Vehicle Mechanic Finder

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ABSTRACT

More number of vehicles get problems these days due to engine faults, breakdown, Tyre problems. etc. In that situation people suffer a lot. If it is a well- known city or a place, they can find a mechanic or a workshop, but in new places and environment they don't know where to go and find mechanic. Then the user had to go in search of mechanic without any support and Knowledge. Considering these kind of vehicle problems an android app is the easy solution to handle this problem correctly because everyone has an android phone, they can easily go through a user-friendly interface to find help. So, this android app helps the user to find the nearby live available mechanics on his Surroundings and can call the mechanic so the user can call them for support and get their live location. This android application helps the people to connect with the mechanic within the nearest surroundings. This application contains two users which are Mechanic and vehicle user. Its acts as a bridge between user and a mechanic. whenever a problem is occurred in the vehicle, user can find the nearest mechanic at his surroundings.

I. INTRODUCTION

We people travel a lot these days travelling is an important aspect in our day-to-day life. So at sometimes we get vehicles problem like engine faults, break down, circuit problems and also due to weather conditions like if it is rainy, bad roads, potholes etc. these make our vehicle worse, if we are in city an urban area, we can find a mechanic easily but if are any highway and rural areas we cannot find mechanic easily we had to go in search for mechanic which is very difficult at times. we face many problems in that situation to overcome that finding a nearby mechanic is the only solution. To make this possible we develop Android Application for people which helps the user at problem. This application even helps peoples in remote areas can use this app for vehicle problems. People who use android devices can install this application and he can ask mechanic wherever they need help. The main objective of the "Vehicle Mechanic Finder" is to construct a bridge between mechanic and the people who faces problem mechanic location is updated every five minutes and through Google Maps Application Program Interfaces (API) optimal route to their position can be found. With the help of this Vehicle Mechanic Finder app, the people can find the mechanic at nearest Surroundings.

II. EXISTING SYSTEM

In existing system, user can get the location of mechanic of which he/she given at the time of registration. But if we want to identify updated location of mechanic, it is not possible. So, it is a major drawback when mechanic is not available in that location. So those apps are not suitable for emergency situations.

III. PROPOSED SYSTEM

Our Proposed Vehicle Mechanic Finder, which provides the user-friendly environment. Which updates the mechanic location Every five minutes, which is a major advantage for user, and it is very easy to use.

IV. LITERATURE SURVEY

Sai Chand, et all [1] explains the breakdown of vehicles and range of vehicles got accident in the middle of the road and picked up the traffic incident dataset covering four and half years in report for car Breakdown. Bheema Yugan Dhar Reddy, et all [2] explains the auto mobile service point or mechanic shops and to monitor mechanic data and tracking the automobile service through android application

Huang Yan, et all [3] explains that Global positioning system common/all-view technique for long distance, time and data transferring frequently Global positioning system time transferral gets and post-processing algorithm squares the measure its core. The period of frequency which is high of time multi-channel global positioning system time sends receiver supported EURO-160 GPS board and the time period functions algorithm squares calculated introduced this paper. To get an accurate one, the experiment of common clock in a zero-base line with the foreign business global positioning system P3 code gets square measure applied. identical technology levels are found in real -time GPS gets and the foreign business GPS P3 code gets by the resulted.

Akhila V Khanapuri, et all [4] explains the no of vehicle in road and the number of accidents and type of accident cases of filed report. The report of automobile shops which help during this situation and helps in these cases.AbusayeedTopinkatti, et all [5] explains the android phone to give an answer which does not give the accident spot and to send the emergency notification to the nearest hospital's and to the affected people relatives in car Accident detection system victimisation Global positioning system (GPS) and global system for mobile communication (GSM).

G.M.Djuknic, et all revealed Geolocation and power-assisted GPS [6] that deals with the information regarding however mobile phone users can get the power to desire the traffic information &directs to gas stations.TanusriDey, et all projected [7] Modern Safety Application for ladies that deals with regarding awful nearby residents by blast, self-calling, location detection of police stations and hospitals nearby etc. It is developed in JDK victimization humanoid Workplace.

Ankush Das, et all have[8] observed on vehicle tracking assistance which deals about mobile application that issues the user to conversate with mechanic nearby whenever wanted and to supply services to the user with the help of local mechanic in less time.Prof. MS. Pranitaet all [9] mentioned concerning vehicle malfunction throughout voyage, it's terribly troublesome for looking mechanic shops in unknown new areas. Hence, to delineate the drawback planned for a mobile yet as internet using help system.Sathwik Krishna. L et all [10] proposed Dijkstra's Algorithm helps to get the nearest mechanic service centre details based on current location of user.

