Whereabout Locator

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Abstract - *In the present era, the interaction amongst humans and machines is not only limited to pen and mouse but has reached a new level and is getting more and more pervasive. Every technological advancement reduces the gap between the human-machine inter action. In such scenario, where technology is used comprehensively, there are many fields which lack advancements. In this paper, we purpose a real-time algorithm for tracking and locating the presence of the required object. Because a lot of time is wasted in schools and colleges, military base camp, the wildlife sanctuary for manual attendance procedures, So in order to overcome these we have come up with a new idea "Whereabout Locator". The idea of 'Whereabout Locator' tends to revolutionize this sector. It basically bridges the time gap required to collect demographic information. Every authorized ID holder is provided with a unique RFID tag/card with her/his details fed in it. Whereabout Locator system consists of Radio Frequency Identification (RFID), Real Time Clock (RTC), Global Positioning System (GPS), PIC microcontroller and WiFi. This system also combines wireless communication with internet system to be structured of attendance record system. This system will increase the efficiency and accuracy of attendance.*

*Key Words***: automatic attendance, rf communication, monitoring system, real time clock, Internet of things.**

1. INTRODUCTION

Manual attendance system requires more time, duplicate data entry and errors in time and attendance entries. Hence a system has to be found to minimize the difficulties of manual processes. Automated Time and Attendance marking system can help schools and higher education, military base camp, wildlife sanctuary in many ways. The Whereabout Locator system will help to eliminate manual attendance system and leaving entry and calculating hours attended. With automatic attendance system, authorities can more accurately and quickly track ID holder's time in the specified area. This system will eliminate duplicate data entry and errors in time and attendance entries. This system will also locate the position of ID holder in that area. This project consists of RFID, GPS, Wifi and PIC Microcontroller. Using RF communication and GPS the ID can be tracked and located. Here RF communication is used for the enclosed area. In RF communication the RF transmitter is in continuous frequency radiating mode. RF receiver has its predefined reception range. After receiving frequencies from RF transmitter the RF receiver counts the presence of that particular ID. GPS will give the position of ID holder outside the enclosed area. WiFi is used to send information to the website. By using the website authorities can track students' whereabouts through the web server. This system is real-time application it keeps the record with date and time.

2. LITERATURE SURVEY

1. This system is very useful for locating and monitoring attendance of students. The paper presents a system in which students will be identified by placing a tag on the student's ID card. If the student is outside the building, a message is notified to teachers.

2. An idea is using an RF communication Technology in Elderly Center. This system is a real-time application. The Internet technology is used to record the data of moving route and work and rest.

3. A combination of GPS and RFID can be used for BUS tracking. GPS is used to locate the Bus and RFID is used to identify the Bus.

4. GPS and RFID both can be implemented in Fisher Boat Tracking System. RFID is used for indoor and GPS is used for outdoor Fisher Boat tracking system in sea, cars and staff over a wide geographic area.

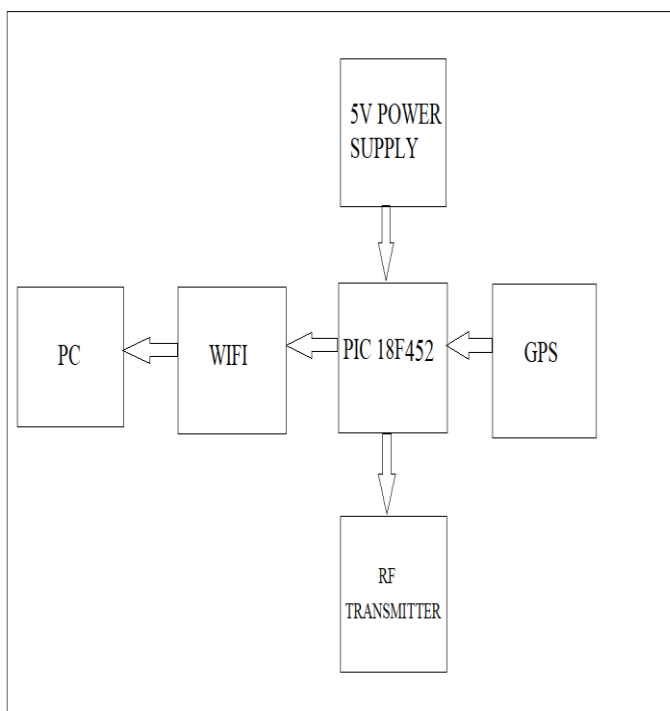5. A real-time algorithm is used for detecting and tracking the moving objects. Pedestrians location can be detected and tracked using dynamic models.

