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VEHICLE TRACKING SYSTEM USING LoRa DEVICES

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***Abstract*—LoRa is used to track the vehicles within a particular long range of area. The location of the vehicle is obtained through the GPS system. The LoRa receives the datas of the vehicle from the cloud with the help of GPS. The accurate location of the vehicle is obtained through the vehicle tracking system. Under the poor network condition the location and arrival time of the vehicle can be measured.**

Keywords—Vehicle, LoRa, GPS, Google maps.

I. INTRODUCTION

LoRa is a wireless technology. The datas of the vehicle are collected in the cloud through LoRa module .The vehicles longitude and latitude axis is presented in the cloud. The exact location of our vehicle is obtained through the GPS which is visualized in the map. Each Lora gateway has an ability to handle up to millions of nodes. Two ways of communication are available in the LoRa module.

II. LITERATURE SURVEY

A. Android Mobile Application for Finding the Locations of Different Stores

This paper proposes the implementation of an Android Application for finding the locations of different types of stores in the vicinity of the user.

B. Location Based Management of Profile

This paper proposes a methodology where a background service will be running to listen for the devices defined the location .The mobile App will then calculate the distance between current location and saved location. Once mobile is located to the vicinity of the saved location, a notification will be displayed to show the Alert and Profile will be changed automatically.

C. A Survey on Various Location Tracking Systems

This paper has proposed a methodology those implements sharing the tracked location of a vehicle or a specific location among a group.

D. Framwork for Dynamic Resource Allocation and Scheduling for Cloud

This system is used for storing file in encrypted format on local cloud also the system is able to send request to access other user's file. Also the admin panel is there so that admin can observe all activities of other user's and also admin is able to block, delete or deactivate the user in other words he can change accessibility of other users.

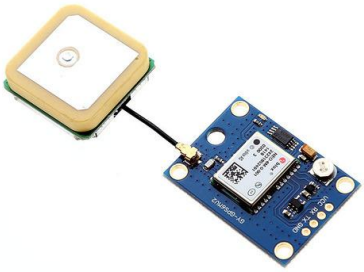
When number of nodes tries to access the traditional system then eventually the system gets crashed because the load on the cloud is not equally distributed.

III. COMPONENTS USED IN IMPLEMENTATION

Fig:3.1 LoRa module

LoRa technology was developed by a Semtech com**p**any. It is a wireless protocol designed for long-range and low-power consumptions. This technology will enable public networks to connect a number of applications running on the same network. LoRa is a wireless technology. It is introduced a number of LoRa RF modules for the market. Each LoRa gateway has the ability to handle millions of nodes. The signals can span a long range distance, which means that there is less infrastructure. This network is much cheaper and faster to implement.

GPS module



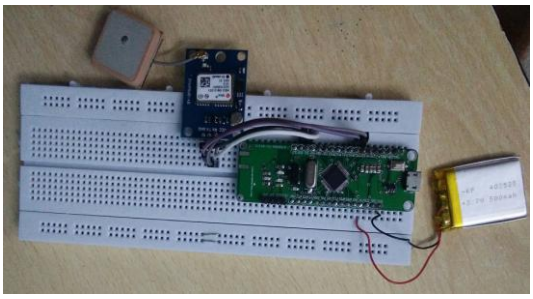
GPS is a navigation device. It can receive the information from the satellite and then to calculate the position of the devices. Latitude and longitude are the combination of GPS. The satellite collect and send only latitude and longitude value.GPS module is used to calculate the time and position of a vehicle. It consists of three segments (space, control and user segment). GPS allows only the current network. This system provides the real time of speed and location of the vehicle. This system provides current location of the vehicle.

Google maps

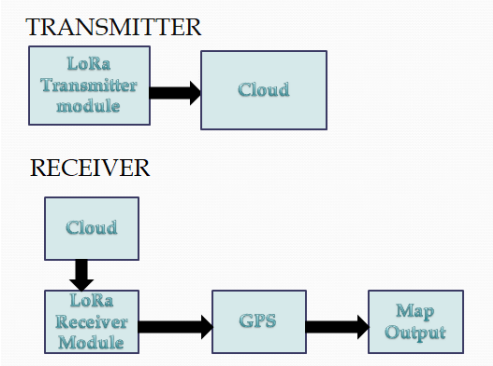
In 8th February 2005, the Google map was launched. It is a web based services that provides detailed information about geographical regions and sites. It offers satellite image, street maps and panoramic views of street. Also real time traffic condition and route planning for travelling time. It is available in multilingual. It is based on C++ language. The services front end utilizes Java script, XML and Ajax. Google map maker allowed user to collaboratively expand and update the services mapping worldwide but was discontinued from March 2017. In August 2018 the desktop version of Google maps updated to show a 3D globe.

IV. PROPOSED METHOD

Location and the arrival time of the vehicles could be measured. LoRa module performs under the poor network conditions and the data will be transmitted in long range. The GPS module gets the data from the cloud. The current location of the vehicle has been identified.



V. BLOCK DIAGRAM



VI. ALGORITHM

TRANSMITTER:

STEP 1: Start the program

STEP 2: Header files are SPI, GPS, LoRa

a) SPI is used to separate data lines and clock.

b) GPS components used for finding the location.

c) LoRa technology a message transmitted by any devices can be received by single or multiple gateways.

STEP 3: Set input LoRa sender

STEP 4: If starting LoRa failed enter the while loop.

STEP 5: If starting LoRa did not failure data does not enter into the loop

STEP 6: LoRa print the location through the GPS.

STEP 7: End the program.

RECEIVER:

STEP 1: Start the program.

STEP 2: Header files are used only SPI and LoRa.

STEP 3: Receiver process is same for transmitter process.

STEP 4: If starting LoRa failed enter the while loop.

STEP 5: If starting LoRa did not failure data does not enter into the loop.

STEP 6: Received the data from packet then read the data.

STEP 7: Give the information about the data using RSSI.

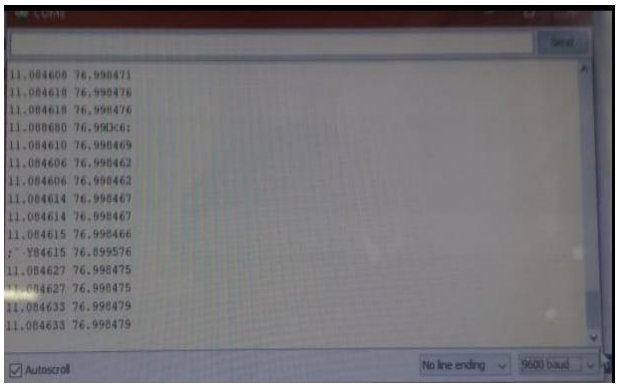
STEP 8: End the program.

VII. FEATURES OF LORA

- LoRa is a wireless RF technology.
- It has long range, low power and secured data transmission.
- It is used for inexpensive, long range connectivity of IoT devices.
- Range of LoRa:2 to 3 km (urban)

  5 to 7km (rural)
- Maximum attainable range:702km

VIII. OUTPUT



IX. CONCLUSION

Vehicle tracking systems is increasing in large areas and it is more useful compared to other devices. This technology can be used in security purpose and tracking purpose.

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