework

HelpDepot is based on the principles of Collaborative Consumption Theory, which emphasizes sharing resources within a community to maximize utility. The project also applies Social Exchange Theory, where individuals engage in mutual service exchange based on trust and reciprocity. Additionally, this principle will guide the app's user-friendly design, ensuring accessibility and ease of use for all users.

5.2 Summary of Related Works

Some popular apps like Nextdoor and TaskRabbit gave us ideas for building HelpDepot. Nextdoor helps neighbors talk and share local news, while TaskRabbit lets people find local help for tasks like cleaning or repairs.

These apps show useful features like secure sign-in, skill listings, chat options, and user reviews are for making sure people can trust each other. But most of them are focused on business or paid services.

HelpDepot takes a different approach. Instead of focusing on money, it's designed to help people share their skills and help each other for free. This helps build stronger bonds in the community and encourages a spirit of support and cooperation.

5.3 System Requirements:

- **Operating System:** Android (5.0 and above), iOS (12.0 and above)
- **Frontend:** React Native (for cross-platform mobile development)
- **Backend:** Node.js with Express
- **Database:** MySQL for data storage
- **Authentication:** JWT for secure user authentication
- **API Requests:** Axios for HTTP communication
- **Development Tools:** Visual Studio Code, Android Studio (for Android)
- **Version Control:** Git (for source code management)

5.4 Hardware Requirements:

- **Development Machines:** Any system capable of running Node.js, React Native, and Android Studio (Windows)
- **Mobile Devices:** Android or iOS devices for app testing and deployment
- **Database Hosting:** Server capable of hosting MySQL (e.g., AWS, DigitalOcean, or local server)
- **Network:** Stable internet connection for API calls and real-time updates

5.5 Software Requirements:

• Functional and Non-functional Requirements

Functional Requirements:

- User registration and login system
- Create, view, edit, and delete service/skill listings
- Request help or offer services
- Real-time notifications for requests and responses
- User profile management
- Review and rating system for users
- Secure authentication using JWT

Non-functional Requirements:

- The app must be responsive and user-friendly
- Data should be stored securely in the backend
- The system should be scalable for more users
- Should work on Android.
- Must provide fast response times for API requests

User Stories:

- *As a user*, I want to sign up so I can join the platform.
 - *As a user*, I want to post my skills so others can see and contact me.
 - *As a user*, I want to request help for a task I can't do myself.
 - *As a user*, I want to message other users to coordinate help.
 - *As a user*, I want to rate someone after they help me.
-

System Architecture

HelpDepot follows client-server architecture:

- **Frontend (Client):** Built using React Native to run on both Android and iOS
 - **Backend (Server):** Built with Node.js and Express to handle logic and data
 - **Database:** MySQL used to store users, posts, requests, and reviews
 - **API Communication:** Axios is used for sending requests between the frontend and backend
 - **Authentication:** JWT is used for secure user login sessions
-

• Database Design

Tables include:

- **Users** (id, name, email, password)

- **Posts** (Post Id)

Relationships:

- One user can have many posts

• Wireframes and User Interface Design

Wireframes were designed to ensure a simple and clean user interface. Key screens include:

- **Login / Signup Page**
- **Home Page** showing latest posts or requests
- **Create Post Page** to add new skill or help request
- **Profile Page** for managing user info and listings

6. Software Development and Implementation

6.1 Development Tools and Technologies

The following tools and technologies were used:

- **Frontend:** React Native (for cross-platform mobile development)
- **Backend:** Node.js with Express (for handling API requests)
- **Database:** MySQL (to store users, posts, and requests)
- **API Communication:** Axios
- **Authentication:** JWT (JSON Web Token)
- **Development Tools:** Visual Studio Code, Android Studio, Xcode
- **Version Control:** Git and GitHub

6.2 Software Development Methodology

- Regular testing and feedback
- Continuous improvement of features
- Easy collaboration and flexibility during development

