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## Road Assistance System Using GPS

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**Abstract:** The Road Assistance application was developed with the aim of providing emergency road side assistance services round the clock to ensure a pleasurable and uninterrupted journey virtually anywhere. The application is designed to enhance the user experience and ensure that users get immediate and hassle free service in the event of any vehicle breakdown. Our application shall make all possible efforts to locate and direct the nearest service provider to user's location. The application doesn't just assure a prompt service in the rare event of a car breakdown, but it also helps with the mechanical breakdown towing, fuel delivery, flat tyre change and car collision etc. The application helps you to find your nearby service centers as well as the fuel stations in case of emergency situations like insufficient fuel on vehicles and un-avoided incidents like puncture, break failure, doping etc. The exact locations with the distance from your place with the directions using Google Maps let you to know with ease to access with the help of this application on your smart mobiles.

**Keyword:** Emergency, Hassle free Service, Service provider, Smart Phone.

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### I.INTRODUCTION

Road trip is always fun and enjoyable by you get to know many things. You might also plan and make all precaution to make the journey safe and smooth. However in the unfortunate & unforeseen event of a breakdown or road accidents what is needed is immediate help. Our goal is to ensure that you get prompt assistance during such a situation. To make this possible we are doing an Android Application for user assistance purpose which provides assistance to the passengers during their road trips. We already know Android is the Trending Technology. In our Application we are integrating many possible assistance that can be provided during the trip.

The assistance to the travelers by road may be vast and focusing on some of the important aspect that gives assistance to the passengers to ensure their safety and good travelling experience.

The other interesting part is that, travelers can use this application since they are just few taps away to communicate the problem and get immediate possible assistance. In this crazy world with amazing technology, everyone is using Smartphone. People with android phones and tablets can install our application and can have access to our assistance service when needed.

### II.SYSTEM ANALYSES

#### A. Existing System

The assistance provided to the travelers is highly limited to the types of services that is being provided. Assistance through helpline is highly prone to unavailability that makes the travelers experience worse. The available services to the travelers are not accessible to the travelers in terms of locality.

#### Disadvantage of Existing System

The traveler is completely unaware of the services that are available near to them. At times travelers are made to stay in a position where the get no assistance due to unavailability.

#### B. Proposed System

The assistance provided to the travelers are in wide range where they can enjoy in all in one manner. The services provided are made available with the information of the service provider with which the traveler can have access. The access to and the presence of services are made to known to the travelers with Google Maps Navigation System.

### **Advantage of Proposed System**

The traveler is provided with more services and support to ensure that they have a good travelling experience. The traveler can have easy access to the services based on the current location using Google Maps Navigation System. The services are provided in a wide range so that travelers enjoy the maximum benefit out of it.

### **C. System Requirements**

Hardware Requirements:

- Android Phone

Software Requirements:

- Client on IDE : Android Studio 2.1
- Database Server : Xampp 7.0.9
- Database IDE : PhpMyAdmin
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### **D. List of Modules**

Road Assistance system project comprises of 6 modules which are listed below:

- Registration Module
- Fuel station Module
- Hospital Module
- Service Station Module
- Flat tyre Module
- Tow service Module

### **E. Module Description**

- **REGISTRATION MODULE**

Registration module is the first module which allows user to register their details in order to get access of the application. Registration is the one-time process where the user credentials are stored in the Database server. Registration module consists of a simple registration form, where the user details Mobile number, Vehicle type, Vehicle Model are asked for and entered, which are stored in the Database server.

- **FUEL STATION MODULE**

Fuel station module helps the user find the nearby Fuel stations in case of insufficient fuel on vehicles. Fuel station module gives output of locations of nearest fuel station with respect to the location of the user. This module is directly connected to the web service which fetches fuel station data based on the user's location.

- **HOSPITAL MODULE**

Hospital Module helps the user to navigate and locate the nearby hospitals in case of any accidents or emergency situations. This module is directly connected & linked to the web services like Google which gives the hospital data based on the user's location. Hospital module helps to find the Hospital location, details, contact number and distance from user's location and also about the ambulance services.

