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Location based Android Application:Geo-Location

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Abstract: Mobile is changing the way we relate to the world. Determining user's location through GPS is a very common feature in today's day to day life. Using this feature effectively can help us to build a number of smart android applications, thus helping mankind. Existing reminder application in android are time-based i.e. they remind you about the task on pre-settled time. Many time it may happen that when the alarm reminds you then you are not at that location to complete the task. Hence, in this research paper, we will try to develop a real-time location alarm system which will remind the user about the task not only at the right time but also at the right location. The main objective is to build a location-based Android reminder which will enable the user to-do following tasks:-1)to create a reminder and to set the target location 2)to alert the user through an alarm when user's current location matches to the predefined target location.3)to allow the user to edit and delete the reminders.4)to set user's choice alarm tone and ringer mode.5)to automatically set the profile mode based on user predefined location .This android application is designed using technologies such as GPS and SQLite.

Keywords: Reminder, Location Based Alarm, Google Maps, Android, GPS, SQLite.

I. INTRODUCTION

Reminders are the way to help us remember some important and daily need tasks. Usually, reminders are time-based and date based but, this system proposes a location-based reminder. A location-based reminder not only help us to complete the task at right time but also at the right place. For example, we many times save a reminder for buying some important medicines but, when the reminder alarms us we aren't present at the medical shop or near to that and we delay the task and then we forget. So, this real-time location reminder will allow the user to save a task for a destined location without a chance of missing it. Whenever user passes through that saved location, the reminder would alarm the user to complete the task. This prototype will allow the user to add, view, edit or delete the saved reminders. It will also enable setting such as to set ringtone of alarm, enable vibration mode and snooze mode. Additionally, it will also allow the user to set the profile of cell phone according to a predefined location. For example, for a student, it will set the phone on silent mode from 10 am to 5 pm and to the general mode from 5 pm to next 10 am, thus reducing manual efforts of doing it daily. For implementation, Google Play Services have been used to take the advantages of features such as Google Maps, thus making it faster for the user to receive updates.

A. Problem Statement

System can be implemented to track the location and visualize the same location's position on Google Map. Objectives for the research

- 1) Track the location of venue provided in To-Do-List.
- 2) Easy interaction to the user and precision in tracking may gain benefits.
- 3) Boost the human efforts by replication of manual practices with use of our proposed To-Do-List.

II. LITERATURE REVIEW

A. Place Reminder Location Based Remainder

Android phones these days allow us to set reminders based on location. The application provides full access to user acting as a personal secretary that performs correct work at correct place on correct time. Looking over some real world situations:

- 1) A person may like to purchase gift while returning to home the next time he passes from the gift-shop.
- 2) While going on a holiday never miss a checkpoint.
- 3) Buying stationaries for craft work before returning to home.
- 4) Delivery Location for certain customer services e.g. food orders.
- 5) Using GPS and GPRS on GoogleEarth for Vehicle Tracking System

This paper implements GPS based vehicle navigation system which can be done through fetching information from vehicle. Information can be changed/transformed when:

- a) Location provided for vehicle is specific for a particular time interval as provided by the user.
- b) Gathered periodic information of location can now be send to tracking server further displaying the location of vehicle using GoogleEarth in the electronic goggle maps.
- 6) *GSM&GPS based tracking system:* The procedure is best suited to public transports beneficial for Tele Monitoring and Management of location based services within the city. In this paper system describes a To-Do-List Android application `that uses GPS to match the task and it is preferred location along with the time split described. Computation of longitudes and latitudes by satellites and sending the transformed short messages to monitor center in accordance to the provided GSM communication controller and it is network
- 7) *Design and Development with Google Map based Monitoring:* Fetching location using GPS is based on latitudes and longitudes from satellite. This system provides vital daily basis task to be performed by matching the task, time as well as location from the to-do list made within the Android Application thus minimizing the human effort or any failure cases as it never misses any checkpoints set within to-do-list. GPS device and GSM in configuration with a SIM card enables a two way communication process just the way a regular communication by a regular phone is done.