6.3 System Modules and Features

1. User Module:

- Sign up, login, logout
- Profile management

2. Post Module:

- Create, edit, delete, and view service/skill posts

6.4 Code Implementation

The code was implemented using:

- **React Native components** for UI screens (SignInScreen, SignupScreen, HomeScreen, etc.)
- **Axios** to handle HTTP requests from frontend to backend
- **Node.js/Express** to create RESTful APIs (e.g., /api/signup, /api/posts)
- **MySQL queries** to manage data (inserting, updating, retrieving)
- **JWT tokens** for verifying users before allowing actions like posting or requesting help

6.5 Security Measures

To protect user data and ensure safe usage:

- **Password hashing** using bcryptjs
- **JWT authentication** to secure user sessions
- **Input validation** to prevent SQL injection and malicious data
- **CORS policy** implemented to control API access
- **Error handling** added to prevent application crashes and misuse

7. Testing and Evaluation

7.1 Testing Strategies

The app was tested using both manual and automated methods. Insomnia was used to test all API endpoints for correct responses, error handling, and authentication. On the frontend, manual testing was done to validate navigation, form validations, and UI responsiveness on different devices. Edge cases like invalid logins, empty posts, and unauthorized actions were carefully checked. Continuous debugging and console logging helped identify and fix integration issues efficiently.

7.2 Test Cases and Results

	Test Case	Description	Expected Result	Actual Result	Status
1	1. User Sign Up with valid data	Register new user with valid details	Account created successfully	Account created	✓ Pass
2	2. Login with incorrect password	Try logging in with wrong password	Show error message	Error displayed	✓ Pass
3	3. Create Post without login	Attempt to create post without being logged in	Prevent post creation	Unauthorized error	✓ Pass
4	4. Like a post	Click like button on a post	Post like count increases	Like added successfully	✓ Pass
5	5. Comment with empty text	Submit a comment with empty input	Show validation error	Error message shown	✓ Pass
6	6. Logout function	Tap logout to exit session	Clear token and return to home	Logged out successfully	✓ Pass

7.3 Performance Evaluation

The HelpDepot app performed well during testing with minimal latency in API calls and smooth UI transitions. The backend handled concurrent requests efficiently, and data fetching from the MySQL database was optimized using indexed queries. Token-based authentication worked securely without noticeable delays. On mobile devices, the app-maintained responsiveness and stability even with increased user activity. Overall, the system met performance expectations under typical usage.

7.4 User Feedback and Improvements

User feedback highlighted that the app was easy to navigate, and the features were useful for community interaction. However, users suggested clearer post categories and improved comment visibility. Based on this, UI layouts were refined, and the comment section was made more intuitive. Minor bugs related to login errors and post refresh were fixed. Overall, feedback helped improve usability and polish the final version of HelpDepot.

8. Conclusion and Future Enhancements

8.1 Summary of Findings

The HelpDepot app effectively bridges the gap between community members by enabling skill and service sharing. User authentication with JWT works reliably, and the backend successfully handles CRUD operations for posts, likes, and comments. Real-time data fetching ensures smooth user experience. The app's design proved user-friendly across different devices, making it suitable for local community engagement. Overall, the project met its functional and social objectives.

8.2 Challenges Faced

During the development of HelpDepot, integrating user authentication and managing JWT tokens securely was a major challenge. Connecting the React Native frontend with the Node.js backend and MySQL database required careful API handling. Debugging issues with AsyncStorage and ensuring real-time post updates also took significant effort. UI design for a clean and responsive layout was another area that required multiple iterations. Despite these hurdles, the project was completed successfully with consistent testing and improvements.

8.3 Conclusion

HelpDepot promotes the idea of mutual aid by connecting neighbors with diverse professional skills. It solves the problem of finding reliable, affordable help within a community.

The platform encourages collaboration, trust, and local engagement. By empowering people to help one another, it builds stronger social bonds. HelpDepot is more than an app—it's a step toward a connected, supportive community.

