IEP Service Using Android Platform

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ABSTRACT:

Android Mobile has become one of the basic amenities in our day to day life. People depend on Android application for searching services for their emergency purposes. This project targets to find the nearby Electricians and Plumbers using mobile applications in the Android platform. Usually when we need any services (electrical or plumbing) we need to ask some people to find electricians or plumbers for the repair purpose. This prototype implementation includes basic functionalities such as showing Electricians and Plumbers locations, contact details, reviews etc., Admin Backend is integrated to manage data (edit, update or delete data) with the help of Firebase database. As a part of the proposed system, Instant Electrician and Plumber (IEP) will enable any user to search and communicate with any electrician or plumber in the vicinity. In a nutshell the proposed system focuses on the basic services required by the people for Electrician and Plumbers. Location-based services API are popular for using mapping and navigation apps. JSON and MySql have been used in this system to obtain solutions. In this system, we use Greedy Algorithm as it gives an optimal solution in finding the electrician or plumber within nearby distance from the users location. IEP service proposes greedy algorithm to identify the best (electricians and plumbers) POI that are geographically close and the service area. This system saves a lot of

time and that is how it is done and this can be used anywhere and at any time. Thus we are developing an application which goes hand in hand with the new technology and then it is user friendly.

Keywords: *Android application, Greedy algorithm, Firebase database, Location Based Service API, JSON.*
Abbreviations: *JSON, JavaScript Object Notation; GPS, Global Positioning System; POI, Point of Interest; API, Application Programming Interface.*

I. INTRODUCTION

Today, a lot of people are facing difficulties in getting help when they need any services like Electrician, Plumber, etc., Many of them do not have a contact number and could not get help from them for emergency without the help of a third person, then they might be far away from their locations. IEP Service is a progressive step in the field of service. Any user can make use of such app to locate and communicate with the service in the proximity. For this implementation, we are using Android studio.

Android is one of the most popular computing platform, it is based on the Linux operating system. Application frameworks are telephony manager, location manager, notification manager, content providers, windowing and resource manager. In Android studio Library functions graphics libraries, media libraries, database libraries and sensors. Linux Kernel, including power, file system, drivers and process management.

Location-based services power a style mapping and navigation apps. *A* vital side of the Android application setting is that Android applications have traditionally been written within the Java artificial language. The Java ASCII text file is compiled and formatted in byte code, that represents the logic of the application, however not the precise directions for a specific hardware device.

II. OBJECTIVE

The Main objective is to provide a User friendly App for the users to connect with their nearby IEP service. IEP provides the information or details about the Electricians and Plumbers with their respective locations. It saves time and effort in searching the Electricians and Plumbers.

III. RELATED WORKS

A Novel Location-Based-Service[1] was published by Jiguo Yu, Shengling Wang, Xiagheng Meng (2017). This paper will help the user to locate, search, navigate and or check. The LBS is a place searching, in which a user submits its current location and the type of point of interest to an LBS server, which returns a small number of nearest POIs to the user's. It proposes several algorithms using computational geometry techniques to find the best K POIs that are geographically close and the service area which will cover as many the best Q

clusters as attainable whereas reducing the cask effect within the service area mode. Extensive simulations supported both synthetic and real world data demonstrate the effectiveness of the projected algorithms.

An Optimal Greedy Algorithm for the Single Access Contention Resolution Problem[8] was contributed by Itzel C. Olivos-Castillo, Ricardo Menchaca-Mendez (2019). This System publishes the GOAL-CR, an algorithm that solves a contention resolution problem whereas a set of nodes access a shared resource only once at a time, and the objective of GOAL-CR is to minimize the time it takes for all the nodes to access the resource. It literally proves that the GOAL-CR computes access policies that minimize the expected contention resolution time. It also shows numerically, that the performance of the greedy policies is close to that of a protocol with complete information about the exact number of nodes that have not yet accessed the resource. In addition, the project shows how to adapt the algorithm to scenarios where there is uncertainty in the initial number of nodes and two scenarios where nodes have very limited memory. This Greedy algorithm uses simulations to represent the robustness of the GOAL-CR against asynchronous starts.