- **SERVICE STATION MODULE**

Service station Module helps the user to navigate and locate the nearby service stations. Service station module helps to find the service station location, details, contact number and distance from user's and operation timings. This module is directly connected & linked to the web services like Google which gives the service station data based on the user's location.

- **FLAT TYRE MODULE**

In case of tyre puncture, tyre change user has to find someone who offers this service and more over the service provider should be available closer to the user's location. Flat tyre module helps user to find the available service providers based on the user's location details.

- **TOW SERVICE MODULE**

In case of mechanical breakdown & accidents, change user has to find someone who offers this service and more over the service provider should be available closer to the user's location. Tow service module helps user to find the available service providers based on the user's location details.

## **III. DIAGRAMS**

### **A. UML Diagrams**

The **Unified Modeling Language (UML)** is a general-purpose, developmental, modeling language in the field of software engineering that is intended to provide a standard way to visualize the design of a system.

UML was originally motivated by the desire to standardize disparate notational systems and approaches to software design developed by Grady Booch, Ivar Jacobson and James Rumbaugh at Rational Software in 1994–1995, with further development led by them through 1996.

In 1997 UML was adopted as a standard by the Object Management Group (OMG), and has been managed by this organization ever since. In 2005 UML was also published by the International Organization for Standardization (ISO) as an approved ISO standard.<sup>[2]</sup> Since then it has been periodically revised to cover the latest revision of UML.