9. Appendices

Appendix A – Project Screenshots

- Login and Sign Up screens
- Home screen showing posts
- Create Post and Edit Post screens
- Comment and Like features
- Logout and navigation structure

Appendix B – API Endpoints

Endpoint	Method	Description
/signup	POST	Register new users
/signin	POST	Authenticate users and return token
/posts	GET	Retrieve all posts
/posts	POST	Create a new post
/posts/:id	PUT	Update a specific post
/posts/:id	DELETE	Delete a specific post
/posts/:id/comments	POST	Add comment to a post
/posts/:id/like	POST	Like a post

Appendix C – Tech Stack

- **Frontend:** React Native
- **Backend:** Node.js with Express
- **Database:** MySQL
- **Authentication:** JWT (JSON Web Token)
- **API Testing:** Insomnia

Appendix D – Tools Used

- PyCharm Version 2023.2.3 for code editor
- MySQL Workbench
- Expo Go for mobile preview
- Mi Note 9 Pro Max - android device
- Git for version control
- ChatGPT for guidance and corrections

10. Reference

Botsman, R., & Rogers, R. (2010). *What's Mine Is Yours: The Rise of Collaborative Consumption*. HarperBusiness.

Homans, G. C. (1958). Social behavior as exchange. *American Journal of Sociology*, 63(6), 597–606. <https://doi.org/10.1086/222355>

Nielsen Norman Group. (2021). *User-Centered Design Basics*. Retrieved from <https://www.nngroup.com/articles/user-centered-design/>

React Native. (n.d.). *React Native · A framework for building native apps using React*. Retrieved from <https://reactnative.dev/>

Welling, L., & Thomson, L. (2017). *PHP and MySQL Web Development* (5th ed.). Addison-Wesley.

Express.js. (n.d.). *Fast, unopinionated, minimalist web framework for Node.js*. Retrieved from <https://expressjs.com/>

Nextdoor. (n.d.). *Nextdoor: Connect with your neighborhood*. Retrieved from <https://nextdoor.com/>

11. Poster

HelpDepot

Presented By: Mahesh Karki
17 April 2025

A mobile app that you can trust

Abstract

HelpDepot is a mobile application. Its purpose is to build a community platform where people of the community especially neighbourhoods do exchange professionals' skills and services as a motive to help each other. HelpDepot - Empowering Communities through Collaboration and Resource-Sharing. It is an innovative mobile app designed to bridge the communication gap within communities by providing a unified platform for residents to share resources, seek assistance, and engage in collaborative efforts.



Objectives

- To create a community-driven platform for exchanging professional skills and services.
- To foster collaboration and strengthen neighborhood connections.
- To provide a user-friendly and secure environment for skill-sharing.
- To implement an efficient system for users to request and offer help seamlessly.
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Introduction

HelpDepot is basically a community app that provides help within the community. Its like give and take between the neighbors. It involves to the concept that a community has different individual working with multiple professions. So, why don't they help each other? For example: There could be a doctor staying beside a car mechanic neighbor. There are situations where a car mechanic needs help, guide, support from the Doctor family and so do the Doctor's family. Hence, there can be collaboration between neighbors in many possible ways. So, HelpDepot can be intermediary between them.