V. IMPLEMENTATION

Mechanic Division and User division are two major factors in Vehicle Mechanic Finder Application.

Flow Chart
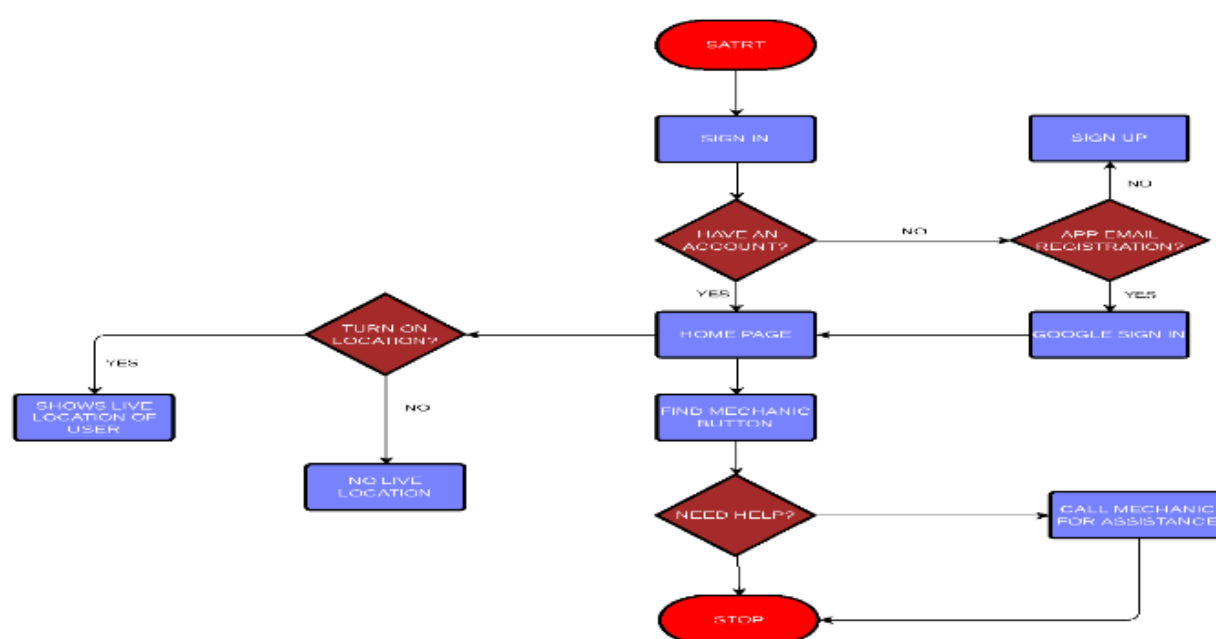
This Flowchart explains the working flow of Vehicle mechanic finder. At start user or mechanic need to sign in through the app, if they already have an account, they can sign in and move to home page. Or else they need to sign up using their existing mail or need to sign in though google account.

After entering Map Home page, they need to turn the location on, and the user can search for mechanic using "Find Mechanic" button. If there are available mechanics near user's location. It will be pinned on map, then user can click the pinned location on map to get mechanic details and call them for help.

Mechanic Portal

The mechanic Sign inpage allows the mechanic to initially register into application and after signing into the app, the mechanic would make his availability status to on duty. If the status is on duty, then the mechanics location will be updated to customer every five minutes.

Customer Portal

The CustomerSign inpage allows the customer to initially register into application and after signing into the app, customers can search for the available nearby mechanics. If the mechanics are available their live locations will be pinned on map, so they can call to whichever mechanic they wish and even find their route to mechanics.

Workflow
DIVIDER MODULE

In this module the page acts as a divider to the application. this page asks the user that who you are. It contains two buttons the first button is user button and the next button is mechanic button. if the user clicks the user button it goes to the user login page. If the mechanic clicks the mechanic button it directs to the mechanic login page. With help of this module user can access the application to his usage.

