

Geo-Location Based Emergency Ambulance Booking Service using Android

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Abstract: *In India, a Person Dies Every Moment Because He Did Not Receive Proper Health Care in an Emergency. Despite All the Facts, We Know the Importance of Emergency Health Care in Such a Situation. In Such a Situation, an Ambulance is Needed. Above All, Patient and Ambulance Response Times Must Be Covered. The Ambulance is an Important Part of the First-aid Service. Usually, People Who Have a Limited Number of Emergency Contacts and Work in a Few Different Areas Are Not Available to Other People in the Area. Sometimes Their Own Number is Not Available; It Can Happen as a Waste of Time, Which is Dangerous for the Health of the Patients and Leads to Worse Conditions. In an Emergency, if the Patients Are in a Residential Area, That is Good, but if Not, It is Very Difficult to Give Their Location to the Ambulance Driver. If the Ambulance Driver Has the Current Location of the Patients, the Driver Can Arrive as Soon as Possible. The System Displays All Available Ambulances in Their Location. If You Accept the Driver's Request, at That Moment the Driver Will Know the Patient's Name and Other Things. The Ambulance Driver Must Accept the Reservation and Receive the Patient's Instructions. For the Ambulance to Arrive as Soon as Possible.*

Keywords: Emergency, Ambulance, First-aid, XML, API, UI, NOSQL

I. INTRODUCTION

Medical Science is One of the World's Most Valuable Gifts. The Medical Field is Increasing Day by Day, Especially in Medicine. India is Known as the "World Pharmacy," and We Produce Roughly 75% of the World's Pharmacy. India Produces 50,000 Doctors Per Year. But One in 10 Patients in India Dies on the Way to the Hospital Because Some Conditions, Like Ambulances, Get Stuck in Traffic, and Sometimes Ambulances Do Not Get Proper Information About Patients[1][4].

This is a Very Problematic Medical Reaction in Any Situation. This is Because There is No Centralized System for Ambulance Systems With Specialist Treatment. A Powerful, Basic and User Friendly Crisis Reaction Framework With Important Connections Could Be a Help for Emergency Situations.

In Any Case, Sometimes the Requirements of Patients and Ambulance Drivers Can Be Solved, as Well as Medical Service[5].with the Quick Changing Technology With Android, Versatile Taxi Booking Has Previously Demonstrated Its Administration at Entryway Step Feature[7]; Such Administrations in the Wellbeing Area Are Predicted to Make a Scoring Goal.

The Purpose Of This Framework To Ensure The Straightforwardness, Viability, And Responsive Elements, Is An Android Application That Serves The Client To Find Nearby Rescue Vehicles And Emergency Clinics[2]. It Will Help The Client(Patients) To Save The Ambulance Time So That The Bother Could Be Headed To The Dispensary On Time, Saving His Life.

The Patient Can Follow the Rescue Vehicle in View of Their Area. This Task Will Help Individuals, as There Are a Few Incidents in the City, Patients Experiencing Pregnancy, Icu, Pulse, Dialysis, Sensitivities and, Will Crisis Wellbeing Reaction Office to the Victims.

II. RESEARCH METHODOLOGY

The Proposed Application is Implemented Using Java, XML and Firebase Workbench[4]. The Application Was Tested on an Emulator and Physically on the Phone to Determine the Functionality. There is No Existing and Centralized System but There is a Particular Hospital Application. This Call Proposes Emergency Ambulance Booking.

