SMART WORKPLACE – USING IBEACON

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Abstract – *IBeacon is a newly developed technology device which is used for indoor tracking purpose. The device iBeacon can transmits the signals with a long range up to 450 meters. IBeacon is used in several fields which is mainly used for tracking purpose nowadays. Because, today world publish the new brand product is very important in marketing work place so without the help of marketing representatives, it is not possible at all. Hence organization cannot monitor the employees all the time. So overcome this problem we are using this iBeacon device for tracking purpose and also we can use this device for entry and exit log instead of biometric device. The working of iBeacon device is first paired /connected with android mobiles with iBeacon App via Bluetooth. Then the marketing representatives hold the smart phone, whenever they go for marketing the products. The app automatically activate with the GPS in that mobile for tracking the location. The iBeacon device is located in the controller room with the buzzer alarm. If workers do some illegal activities means the Beacon device will automatically alert the work place. Then tracking of those representatives is easily done.*

***Key Words*: Wireless networks, Ibeacon device, Arduino Uno, Bluetooth, Tracking purpose.**

1. INTRODUCTION

Ibeacon is a new technology which is a indoor localization tracking system with using the Bluetooth technology. Basically it is based on BLE (Bluetooth Low Energy). Ibeacons are standalone devices that constantly send out a UUID (Universally Unique Identifier) using Bluetooth 4.0 Low Energy by using Arduino Uno microcontroller.

This beacon will transmit and receive the signals (or) data from the mobile phones via Bluetooth pairing. Ibeacon is compared with WiFi and uses only advertisement channel. They transmit packets of data in regular intervals and this data can be picked up by the devices like smart phones.

While GPS is a globally used as location technology it has some disadvantages and also GPS signal inside the buildings or a basements is much more difficult to identify the location but the ibeacon device can be used at anywhere like indoor localization with any distance.

iBeacon functions as an indoor tracking system, which allows businesses to advertise their new products with special offers to nearby smartphones with the iBeacon app. With iBeacons set up, businesses can send messages to potential ability of their customers (such as special offers or goods) when they enter into market or somewhere the beacon device located place.
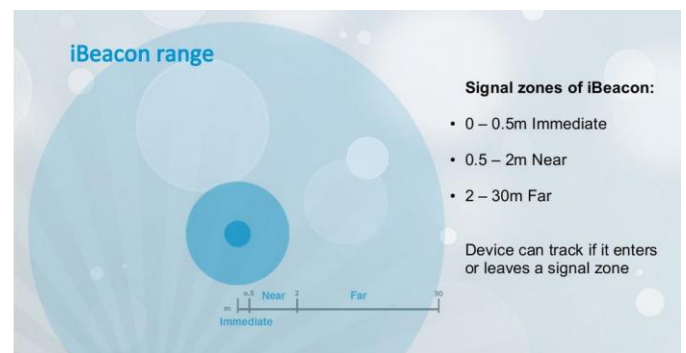

Fig.1. Range of iBeacon

2. METHODOLOGY

In the world of business, everything need to be marketed to represent our brand. And also need to be publish the new products by the marketing representatives as well as workers.

At the same time the administrator of the organization cannot able to monitor them is not much as possible by monitoring separately. So in this paper we are develop a system for monitoring the representative with the help of GPS, but not from the representative's device.

Fig.2.1. iBeacon module

An iBeacon module is an improvised technology which can be used for tracking purpose and also it can be used to find the location for the blind peoples. This device is fully based on the Bluetooth Low Energy (BLE).

Bluetooth low energy consisting two main parts are

1 .Advertising

2. Connecting

Advertising and connecting process are done by the BLE through the iBeacon device. And also BLE is the main source to find the approximate localization of required object.
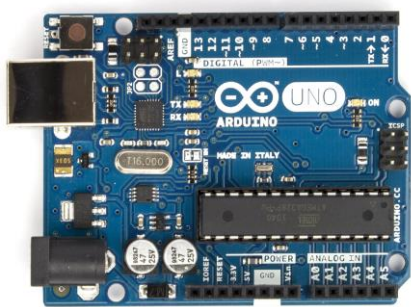

Fig.2.2. Arduino Uno

Arduino Uno is a microcontroller board based on the ATmega328. The microcontroller has 14 digital input/output pins and 6 analog output pins. It can be connected to a computer with a USB cable with a AC to DC adaptor to get started.

Uno means one in Italian and the Uno version 1.0 will be the reference versions of Arduino. Microcontroller ATmega328 operating voltage is 5V input voltage is 7v. The Arduino Uno microcontroller can be powered via the USB connection with the power supply.
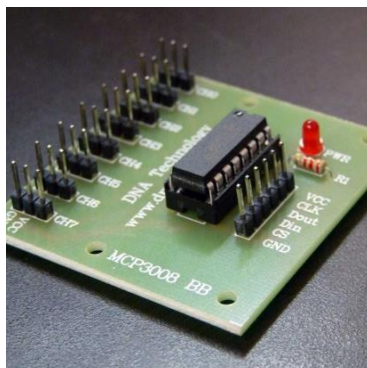
Fig.2.3.AC to DC conversion

After the coding of Arduino microcontroller, which can be connected with the computer using the AC to DC convertor.
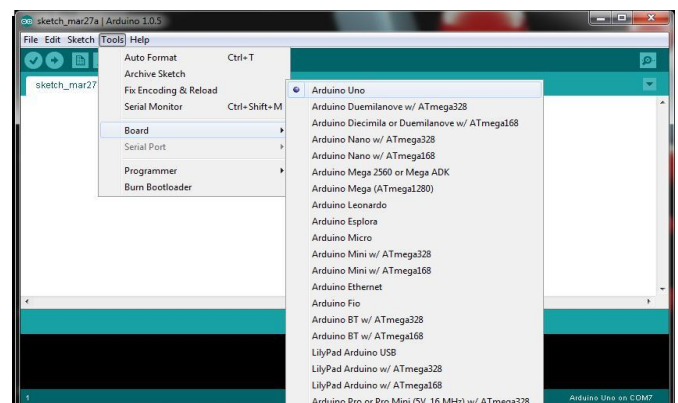
ARDUINO SOFTWARE