A Car Breakdown Service Station Locator System[4] was contributed by Khoo Jin Sheng, Ahmad Suhaimi Baharudin, Kamal Karkonasasi (2016). The CRSP development will be carried out after planning and analysis. Internal and user testing of the application will be carried out before the system is getting deployed. As a part of the expected results, the planned system connects CRSP and the Public through this system. If the car owner's transportation breaks down on any place, the car owner could enter information with regards to the place of breakdown in the system using mobile phones, tablets, etc. The system can mechanically search for any CRSP nearest to the reported incident spot. This project aims to develop a Car Breakdown Service Station Locator System and also connect CRSP and the Public through this technique.

E-Mechanic Service Using Android Programming and Messaging Service[12] was published by Sarita Choudhury, I. Indira, T.Rakesh (2016). This project targets to develop an Android application that will facilitate the user to register through installing the application and can get access to the nearby mechanics location and contact him in person and this uses the internet and messages permitted to go on with the application. When we stuck on the road, then we need to ask some people to find the nearby mechanical shop or mechanic location and then walk across the road and then after find it and go to the place where we got stuck and afterwards only we can get the repair done. This application is an android app that will be run on any android compatible tablets and mobile phones. This application will enable any car user to search and communicate with any car service centre in the vicinity. In the advancing technology, we get access to the mechanic and mechanic gets access to the location user through the GPS location send to him and they will saves a much amount of time and that’s how it will be done and it can be used anywhere and at anytime. Thus we are developing an application which goes hand in hand with the new age technology and characterizes – user friendliness, informative and time saving.

IV. SYSTEM ARCHITECTURE

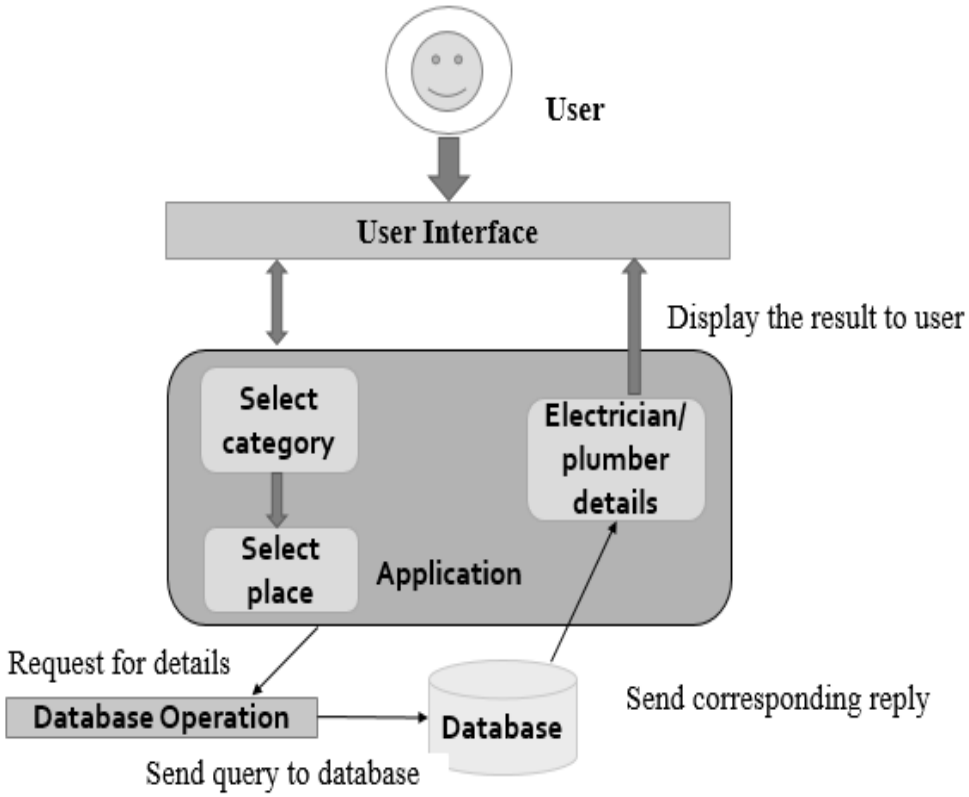

Fig 1. Proposed framework for the IEP Service using android platform

The functions of each components in the System architecture are as follows

User Interface: User Interface enables the user to interact with the system or app by communicating with them and helps in the efficient completion of tasks.