1. **Modular Design:** The Functionality of the Proposed Application is Divided Into a Number of Sub Modules. The Modules to Be Taken Into Account Are User, Driver and Request. These Modules While Integrated Together Give the Functionality Desired Out of the Application.
2. **User:** In This Module the Patients(User) Information is Processed. This Information Includes Giving Email and Password to Login to This User UI. There is an Authentication on Firebase Inbuilt Function Which Helps to Login.
3. **Driver:** In This Module the Ambulance Driver Information is Processed Like Their Ambulance Number. This Information Includes Giving Email and Password to Login to This Driver UI. There is an Authentication on Firebase Inbuilt Function Which Helps to Login.
4. **Payment:** In This Sub Module Payment Options for Booking an Ambulance. Payment Would Be Through Upi. We Do Not Have Cash on Delivery Because of the Transparency of Transactions. The Fair Amount of Ambulance Can Be Decided by the User as Per Their Convenience. We Use Razor Pay for an Android Application That is Free for Use.
5. **Request:** In This Sub Module Request Options for Booking an Ambulance. Request Would Be Through a Slide Button So That Driver Can Get Rest as Per Their Time and It Will Be Available for When It Wants to. The Fair Amount of Ambulance Can Be Decided by the User So It Displays to the Driver After Selecting. We Use Razor Pay for an Android Application That is Free for Use.

2.1 Development Tools

The Entire Development Process Has Been Subdivided Into Two: the Front End Development and the Backend Development. The Front End Comprises of the Visually Visible Parts Such as the Main Page, User Login Page, User Sign in Page, Driver Login Page, Driver Sign in Page, Map Activity Page, User Profile Page, Driver Profile Page, Notification Page, Razor Pay Page. The Back End Contains the Database and Its Interaction With the Front-end.

Front End Development:

The Front End Was Initially Raw Coded Using Java. It is Class Based and Object Oriented Programming Whose Syntax is Influenced by C++. The Primary Goals of Java is to Be Simple, Object-oriented, Robust, Secure and High Level. Java Code Was Simply Mixed With the eXtensible Markup Language (XML) Code. eXtensible Markup Language is the Language Used to Design the Android of an Application. A Static Page is an XML Document That is Stored on the Firebase Database Server.

This Was Performed by eXtensible Markup Language (XML). XML is a Style Sheet Language Used for Describing the Look and Formatting a Document Written in a Mark-up Language. These XML Files Are Linked With the Class Files With. Java is a Client Side Scripting Language Most Commonly Used as Part of Android and Its Implementations Allow Client Side Scripts to Interact With the User, Control the Android and Alter the Document Content Which is Displayed.

For Example, in an Android Application for the User Registration, the System Asks to Provide Their Details Which Contains Their Name, Email Address, Phone Number, Etc. If They Missed Any of the Details, Then Immediately the Application Asks Them to Fill the Particular Field. This is Implemented and Handled by Java.

Backend Development:

Database Management System "DBMS" Provides Backend Support. A Database Management System is Basically Software That Allows Administrators to Create Databases and Add, Delete, Modify, and Update Tables. For Example, a Table Can Contain Different Types of Data.

Integers, Variable Characters, Etc. For This Application, We Chose the Firebase DBMS to Hold the Database. Firebase is a Realtime Cloud-hosted NOSQL Database.

Database Design:

One of the Most Important and More Challenging Tasks is Database Design. The Information Passed by the User While Registering in the Android Application is Stored in the Database. With the Same Information for the Driver Too. Moreover, if Admin Updates Any of Them, Updates Take Place in the Database. So the Program Has a Lot to Do With the Database.

Any Query is Run on the Database by No Structured Query Language (NOSQL). As Stated Earlier That NOSQL Has Some Useful Features One of Them is the Support to Connect the Database and Run Without Queries. The Following Diagram Explains the Details of the Database Design [3].

The System Has Three Tables in the Database Namely: User, Request, Driver Three Tables Are Shown in the Diagram. The Table Entitled "Emergency Ambulance System".

Key is the Unique Key for This User and Driver Table.