III. METHODOLOGY

It includes the software and hardware requirements, project implementations and modules developed.

A. Hardware Requirements

1) For Mobile

- a) At least 1GB RAM
- b) 1.2GHZ Processor (Quad Core is best Suited)
- c) 3.5 inch of screen for better view Internet Data Connection Required

2) For Computer

- a) Windows 8 and above
- b) At least 4GB RAM
- c) 500 GB of Hard Disk
- d) Dual Core 64-bit Processor
- e) 1.2 GHz Processor

B. Software Requirements

- 1) IDE: Android Studio3.0
- 2) Database: SQLite
- 3) Gradle
- 4) Android SDK and add-ons such as the Google Maps SDK
- 5) Coding: Java SE

IV. SYSTEM WORKFLOW

The basic workflow of the application is shown in Figure 1. It comprises of two modules:

A. Application Interaction Module

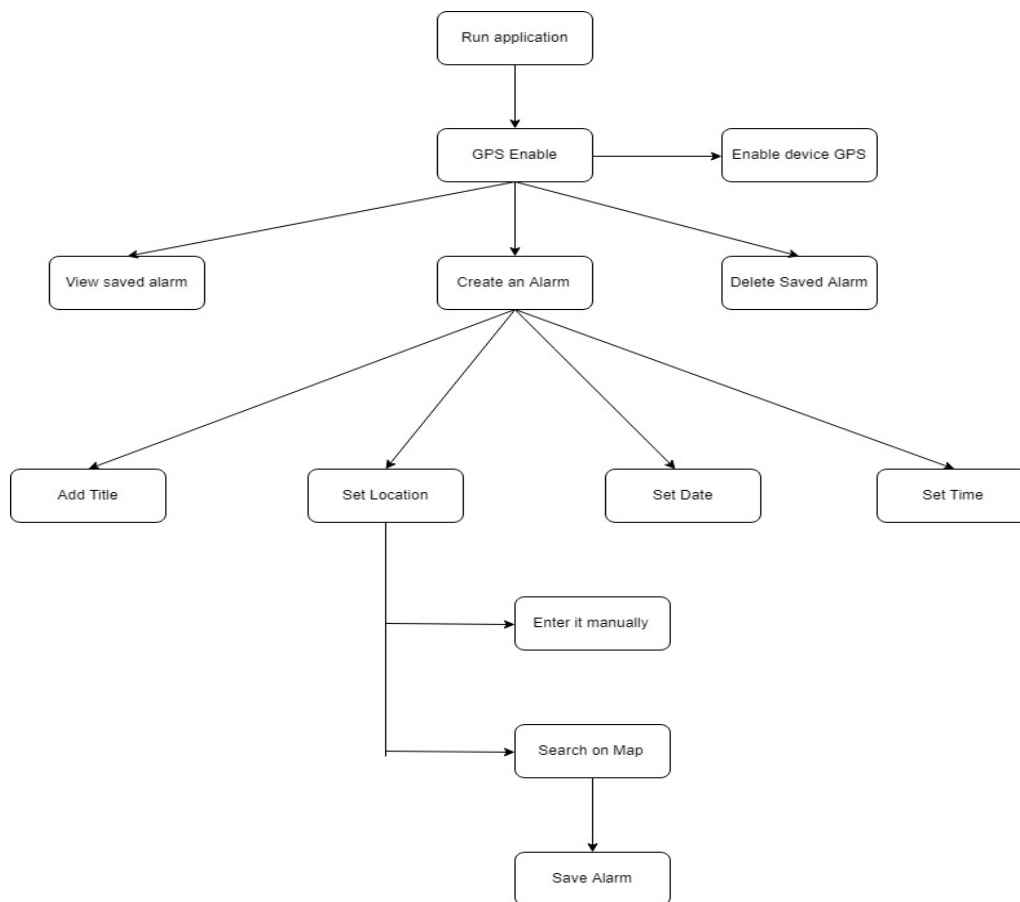


Figure 1

This module shows the action that the user can be able to perform on the application by using a mobile device. When the user launches the application, it will first ask the user to enable GPS (Global Positioning System) on their device to access the location. The next screen then shows three options: View Saved Alarm, Create New Alarm and Delete Saved Alarm. "View Saved Alarm" will show the list of all tasks user has saved along with the location name. "Create New Alarm" will allow the user to create a new task and add details to it. Details will include giving "Title" to the task, "Add Detail Description" of the task, set "Location", Set "Date" and Set "Alarm Settings". Set "Location" will allow the user to enter the location manually or either choose it from the Google Maps. From the Google Map, the user can easily select any target location and save it. "Alarm Settings" will include features such as setting ringtone, mode of ringtone -general or vibrate, ringtone volume, snooze options. After this user will get a prompt to activate the alarm or not. "Delete Saved Alarm" will allow the user either to edit the existing alarm or to delete it.

B. Database Module

The details from the application interaction module are saved in the database. This module is very important as the location and date saved in the database can be used to compare with the current location and current date.

C. Appropriate Technology

The technology used to develop the application are Android, Google API, Android Development Tool Kit, Android SDK, SQLite, GPS.

D. Android

Android is a widely used Operating System based on Linux, which is primarily designed for devices like smartphones, tablets and other touchscreen devices. It is developed by Google and later it becomes Open Handset Alliance(OHA) Operating System. It is very similar to JAVA SE.it is the most appropriate Operating System that can be used for building an application since it is an open source and support many interesting features such as web browser storage(SQLite), Connectivity through Wi-Fi, GSM, Bluetooth,