STEP 1: Open Arduino IDE as shown below
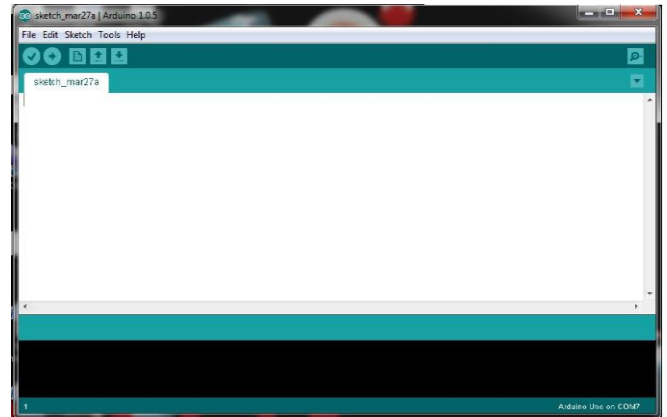
STEP 2: Select the COM port from tool
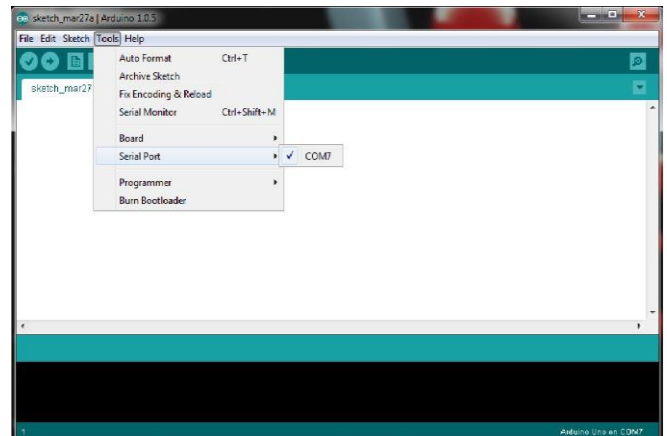
STEP 3: Select the required Arduino board from tools

STEP 4: Write the sketch in Arduino IDE

STEP 5: Compile and upload he sketch to Arduino board

BUZZER ALARM

A buzzer/beeper is an audio signaling device which may be piezoelectric, mechanical, electro mechanical. Buzzer can be used as alarm devices, timers and confirmation of user input such as keystroke.
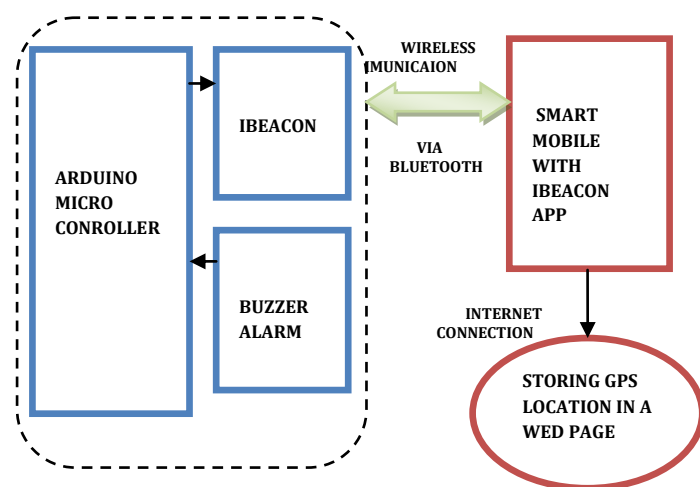

Fig.2.4.System Architecture

An iBeacon technology consist of one or more iBeacon devices that transmit their own identification number to the local area.

It helps smart phones determine their approximate location. And also it can find is relative location to an iBeacon in a workplace or store.
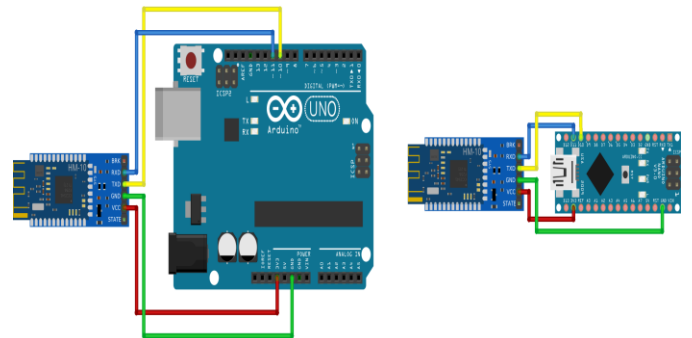
3.RESULT

Fig.3.1. Overall system prototype

Fig.3.2. output

The above figure 3.2 represents comment message from the iBeacon device to the mobile phone.

Fig.3.3. output

Fig 3.3 consists the android mobile phone with Bluetooth debugger which is used to easily paired with the ibeacon app to ibeacon device.

4. CONCLUSIONS

With the improved version of iBeacon technology we can use for multipurpose. Beacons are used for indoor location mapping, targeted advertisements, automatic mobile payments ec. An iBeacon device can easily paired with the mobile phone, so we can track the location of the employee or marketing representatives approximately. Even though the device can be used for entry and exit for various places like workplace, industries, etc,. Due to this technology we can avoid more management oriented problems occur in the workplace.

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