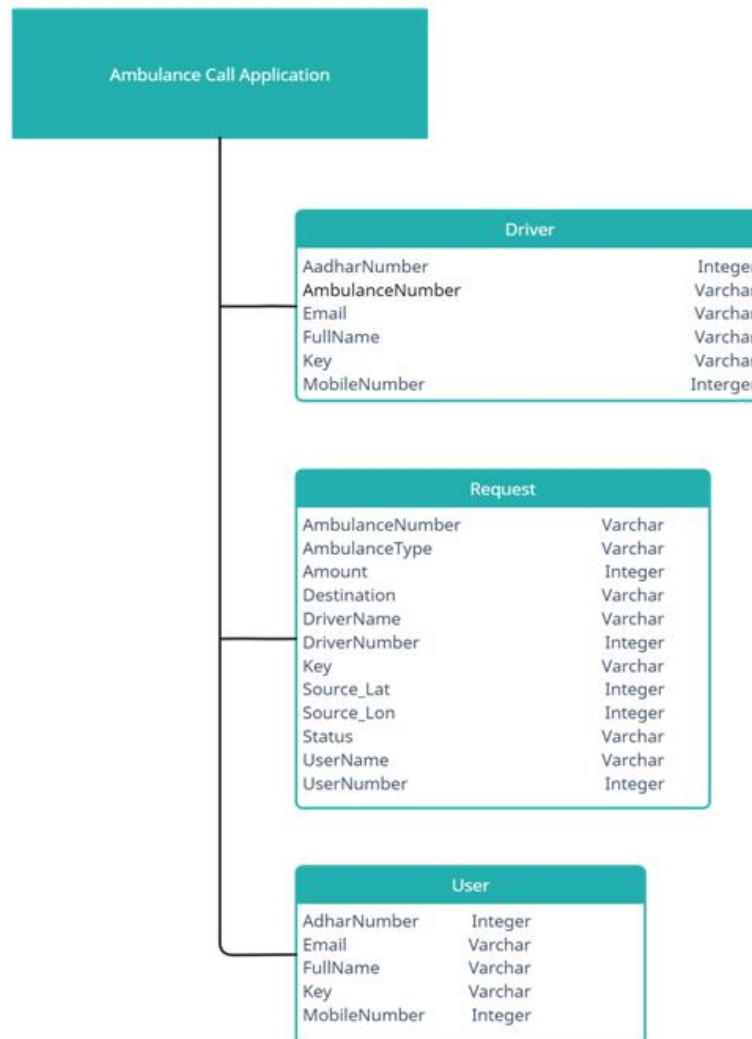


Fig 2.1: Database of Ambulance Call Application

III. SYSTEM ARCHITECTURE

The Admin Side DFD [2][3] Describe the Functionality of Admin. Admin is an Owner of the Android Application. Admin Can Add User and Then Add Driver and Admin Can Manage Request and Payment Detail.

The Admin Side DFD (Data Flow Diagram) Describe the Functionality of Application. Users Should Login With Correct Credentials. Users Select the Driver as Per Their Requirements Specification. Then It Should Take a Ride and Then the Payments. Users Can Pay the Payment Through Net Banking Credit Card, Debit Card and UPI.