- **Use-Case Diagram**

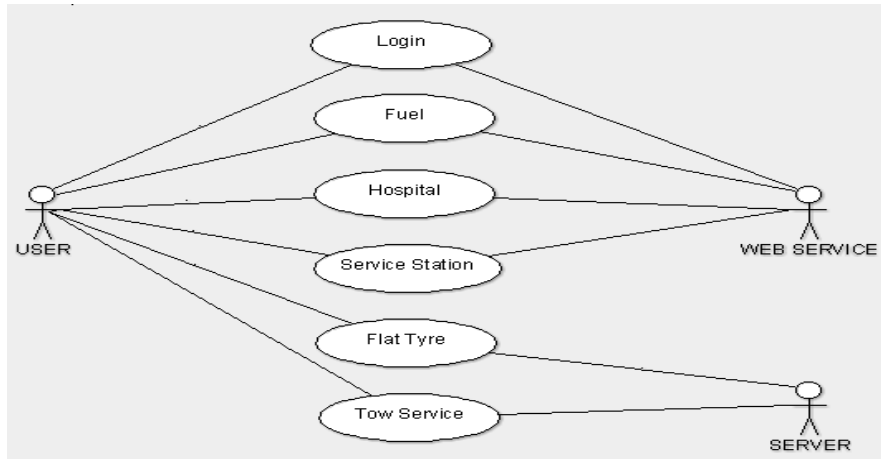


Fig. 1 Use case diagram for road assistance system

- **Sequence Diagram**

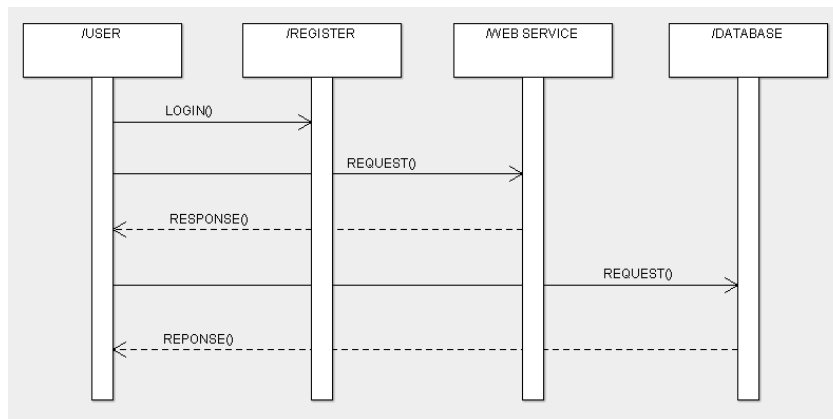


Fig. 2 Sequence diagram for road assistance system

**B. DFD(Data flow Diagrams)**

**USER DETAILS**

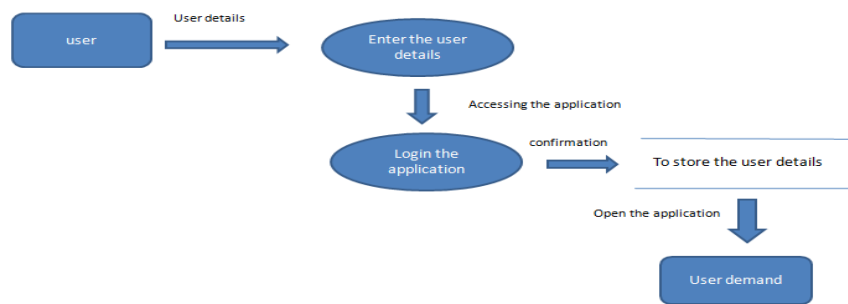


Fig. 3 Level-0 data flow diagram for user details

**FUEL DETAILS**

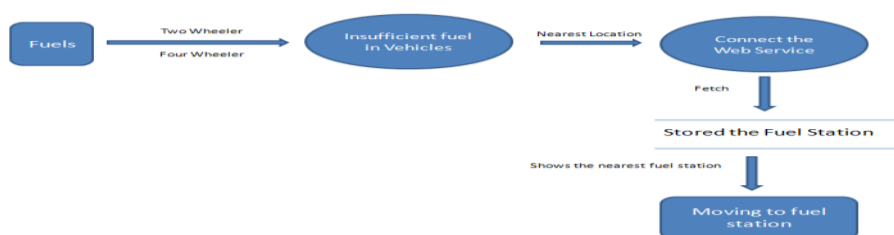


Fig. 4 Level-1 data flow diagram for fuel details

**HOSPITAL DETAILS**

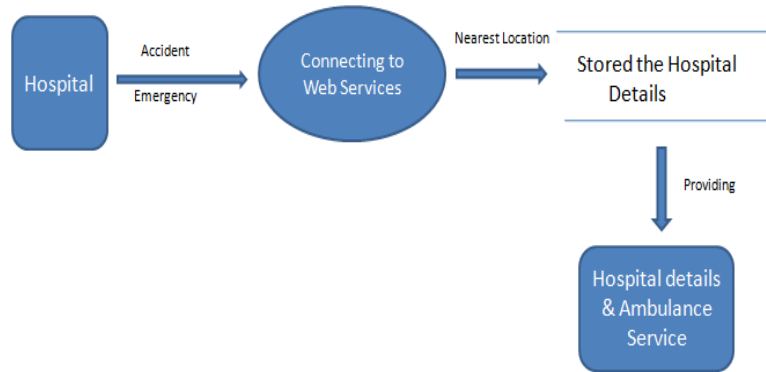


Fig. 5 Level-2 data flow diagram for hospital details

**SERVICE STATION DETAILS**

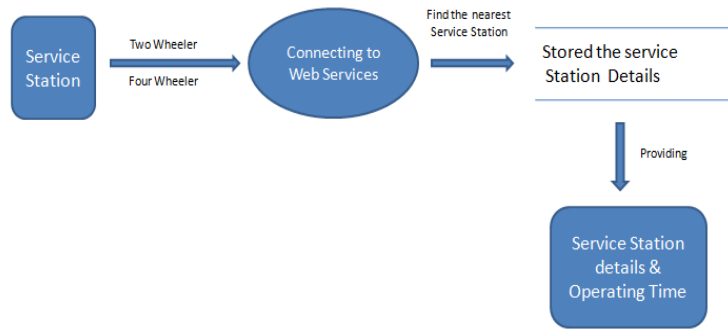


Fig. 6 Level-3 data flow diagram for service station details

**FLAT TYRE**

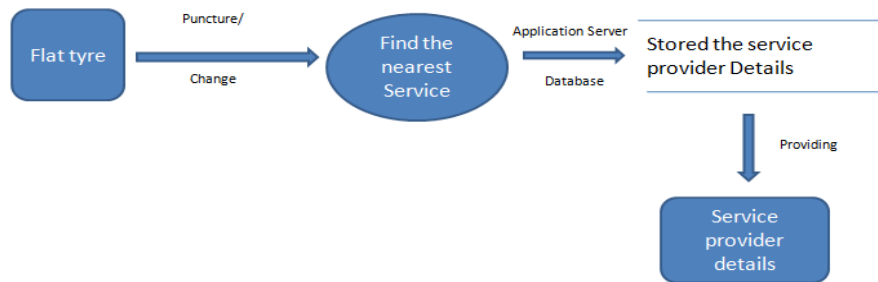


Fig.7 Level-4 data flow diagram for flat tyre details

**TOWING SERVICE DETAILS**

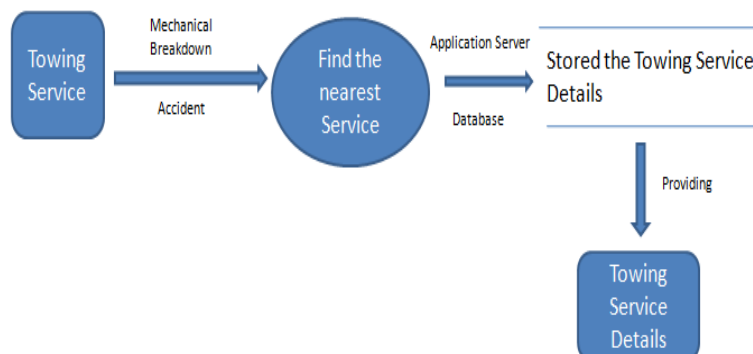


Fig.8 Level-5 data flow diagram for towing service details

C. System Architecture

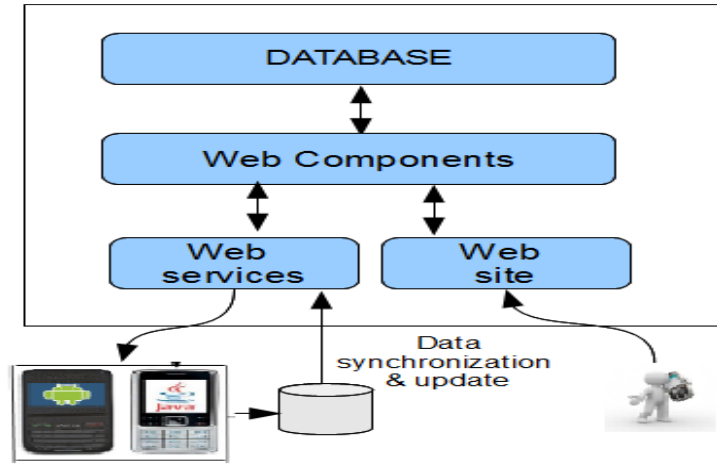


