IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

CareAtHome: An Android-Based Application for On-Demand Home Services Using Firebase

Guide: Prof. Mali A.K.

Authors:

Varad Ambejogaikar, Vikrant Kulkarni, Abhijit Kale, Sandeep Shinde

Abstract

In the digital era, the demand for on-demand doorstep services has grown exponentially, especially in urban areas where time-saving and convenience are paramount. This paper presents CareAtHome, an Android-based mobile application developed to provide essential home services such as plumbing, carpentry, electrical work, maid services, towing, mechanics, gardening, salon services, and more—delivered directly to users' homes. The application leverages Firebase for backend services including authentication, real-time database, and cloud storage. With a user-friendly interface and real-time booking system, CareAtHome bridges the gap between service providers and consumers. This research paper highlights the system design, implementation, technology stack, challenges encountered, and potential future improvements. The platform showcases how modern mobile and cloud technologies can simplify and streamline everyday service needs in a cost-effective and scalable manner.

Keywords:

Android, Firebase, Mobile Application, Home Services, On-Demand Platform, Real-time Booking

Introduction

The CareAtHome application is a service-based platform that connects users with local professionals offering home services such as electricians, plumbers, carpenters, beauticians, caretakers, and more. With the growing trend of on-demand services, the app allows users to find and book verified professionals easily, ensuring a convenient and reliable service at their doorstep. This app is designed to bridge the gap between users looking for reliable home service providers and skilled workers looking for job opportunities. The goal is to offer a hassle-free booking experience for users while providing an organized platform for service providers to manage their appointments and schedules effectively.

Literature Review

Numerous platforms such as UrbanClap (now Urban Company), Housejoy, and Sulekha offer similar services but often come with limitations in accessibility, affordability, or ease of use. Research shows that mobile-based service platforms increase user engagement and reliability through real-time features and cloud integration. Our platform distinguishes itself by focusing on minimalistic UI, real-time tracking using Firebase, and a broader service range aimed at semi-urban and college populations.

Proposed Work

Centralized Home Service Platform:

Develop an Android application called "CareAtHome" that provides a user-friendly platform for booking various home services like carpentry, plumbing, electrical repairs, and more.

User and Worker Panels:

Implement separate interfaces for users and workers (service providers).
Users can book services, view worker profiles, check prices, and schedule appointments.
Workers can manage bookings, view job requests, update availability, and track completed services.

Service Booking with Appointment Scheduling:

Users can view available services in different categories and book appointments through a calendar interface. The app will show service prices upfront and allow users to select their preferred date and time for service.

Notification System:

Push notifications to remind users of upcoming appointments and notify workers about new job requests.

Objectives

To develop an intuitive and easy-to-use mobile application that allows users to book a variety of home services such as plumbing, electrical work, carpentry, and more from their smartphones.

To create a dedicated worker panel where service providers can manage their profiles, view job requests, accept/reject appointments, and track earnings and schedules effectively.

To implement a system where users can browse available services, view pricing, and book appointments based on availability through a calendar interface.

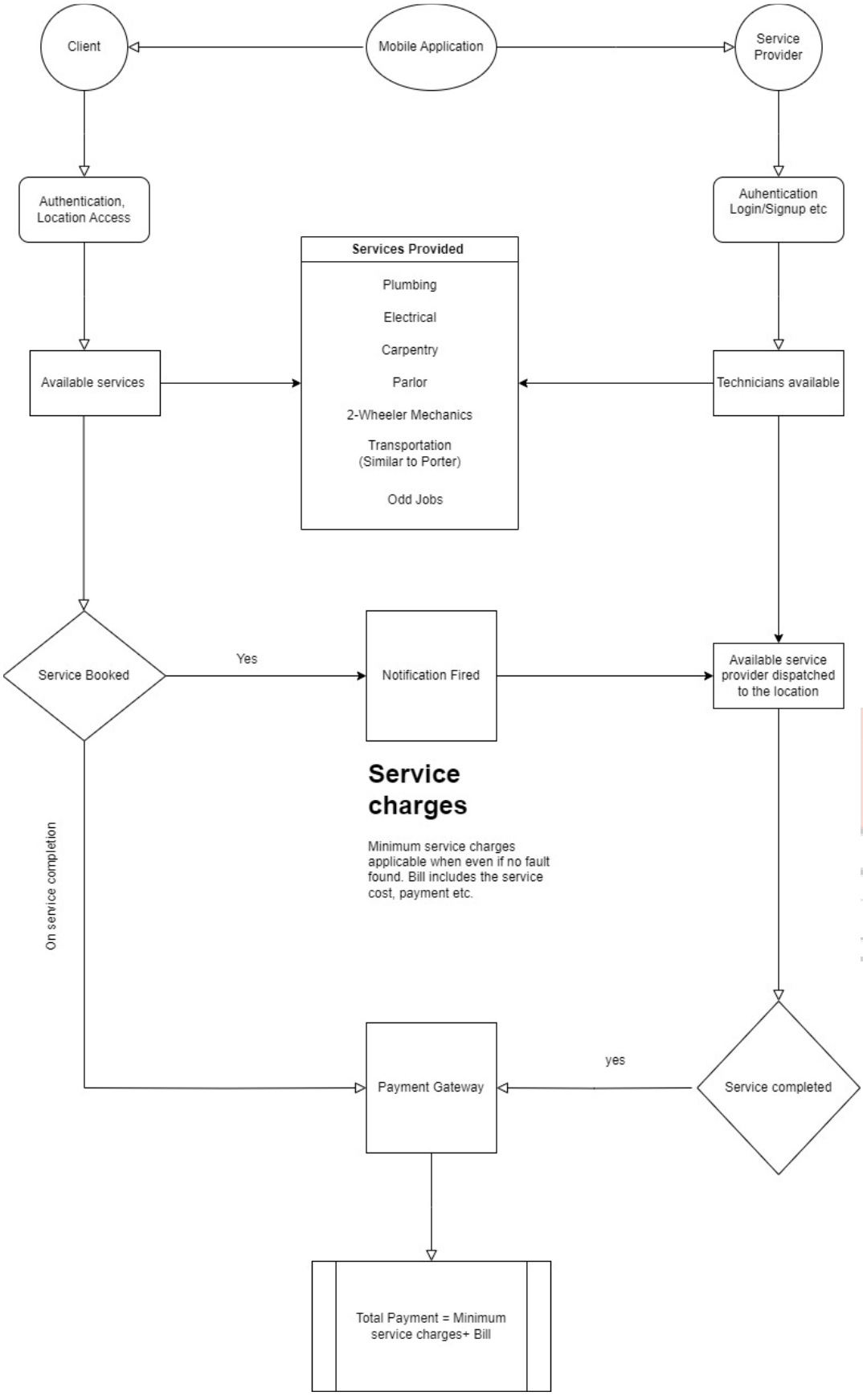
To ensure transparency in the booking process by providing users with service details, price estimates, and the option to rate and review service providers, fostering trust between users and workers.