USER REGISTER MODULE
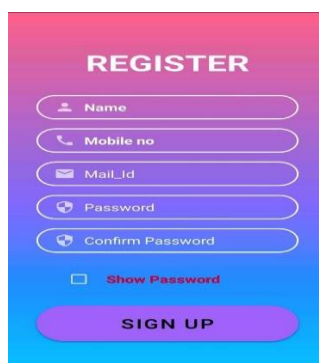
This module is known as register module. If the user doesn't have an account the user clicks the signup button it directs to this module. This module asks the details of the user to create a new account. In the first box we must enter the name of the user the hint is also given as name in the text area. The next is mobile no here the user need to enter the mobile number, here there are some credentials to follow.We must enter only ten number example "1234567890" more or less than that it shows invalid number only numbers are allowed not alphabets and special characters are not allowed. The next text area is mail id the user needs to enter the mail id of the user. Here also there are some credentials the mail id should contain "@gmail.com" followed by mail id.
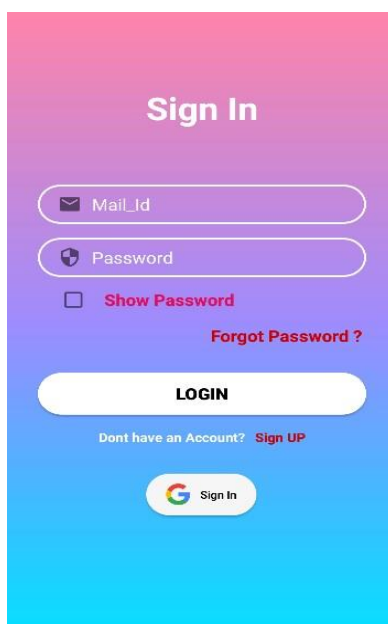
The next text area is password here the user needs to enter the password where it should be minimum of seven letters. The next text area is confirmed password here the needs to enter the exact same password written on password if the password and confirm password are not equal it shows wrong pass word the next it contains a check box if the user clicks that it shows the password other it shows like hidden and the last is signup if the user clicks the button after filling all details it checks and it saves in the fire base data base and it redirects to sign in page.

MECHANIC REGISTER MODULE

This module is known as register module. If the mechanic doesn't have an account the mechanic clicks the signup button it directs to this module. This module asks the details of the mechanic to create a new account. In the first box we must enter the name of the mechanic the hint is also given as name in the text area. The next is mobile no here the mechanic need to enter the mobile number, here there are some credentials to follow.Here also there are some credentials the mail id should contain "@gmail.com" followed by mail id. The next text area is password here the mechanic needs to enter the password where it should be minimum of seven letters.

The next text area is confirmed password here the needs to enter the exact same password written on password if the password and confirm password are not equal it shows wrong pass word the next it contains a check box if the mechanic clicks that it shows the password other it shows like hidden and the last is signup if the mechanic clicks the button after filling all details it checks and it saves in the fire base data base and it redirects to sign in page.

SIGN IN MODULE

This module is known as sign in Module. In this page the user can login using the email id and password if the user is already registered. Here the first text area contains mail id where user should enter the mail id and user need to

enter the password and click the login button, it directs to map module there is also a check box to show the password. Here the module contains forgot password were the user gets the OTP in mail id and the user can reset the password. The module contains a sign-up page if user is new to application he can register in the application. Google sign in is also in the module so that user can easily login through mail id and access the application.

MAP MODULE
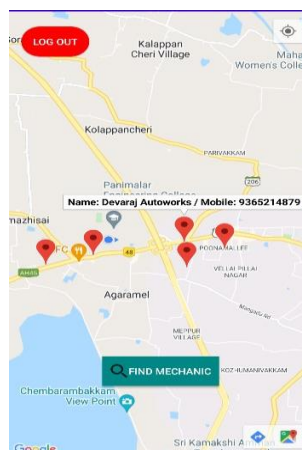
This module is known map fragment. we have inherited google maps API in this application so that it is user friendly and accurate and the details of google map are well known to the people. This is the main module of the application. The first user clicks the live location button located in the top right corner if the user clicks the button, it directs the map to current location of the user through live location given by phone so that user can view where he is. the user clicks the find mechanic button and the user can view the nearby mechanics available nearby under 15 kms. If the user clicks a mechanic, it shows the name of the mechanic that the mechanic has registered and mobile number of the mechanic if the user is ok with it, he can press again so that it directs to detailed page of the mechanic where the user can view the name and mobile number and call the mechanic or he can view and set the direction of the mechanic to reach and the mechanic location is updated every 5 minutes once.

so that the can user gets an accurate location and if the find mechanic is red it is not the updated location the user should click a mechanic and the find mechanic button so change it changes to green and the mechanic updated location is shown and direction button to show the user to the mechanic location and got the mechanic location and the module contains the log out button and logs out of the page and directs to the sign in page.