Fig.9 System architecture for road assistance system

D. Web service diagram

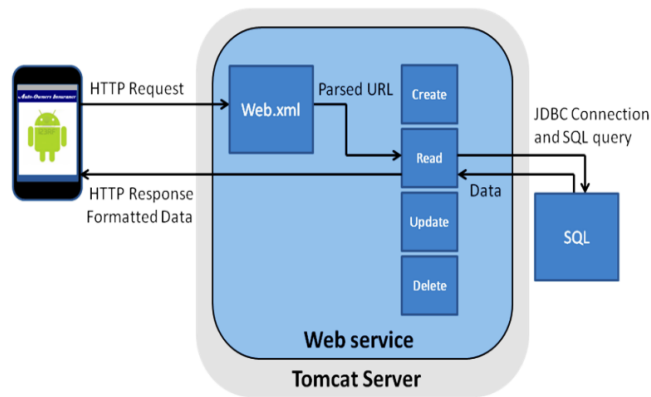


Fig.10 Web service for road assistance system

IV.SYSTEM DEVELOPMENT

- Login page

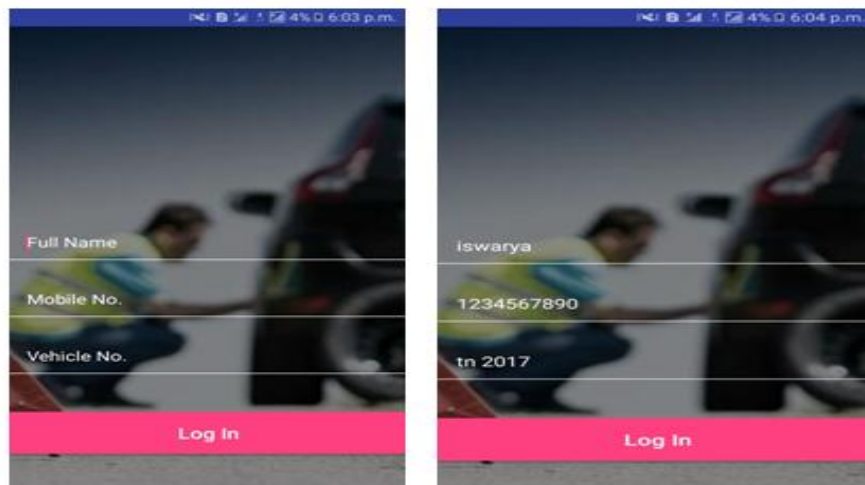


Fig. 11 It allows user to register their details in order get access of the application.

- **Route Details**

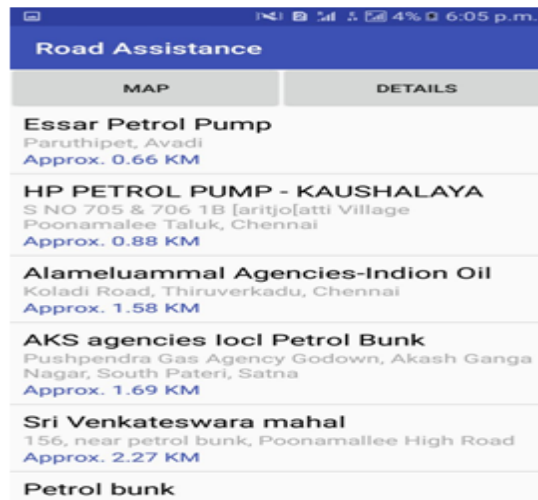


Fig. 12 It directly connected & linked to the web services like Google which gives the route data based on the user's location. It finds the location, details and distance from user's location.



Fig. 13 It directly connected to the web services which fetch the data based on the user's location

### CONCLUSION

In this paper, we presented the design and implementation of android application called Road assistance system, with which mobile users can get travel related service information they need anytime and anywhere. The system provide information query of the Fuel stations, Hospitals, Service station details, and the importance services for the travelers like Flat tyre service provider details and tow service provider details based on the user's location. The system is a combination of smart phone and web services and will help tour and life for user. Tow service details can be accessed from the application, which is stored in the server as part of the broader roadside assistance service. Positioning support (GPS), highlights the user's current position on the map. The built application successfully provides ease of access (one-touch access) for locating required services.

### FUTURE ENHANCEMENTS

Road assistance system application can be added with more features like live weather reports and availability ambulance services, hotel services based on the user's location will ease. By adding more inputs for the services like Tow and Flat tyre providers, the precision and availability of the data for requested details can be improved. Current system is designed and developed in android technology, which can be done in other technologies like Macintosh and windows will make more reach to users.

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