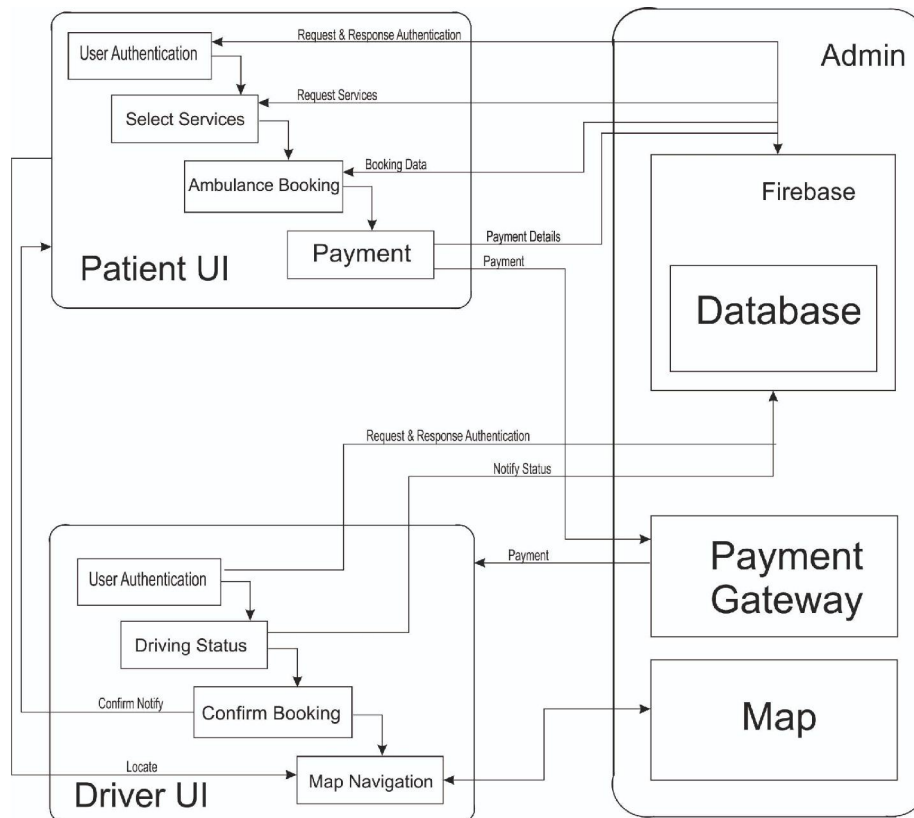


Fig 3.1: Data Flow Diagram of Application

IV. IMPLEMENTATION

The Android App Design and a Database for Implementation at the Server Side and Only an Android App at the Client Side. The User Types the Android App and Provides the Location Address Field to the Driver UI, a API Server is Contacted to Get the Requested Information. API Server Accepts the Incoming Driver Requests and Returns the Requested Information in a Response. The Application is Developed Using Android With Java and XML, and Google Firebase Workbench as the Backend.

Integrating the Application and the Database

Patients Can Get Ambulances Near the Location. And From This App Patients Can Set a Fair Amount as Their Feasibility. The Driver Should Be Able to Keep Track of Location and Details of Patients. So a Well-organized Database is Very Essential for Maintenance of an Real-time Android App. The User Must Be Able to Access the Database and for This the Remote Database Connectivity is Established. The User Information is Stored in and Retrieved From the Remote Database. The Database Used in This Paper is Firebase Server.

Android Page design

The Android Application Is Designed in Java and XML Script. The Android Application Should Be Dynamic in Nature as the User Should Be Able to Access the Ambulance Near Location. The Static Android Application is Used for Displaying the Patient's Details. API is Used as a Middle Tier That Establishes the Necessary Connection With the Database to Retrieve the Information From the Firebase Database.