REALTIME FIREBASE
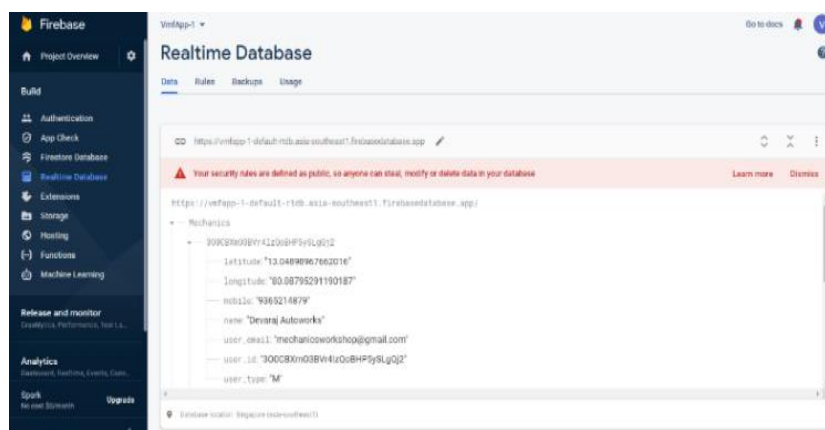
The Database used in this android application is Firebase. This is a real time, non-relational cloud storage data base. The fire base is very fast and easy to access and user friendly to access and work with it, here we are accessing with sing in page which is signed up by the user. In the application it sores the data in the real-time fire base database it allocates memory whenever the there is a new user and then the details of the user like latitude and longitudeand the user name, mobile number, email id, and it has unique key to identify the user. Through this firebase data the google sign in is also added so that if the user clicks google sign in, it automatically sign-in with Gmail details so that user need not register it will be automatically gets google authentication. Sign in is a firebase authentication feature.

MECHANIC DETAILS MODULE
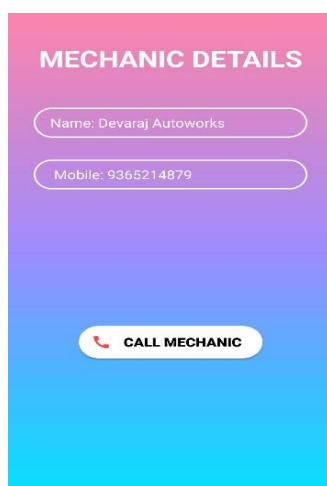
In this module the details of the mechanic will be shown when the user clicks in the mechanic in the map module here the mechanic's name andthe mechanic number also shown and the end the of the module there is call button if the user clicks the button the call to mechanic process will be initiated.

HAVERSINE ALGORITHM

```java
public static double HaversineInKM(double lat1, double long1, double lat2, double long2) {
    double dlong = (long2 - long1) * _d2r;
    double dlat = (lat2 - lat1) * _d2r;
    double a = Math.pow(Math.sin(dlat / 2D), 2D) + Math.cos(lat1 * _d2r) * Math.cos(lat2 * _d2r)
            * Math.pow(Math.sin(dlong / 2D), 2D);
    double c = 2D * Math.atan2(Math.sqrt(a), Math.sqrt(1D - a));
    double d = _eQuatorialEarthRadius * c;

    return d;
}

public static int HaversineInM(double lat1, double long1, double lat2, double long2) {
    return (int) (1000D * HaversineInKM(lat1, long1, lat2, long2));
}
```

The algorithm used in Vehicle mechanic finder isHaversine Algorithm. The haversineformula determines the great-circle distance between two points on a sphere given their longitudes and latitudes.

- Assume d2r = PI (3.14) / 80 and Equatorial earth radius = 6378.1370
- Distance longitude=(longitude 2 – longitude 1) * *d2r*
- Distance latitude = (latitude 2 – latitude 1) * *d2r*

- Assume x = Distance longitude and y = Distance latitude
- c (x, y) = 2arcsin [sqrt {sin^2((x1 - y1) / 2) +cos(x1) *cos(y1) *sin^2((x2 - y2) / 2)}]
- Distance = equatorial earth radius * c

Thus, the distance between Mechanic and user is find using Haversine Algorithm.

VI. CONCLUSION

The above proposed system has provided comprehensive methods and overview for finding solution for Damaged vehicle. It has concentrated on problems of user when they find fault on their vehicle. So, with this app the convenience of taking the vehicle where ever they want to take if there is problem, they can find a mechanic and the problem can be solved. The user need not to worry about the car. The problems faced by the user can be solved by this app.

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