messaging services(SMS, MMS)etc. Since, Android is widely used among a large number of users so a large number of users can access this application. The UI for the application is very simple and can be easily understood by the user. To run, test and debug the android application Android Emulator is used. A variety of widgets such as Buttons, TextFields, AlertDialog, DatePicker, TimePicker are provided by Android to create an interactive UI.

E. *SQLite*

There are three ways provided by Android for storing user's data and application's data.

- 1) Shared Preferences: - using key-value pair
- 2) Android's File System
- 3) Android's database: - SQLite.

SQLite is an open-source database embedded in an Android by default. It is a type of relational database and provide basic operations on data such a create, edit or delete data. It is a very light database. Sql database in comparison to SQLite database is prone to SQL injection attack the query statements in SQLite are very easy.

F. *GPS*

Global Positioning System is a system that provides location and time information based on satellite navigation. In order to track someone location it gives the most accurate user co-ordinates. For GPS tracking Internet plays a vital role. The signals send by satellite to GPS receivers are encoded, so the smart phone must have in built GPS receivers.

G. *Google Maps*

A most important service developed by Google which offers view varying from satellite imaginary to street view. It acts as a route planner for travellers. They are coded using JavaScript and XML.In order to embed Google Map on your application Android provides Google Map API.Google Maps can be used to display your current location, navigate location direction, search location etc. To access Google Maps on your application you need to create an API key by registering your project.

H. *Android-Notifications*

A notification is a type of reminder in the form of message, provided to the user on device when the user is not accessing the application. Android provides a way to alert the user through notification. NotificationManager Class is used in the project to alert the user to complete the task saved when user arrives the target location.

V. CONCLUSIONS

The wide use of android devices and the pervasiveness of their networks make them an essential platform for personal ubiquitous computing. The proposed system let user set dynamic remainders based on their need. The system is able to detect or locate a certain venue along with a Google Map set on venue's longitude and latitude for user's convenience.

VI. FUTURE SCOPE

To-Do-List proposed to track/trace locations on a user specific requirements can further be exploited for business solutions such as a food order application on android ,ambulance services to accurately and actively compute patient's position in real time. Authentication of user by prompting for a pin request On-Profile change randomly which if not fulfilled trigger would be placed that automatically captures image of that user with front camera and send to device's saved contact informing for a security threat that may occur.

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