Mobile Monitoring and Tracking System

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Abstract:

Today's world which completely depends on Technology 24/7, no matter its day or night, But still this is not completely utilized, there are many instances where many of them get worried about their related ones current situation and their present location. And if they are facing any issue it has become tough to resolve the issue at that particular instance, where the technology i.e. mobiles or any gadgets that they carry didn't help them. There are plenty of tracking devices and mobile applications that track the required ones. Even though they do their specified task, they are not up to the mark. And there are many mobile apps that give the user his applications usage stats.

But they are of no use as the data is contended to that particular mobile in which the app is installed; it just gives user an idea about his usage. The purpose of this project is to trace the user and monitor his usage. This project constitutes of mobile application which collects the device info i.e. IMEI, GPS Location info & accessing details of the applications that are used by the user i.e. the accessing time of each application by the user is stored. This info is stored in server, based on this info tracking of the device is done using web application and at the times of any issue the occurred the data might be helpful.

I.INTRODUCTION:

There are plenty of tracking devices and mobile applications that track the required ones. Even though they do their specified task, they are not up to the mark. And there are many mobile apps that give the user his applications usage stats. But they are of no use as the data is contended to that particular mobile in which the app is installed; it just gives user an idea about his usage.

Disadvantages:

1. In the form of hardware i.e. which are to be carried externally.
2. coming to applications most of them are paid apps and some of them don't work properly in some areas.
3. Applications which give the details of how much the user is using the apps is of no use just to give the user an idea

Proposed System:

The purpose of this project is to trace the user and monitor his usage. This project constitutes of mobile application which collects the device info i.e. IMEI, GPS Location info & accessing details of the applications that are used by the user i.e. the accessing time of each application by the user is stored. This info is stored in server, based on this info tracking of the

device is done using web application and at the times of any issue the occurred the data might be helpful.

Advantages:

1) User direct interaction with the application.
2) After the installation of mobile application, user just needs to open the application.
3) And also the device as to connected to any network.
4) Auto uploads of files. At the time of registering into web app the user need to have IMEI number of the device in which the app is installed.

II.GPS:

GPS was originally designed for military and intelligence applications at the height of the Cold War in the 1960s, with inspiration coming from the launch of the Soviet spacecraft Sputnik in 1957, the global positioning system (GPS) - is a network of satellites that orbit the earth at fixed points above the planet and beam down signals to anyone on earth with a GPS receiver. These signals carry a time code and geographical data point that allows the user to pinpoint their exact position, speed and time anywhere on the planet. Transit was the first satellite system launched by the USA and tested by the US Navy in 1960. Just five satellites orbiting the earth allowed ships to fix their position on the seas once every hour.

In 1967 Transit was succeeded by the Timation satellite, which demonstrated that highly accurate atomic clocks could be operated in space. GPS developed quickly for military purposes thereafter with a total of 11 "Block" satellites being launched between 1978 and 1985.However, it wasn't until the USSR shot down a Korean passenger jet - flight 007 - in 1983 that the Reagan Administration in the US had the incentive to open up GPS for civilian applications so that aircraft, shipping, and transport the world over could fix their positions and avoid straying into restricted foreign territory. Upgrading the GPS was delayed by NASA space shuttle SS Challenger disaster in 1986 and it was not until 1989 that the first Block II satellites were launched. By the summer of 1993, the US launched their 24th Navstar satellite into orbit,

which completed the modern GPS constellation of satellites - a network of 24 - familiar now as the Global.

III.MMTS:

The MMTS (Mobile monitoring and tracking system) has a set of rich features and integrates seamlessly with other module. These applications help in tracing user's location using GPS information and also know user's usage of the apps.

Product Functions:

1. Generation of files which include info of IMEI, apps usage stats, GPS information by the mobile app
2. Web app represents all the information that is gathered i.e. showing the location using google maps. And downloading the stats file.

Assumptions and Dependencies:

This application can be used by any android based mobile user and any user who wants to trace and monitor can use the web app.

1. Specific user can view the mobile user details
2. Only the person who as the mobile user's IMEI number can register
3. Without installing the application into the mobile, can't access the files or trace through web app

IV. External Interface Requirements
User Interfaces

User management functionality is used to create user, provide user emailid and password and to give authorizations to the users. The software provides good graphical user interface for the front end of the database so that the naive users can make use of the system with ease. The user's authorizations are dependent on his provided data.