Select category: In the Select category, we can select categories such as electrician or plumber and can also see the E OR P details.

Select place: Using Select place, the user can find the nearby electrician or plumber from their current location and can also search for E or P in the particular place.

Database: Firebase database is a Realtime database that supports multiple platforms. All the data is stored in JSON format and any changes in data reflects immediately by performing a sync in applications.

V. PROPOSED SYSTEM

In the Proposed system, it mainly focuses on the basic services required by the people for electrician and plumbers. The app database is directly connected to the Google Maps services. Google Maps services with current longitude and latitude of the user is provided.

We propose a Greedy algorithm to minimize a time it takes for all nodes to access the resource successfully. It supports the service modes like rating mode and comment mode. By using this application the user can find the required person for the need and can easily find without any third party applications.

The modules added in this framework –Admin module, Main page, Home page and Exact location and Map navigation

Admin module: The Admin module consists of the functions such as update Electrician or Plumber details, add new categories, view all users and verify E & P etc.
Main page: This shows the Sign in page of our app. Once the user login into the system then the user details will be store in the database**.** The web admin only view the details of the user.
Home page: In this page there are two main categories that includes Electrician and Plumber. My Service category includes the services provided by IEP service. In My Help category, users can clarify their doubts.
Exact location: If the user clicks the category of Electrician then it displays the exact location and photo of the nearby Electricians name and phone number which is nearer to your current location.
Map navigation: The Map navigation category shows the current position of the user and also the shows the nearest electrician or plumber from the user location.

ALGORITHM

In this System we use Dijkstra's Algorithm to calculate the shortest path between one node (user) and every other node (Electrician or Plumber). Below are the steps used in Dijkstra's algorithm to find the shortest path between the user and the EP.

Step 1 Create a set spt included in the shortest path tree of vertices, i.e., whose min distance from the source is finalized. Initially, the set is empty.

Step 2: Assign a value of distance to all vertices in the input graph. Initialize all the value of distances to infinity. Assign value of distance to 0 for the source vertex so that it is taken first.

Step 3: When spt doesn't includes any vertices

1) Take a vertex u which is not in spt and has minimum value of distances.
2) Include u to spt.
3) Update the value of distance of all the vertices of u. To update the value of distance, thoroughly iterate through all the adjacent vertices. For each and every adjacent vertex v, if sum of value of distance of u and the weight of edge u-v is lesser than the value of distance of v, then update the value of distance of v.

Greedy Algorithm: Dijkstra's Shortest Path Algorithm

Input: An edge connected graph G(V, E, w) whereas w : E → R+ and 2 vertices (s, t).

Output: A path from s to t with min total cost.

1: S = ∅.

2: Initialize empty priority queue.

3**: foreach** v ∈ V **do**

4: p[v] = NIL

5: d[v] = ∞

6: enqueue(v)

7: **end for**

8: d[s] = 0

9: Update the order of s

10**: while** queue is not empty **do**

11: v = dequeue the elements with minimum priority d[]

12: **if** p[v]! = NIL **then**

13: S = S ∪ {(p[v], v)}

14: **end if**

15: **foreach** edge (u, v) **do**

16: **if** u is in queue & d[v] + w(v, u) < d[u] then

17: p[u] = v

18: d[u] = d[v] + w(v, u)

19: Update the order of u

20**:** **end if**

21**:** **end for**

22: **end while**

23**: return** S

VI. CONCLUSION

In this system, the problems faced by many of them who are new to the particular places in search of plumbers and electricians have been reduced by this application. The IEP service provides an easy way to get the information about the electricians and plumbers in the nearby areas. The users can get the information they need anytime and anywhere and they can get an attraction towards detailed information, including name, address and phone number. The user can search the nearby attractions after he or she configures the distance between the current location and the view spots.

VII. FUTURE ENHANCEMENT

In our future work, we will further made additional implementations based on users needs and recommendations. Future enhancement of our project is, apart from the Android, it can also be made for Windows and IOS users. The navigation system can also be integrated for a particular place. The covering access range can be increased for all other areas.

CONFLICT OF INTEREST

The Authors hereby declare that they have no conflict of interest.

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