fig 4.1: Main Page of Application

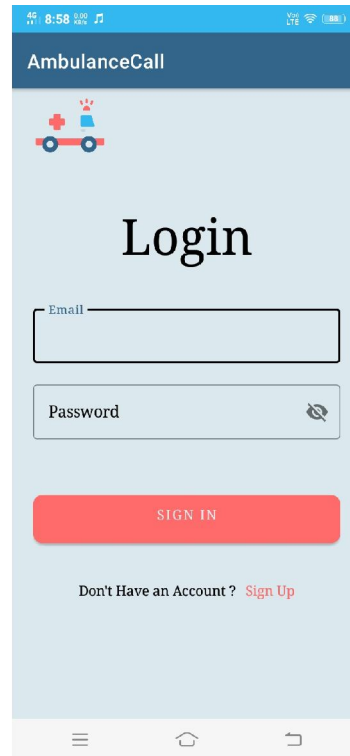


fig 4.2: User Login Page of Application

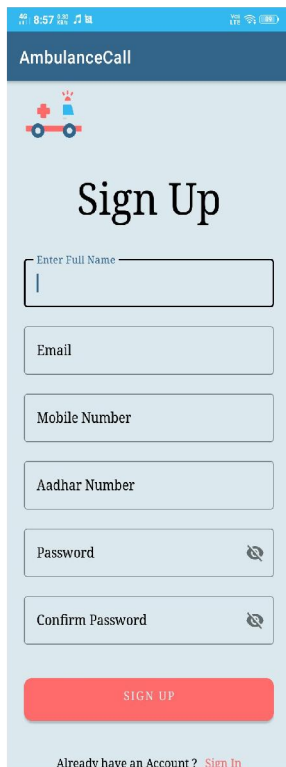


fig 4.3: User Sign In Page of Application



fig 4.4: User Driver Page Check of Application

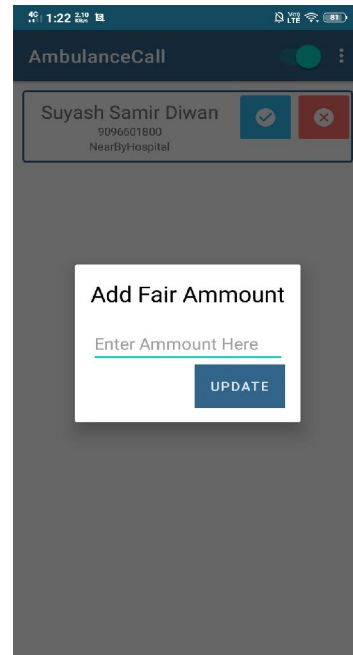


fig 4.5: User Driver Page Check On of Application

fig 4.6: User Driver Fair Amount Page of Application

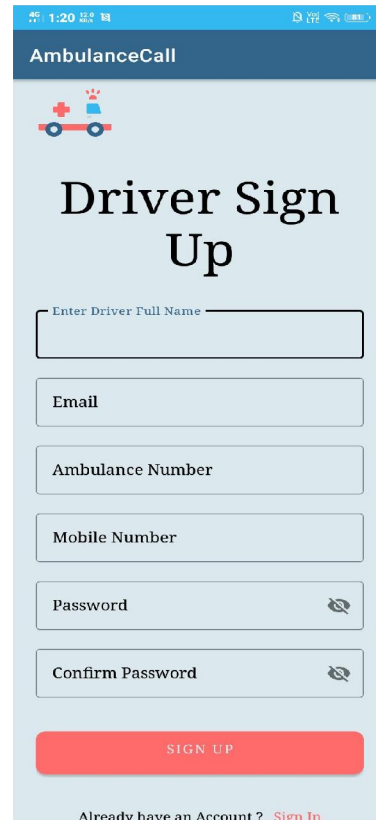
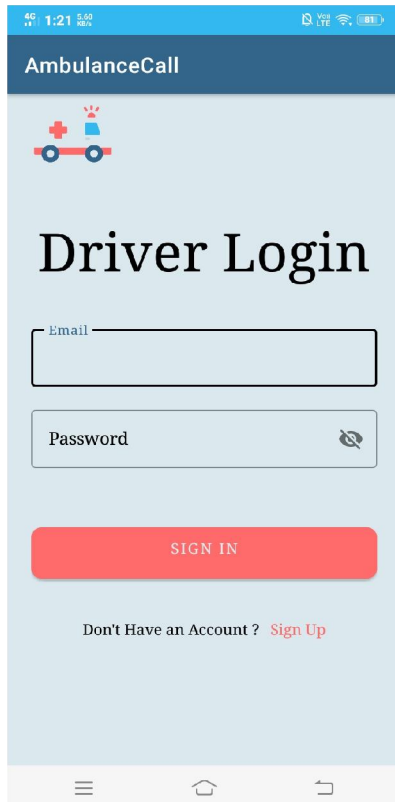