Hardware Interfaces

1. Operating system: Operating system must provide networking support
2. Networking: Hardware must be connected to Internet.
3. Hardware: Personal computers, Laptops, Smart Phones (screen sizes).
4. RAM capacity: 256 Mega Bytes of memory (Recommended: 512 MB or more).
5. Processor: 32-bit or 64-bit Processor.
Processing Speed: 1.3 Gigahertz or more

Software Interfaces

1. HTML 5: Software uses HTML 5 as a markup language.
2. CSS 3: Software uses CSS for styling the Layouts.
3. Java script: Software uses Java script for client side input validation.
4. PHP 5.5: Software uses PHP for Processing and Validation of input within server.
5. My SQL 5.6: My SQL database is uses for web application.

Communication Interface

Web Browser: It is the main interface that is required for communication.
HTTP: Protocol used for transferring hypertext is also required.

System Features

In this section, we will explain the major functions of MMTS. So the major functionality of the project such as installing, tracing and download of files

Application installing
Description and Priority

User first has to install the application into the mobile to sync the data to server. This feature has first priority.

Functional requirements

REQ-1: Application installation: User needs to install and open the app in the mobile.

Registration

Description and priority:
User has to register in the website by entering the values and later he can login with his/her username and password. This feature has the second priority.
3.4.2.2 Functional requirements
REQ-1: Registration of user:A user who as IMEI number of the mobile user can register to access the features of the web app.

Login:
Description and priority

The user need to login to use the other features for this user need to provide his username and password. This can be performed by a registered user only. This feature has third priority.
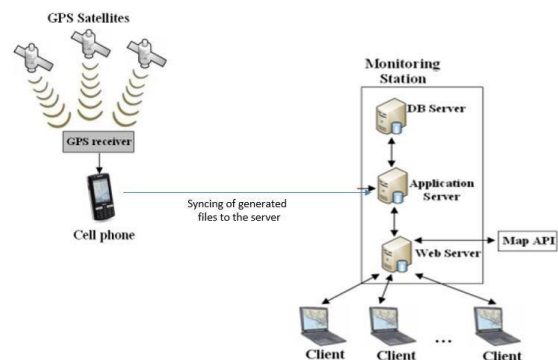
Functional Requirements

REQ-1: Email ID and password

Tracking
Description and Priority

The web user can track the mobile user using Google maps based on the GPS information that is synced from the mobile.

System Architecture

User can login to MMTS web app with his/her Email ID and password. If the user does not exists in the database that means he didn't register. After logging in, the user role will be tracking or viewing the stats of mobile user.

The files are synced to the server after the user installs the app into the mobile. And these files are uniquely stored in the server.

The Unified Modeling Language (UML) offers a way to visualize a system's architectural blueprints in a diagram, including elements such as:

1. Any activities (jobs)
2. Individual components of the system
3. And how they can interact with other software components
4. How the system will run
5. How entities interact with others (components and interfaces)
6. External user interface

Although originally intended solely for object-oriented design documentation, the Unified Modeling Language (UML) has been extended to cover a larger set of design documentation (as listed above), and been found useful in many contexts.

Design/Usage
Software development methods

UML is not a development method by itself however; it was designed to be compatible with the leading object-oriented software development methods of its time (for example OMT, Booch method, Objectory).

UML models can be exchanged among UML tools by using the XML Metadata Interchange (XMI) interchange format. UML 2 has many types of diagrams which are divided into two categories.

Some types represent structural information, and the rest represent general types of behaviour, including a few that represent different aspects of interactions. These diagrams can be categorized hierarchically as shown in the following class diagram:
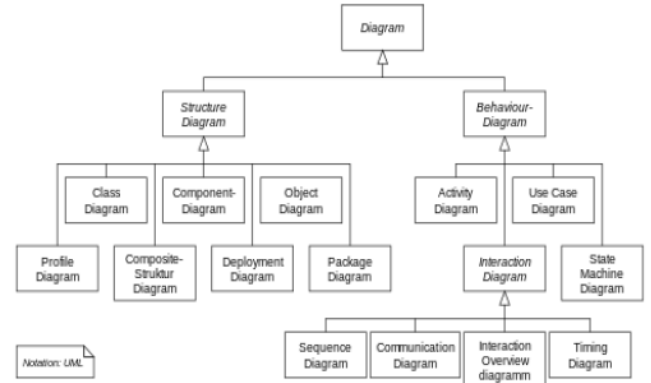

Fig 1: Classification of UML Diagrams

These diagrams may all contain comments or notes explaining usage, constraint, or intent.

V.MODULE DESCRIPTION

The following the core modules essential for the project:
Mobile app
Tracking user Location
File download

Mobile app:

For a user to use the features of web app, first he needs to install the application. After the installation of app he has to open it by which the functionalities like gathering GPS, IMEI info and user stats files are generated. The generated files are uploaded to the server using ftp. The user stats means the usage time of user on each app. In this IMEI is every important by which the user uniquely identified.