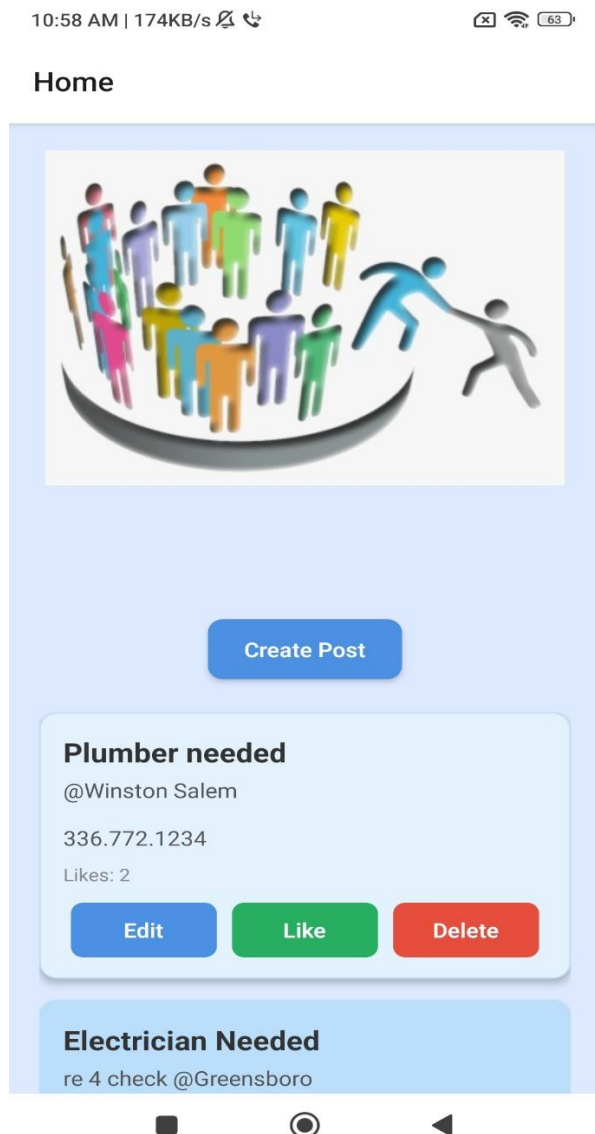
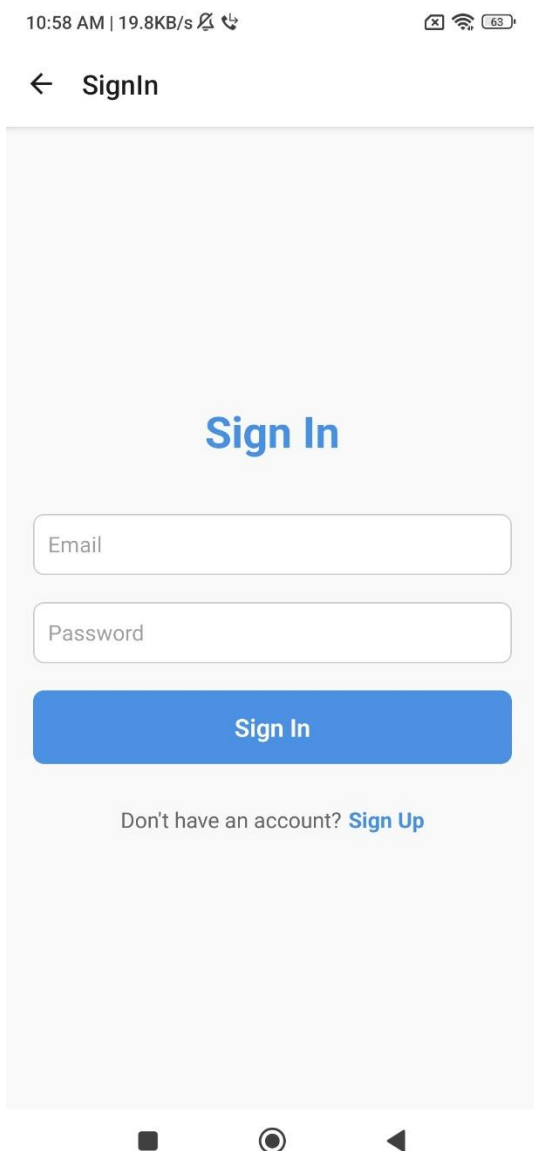
System Architecture