fig 4.7: Driver Login Page of Application

fig 4.8: Driver Sign In Page of Application

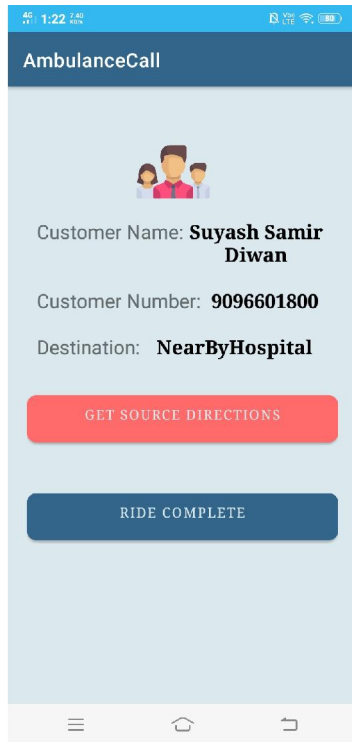


fig 4.9: Driver Get Notification Page of Application

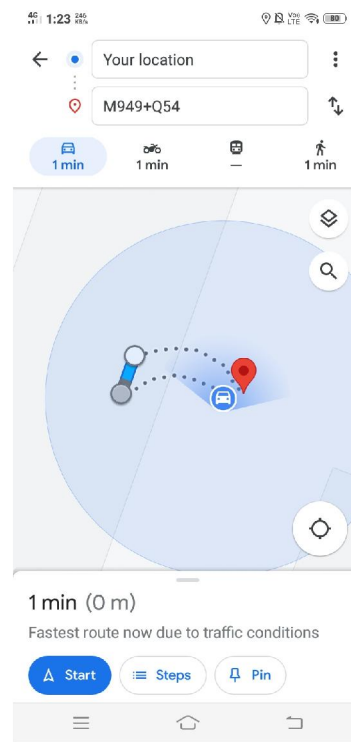


fig 4.9: Driver Get Source Direction Page of Application

Working

The Administrator is Given the Benefits of Changing and Refreshing the Database. The Administrator Includes Drivers, Requests and Users. The Request Gives the Status of the Ride Whether It is Completed or Cancelled. For Example, in Regions Where the Ambulance is Not Accessible, Users Can Use the Emergency Ambulance App to Approach the Driver. The User Can Choose a Fair Amount.

The User Should Sign Up for the First Time to Book the Ambulance. Later, Each Time a User Books an Ambulance, He Should Login, as the Driver Should Sign Up for the First Time to Take Patients. Later, Each Time the Driver Takes Patients, He Should Log in. The Type of Ambulance That Users Want and Need, and Users See Some More Details of the Driver While They Accept It.

The Driver UI Has the Option to Activate or Deactivate the Time So That Driver Can Take Rest and Patients Also Do Not See That Driver, So Patients' Time is Not Wasted. When a Driver is Active, Then the Available Patients Get the List of Available Drivers. When a Patient Logins, It Gets the Map Page UI and Gets Nearby Hospital Drivers and the Type of Ambulance That the User Wants.

After Selecting the Patients, It Gets Details of the Driver and Details Patients Send to the Driver. There Are Two Options: First, Get the Source Direction and Second, the Ride is Completed. After Payment, It Can Be in Cash and Online. We Have a Razor Pay System for Applications. When You Click on a Resource, the Direction Driver Sends to Map Activity, Takes Direction From Location.

V. CONCLUSION

This Paper Has Identified and Presented the Challenges Faced by People in Rural India With Respect to Public Health Facilities Such as Emergency Medical Services. Patients in Particular Find It Difficult, if Not Impossible, to Access Medical Transport in Emergencies, Resulting in Preventable Loss of Life. To These and Other Challenges, This White Paper Proposes a Solution in the Form of a Mobile-based Ambulance Planning System. It Aims to Improve the

Availability of Ambulances and Other Services. This Paper Was Analyzed, Designed and Implemented as a Prototype to Demonstrate the Operation of the System and Show Its Effectiveness in the Context of Current Systems. Based on Its Workings, Once This Application is Adopted for Use by People in Rural Areas, It Will Be Adopted Not Only in Rural Areas, but Also in Areas Where Modern Hospitals and Medical Facilities Are Deployed in Metropolitan Areas of India. I Think. In Addition, Much Can Be Done to Make Their Lives Easier and Prevent Loss of Life in Emergency Situations.

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