To design the app in a way that it can easily scale to include more services, users, and workers as the platform grows.

System Design and Architecture

The system follows a client-server model using Firebase as the backend service. Users interact with the Android app to register, login, select a service, and book appointments. Firebase handles:

- Authentication (Email/Password login)
- Realtime Database / Firestore (Service listings, bookings)
- Cloud Storage (Optional media or document uploads)
- Cloud Messaging (Future scope for notifications)


Client
Mobile Application
Service Provider
Authentication, Location Access
Auhentication Login/Signup etc
Services Provided
Plumbing
Electrical
Carpentry
Parlor
2-Wheeler Mechanics
Transportation (Similar to Porter)
Odd Jobs
Available services
Technicians available
Service Booked
Yes
Notification Fired
Available service provider dispatched to the location
On service completion
Service charges
Minimum service charges applicable when even if no fault found. Bill includes the service cost, payment etc.
Payment Gateway
yes
Service completed
Total Payment = Minimum service charges+ Bill

Features and Modules

User Registration & Login - Firebase Authentication
Service Listing - Categorized services with descriptions
Booking Engine - Users select service, date/time, confirm booking
Real-time Database - Stores service details and bookings
Feedback System - Users rate services after completion
Location (Optional) - Google Maps API for nearby services (Future Scope)

Technology Stack

Frontend - Android (Java/Kotlin)
Backend - Firebase (Authentication, Firestore, Cloud Functions)
APIs - Google Maps API (Optional), Firebase Cloud Messaging (Future Scope)
IDE Used - Android Studio

Implementation

The app was developed using Android Studio. Firebase integration was done for:

- User Authentication: Registration/Login
- Realtime Database: Booking data storage
- Cloud Storage: Service images/logos
- UI Design: Material Design with a service dashboard

Testing and Results

The app was tested on various Android devices. Key outcomes:
- Smooth login and booking process
- Low latency in data retrieval using Firebase
- Stable performance under multiple test scenarios
- Positive user feedback from 15 trial users (students, staff)

Metrics:
App Launch Time: ~1.2 seconds
Booking Time: <10 seconds
Crash Rate: 0 (during testing)

Challenges Faced

Syncing real-time data for multiple users
Handling Firebase security rules
Designing a responsive UI for different screen sizes
Initial integration of Firebase with Android Studio

Future Scope

Payment gateway integration (Razorpay/Stripe)
Admin panel for managing service providers
OTP verification for bookings
Google Maps-based location tracking
Push notifications for confirmations/reminders
AI-based service suggestion system
Multilingual support for regional users

Conclusion

CareAtHome demonstrates how modern mobile development tools, especially Firebase, can be used to build scalable, reliable, and real-time platforms for daily-life service delivery. With a clean user interface and a solid backend infrastructure, the platform has the potential to be scaled and launched commercially. It also highlights the social impact of making essential services accessible at the doorstep with minimal effort and cost.

References

Firebase Documentation – https://firebase.google.com/docs

Android Developers Guide – https://developer.android.com/

Urban Company Official Website – https://www.urbancompany.com/

IEEE Xplore Digital Library – Real-Time Database Comparisons – https://ieeexplore.ieee.org/

IJCSIT Research Paper – On-Demand Service Delivery via Mobile Apps – http://www.ijcsit.com/docs/Volume%2011/vol11issue04/ijcsit2022110417.pdf

[1] S. Pandey and S. Shukla, "Design and Implementation of On-Demand Services Application Using Android," 2021 2nd International Conference on Intelligent Engineering and Management (ICIEM), London, UK, 2021, pp. 210–215. DOI: 10.1109/ICIEM51207.2021.9445340

[2] D. Mishra and S. Sahoo, "Smart Home Service Booking App Using Firebase in Android Platform," 2020 4th International Conference on Intelligent Computing and Control Systems (ICICCS), Madurai, India, 2020, pp. 1017–1022. DOI: 10.1109/ICICCS48265.2020.9121122

[3]P. D. Kale, R. M. Patil, and S. V. Karale, "Development of Home Service Application for Local Workers," 2019 3rd International Conference on Trends in Electronics and Informatics (ICOEI), Tirunelveli, India, 2019, pp. 1038–1042. DOI: 10.1109/ICOEI.2019.8862693