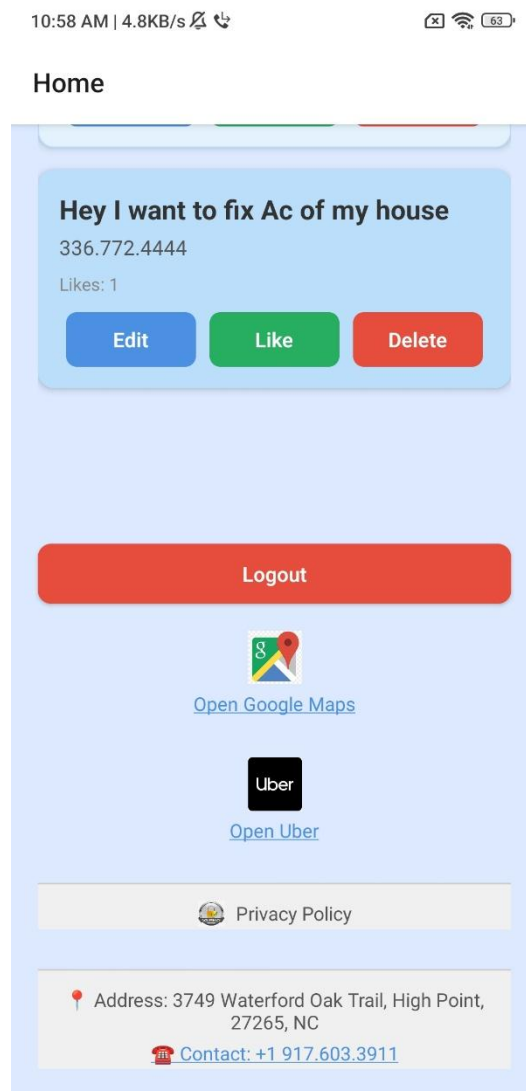
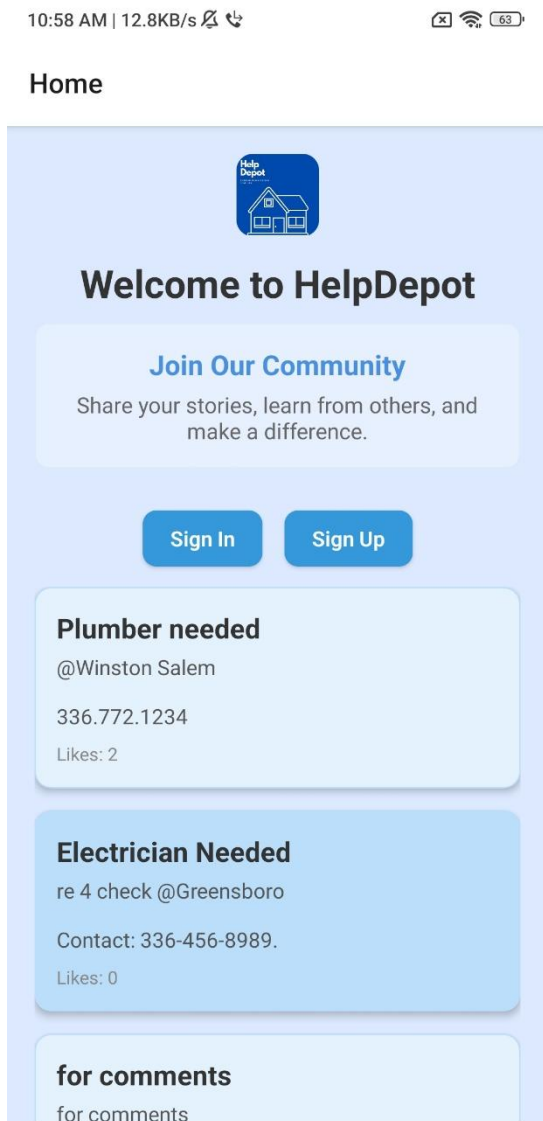
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12. Screenshots of App running on Android Device





The End