Tracking user Location

User first has to register into the web app at the time of registration he should also have the mobile user's IMEI number by which he can access the info of the mobile user. After successful registration the user can login with the specified emailed and password at the time of registration. Next the user can trace the mobile user just on one click and it also specifies the last updated location info.

File download

After the user registration and login, he can either trace or download the generated files by the mobile. The downloaded file consists of the user's mobile usage stats information.

Importance of testing

The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components, sub-assemblies, assemblies and/or a finished product it is the process of exercising software with the intent of ensuring that the Software system meets its requirements and user expectations and does not fail in an unacceptable manner. There are various types of test. Each test type addresses a specific testing requirement.

Test Cases

A set of test inputs, execution conditions, and expected results developed for a particular objective, such as to exercise a particular program path or to verify compliance with a specific requirement. The test cases for our project are listed as follows:

Test Scenario 1: Test case Scenario for Mobile app

Test Case ID	Test Case Type	Test Case Description	Expected Value	Actual Value	Result
TC_1	Mobile app	Open the installed mobile app and check that the device is connected to any network or mobile data is on.	File upload	File upload	pass

Test Scenario 2: Test case Scenario for URL

Test Case ID	Test Case Type	Test Case Description	Expected Value	Actual Value	Result
TC_2	URL	Open Browser Enter Url mmts.co.nf	mmts LoginPage	mmts LoginPage	pass

Test Scenario 3: Test case Scenario for Login

Test Case ID	Test Case Type	Test Case Description	Expected Value	Actual Value	Result
TC_3	Login	Enter username & password	Login successful	Login successful	pass

Test Scenario 4: case Scenario for Main page

Test Case ID	Test Case Type	Test Case Description	Expected Value	Actual Value	Result
TC_4	Main page	After login	Main page	Main page	pass

Test Scenario 5: case Scenario for Location Tracing

Test Case ID	Test Case Type	Test Case Description	Expected Value	Actual Value	Result
TC_5	Location tracing	Click on the link to trace the users location	Showing location using Google maps	Location shown using Google maps	pass

Test Scenario 6: Test case Scenario for File download

| Test Case ID	Test Case Type	Test Case Description	Expected Value	Actual Value	Result
TC_6	File download	Click on the link for the file to download	Download of the file	Download of the file	pass

Test Scenario 7: Test case Scenario for Logout

Test Case ID	Test Case Type	Test Case Description	Expected Value	Actual Value	Result
TC_7	Log out	Exit	Log out successful	Log out successful	pass

Screen Shots:

Fig : Login Page
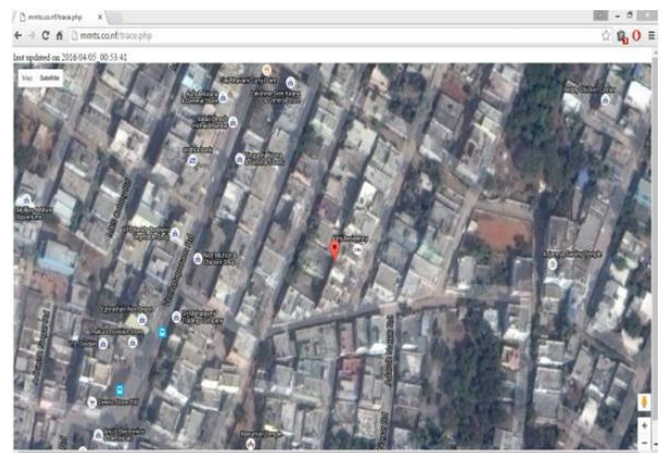
VI.CONCLUSION:

As IT continues to development, there will be more and more usage of GPS. And it will be made to be available for everyone and in an ease of access manner, also with multi OS compatibility. The Indian Regional Navigation Satellite System or IRNSS that will be soon replaced by the current using GPS navigation system i.e. American Global Positioning System (GPS).In October 2015, ISRO held a major meeting in Bangalore involving location and navigation device manufacturers, mobile phone manufacturers and global information system (GIS) technology developers where the advantages of using the IRNSS technology over the current GPS technology was showcased. ISRO feels that seven IRNSS constellation satellites once operational by July 2016 will be significantly more accurate than the American GPS system. Unlike American GPS, ISRO is recommending a small additional hardware in handheld devices that can receive S-Band signals from IRNSS satellites and inclusion of a code in the phone software to receive L-Band signals.

"Both these L and S-band signals received from seven satellite constellation of the IRNSS are being calculated by special embedded software which reduces the errors caused by atmospheric disturbances significantly.

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