3. BASIC STRUCTURE

The main structure consists of a PIC18F4552, RF Transmitter, RF Receiver, GPS, WiFi.

3.1 BLOCK DIAGRAM

The basic structure of this project consists of two sections.

A. Transmitter Section

The transmitter section consists of PIC18F452, Power supply, GPS, RF Transmitter, WiFi. When the RF Transmitter is in the range of RF Receiver then the information of the student is provided to the PC. This information is provided via WiFi network. If the student is outside the building then the position of that student is tracked by the GPS and sent to the website via WiFi network.

B. Receiver Section
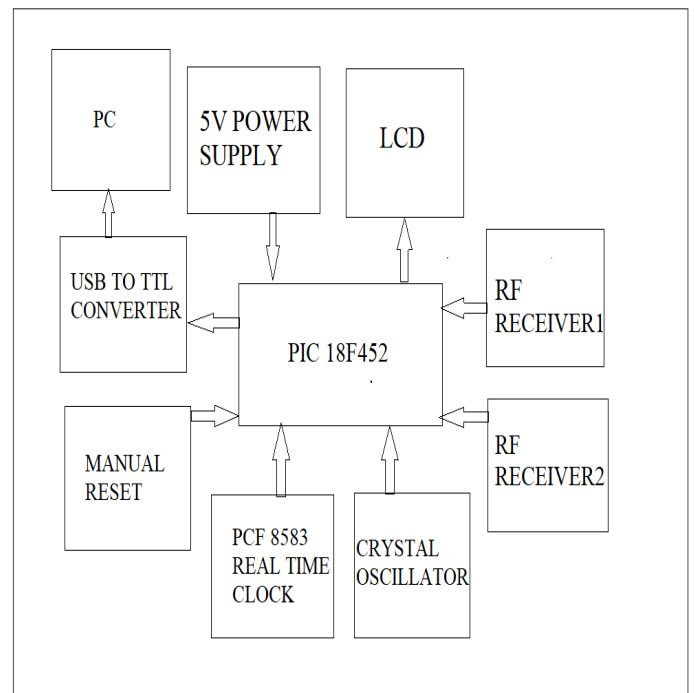
A receiver section is especially focused on PIC18F452, RFID Tags, Real Time Clock(PCF8583), Power supply. The presence of RFID Tag is monitored by RF receiver. The received information of student is then stored in the record with the time and date. The time and date are saved with the help of a real-time clock.

3.2 CIRUITARY

PIC MICROCONTROLLER (PIC18F452)

A microcontroller is a compact microcomputer which was designed to control robot, office machine and many more useful devices. Microcontroller has a processor, memory and peripherals. PIC microcontrollers are electronics circuit that can be programmed accordingly to the particular task. It has 40 pin, 75 instruction set, operating speed DC - 40MHz clock input.

RFID

The RFID consists of two main components RFID reader, RFID tag. The tag monitor and carries information in the microchip. The reader detects the tag that is within the frequency range. The reader read/write data from the tag.

WIFI

Wi-Fi is used to provide wireless high-speed internet and network connection. It is a facility which allows computers, smartphones, video-game consoles, smart TVs, modern printers, digital audio players or other devices to connect to the internet.

GPS

GPS is used for navigation system. With the help of this system location of the device can be traced. It gives us longitude and latitude of that device on the earth.

RF COMMUNICATION

RF communication requires two main modules for communication with same frequency. RF transceiver consists of RF transmitter and RF receiver.

4. HARDWARE IMPLEMENTATION

The system architecture consists of two main parts; the hardware and software. The authorized person can login into the system and check necessary information in the application. The application keeps a log of the ID, time and date of every person. The RFID tag is given to each and every person in the department. This system is embedded into the ID cards of that particular person. The tag is scanned by the reader which consists of a unique code. This unique code has basic information about the student. After receiving the existence of the RFID tag the ID holder's information on that tag is stored in the database with time and date. The software part contains the website which has information about the ID holder's position on the campus. The authorized person can assist the location of ID holder from anywhere.

4.1 FLOW CHART
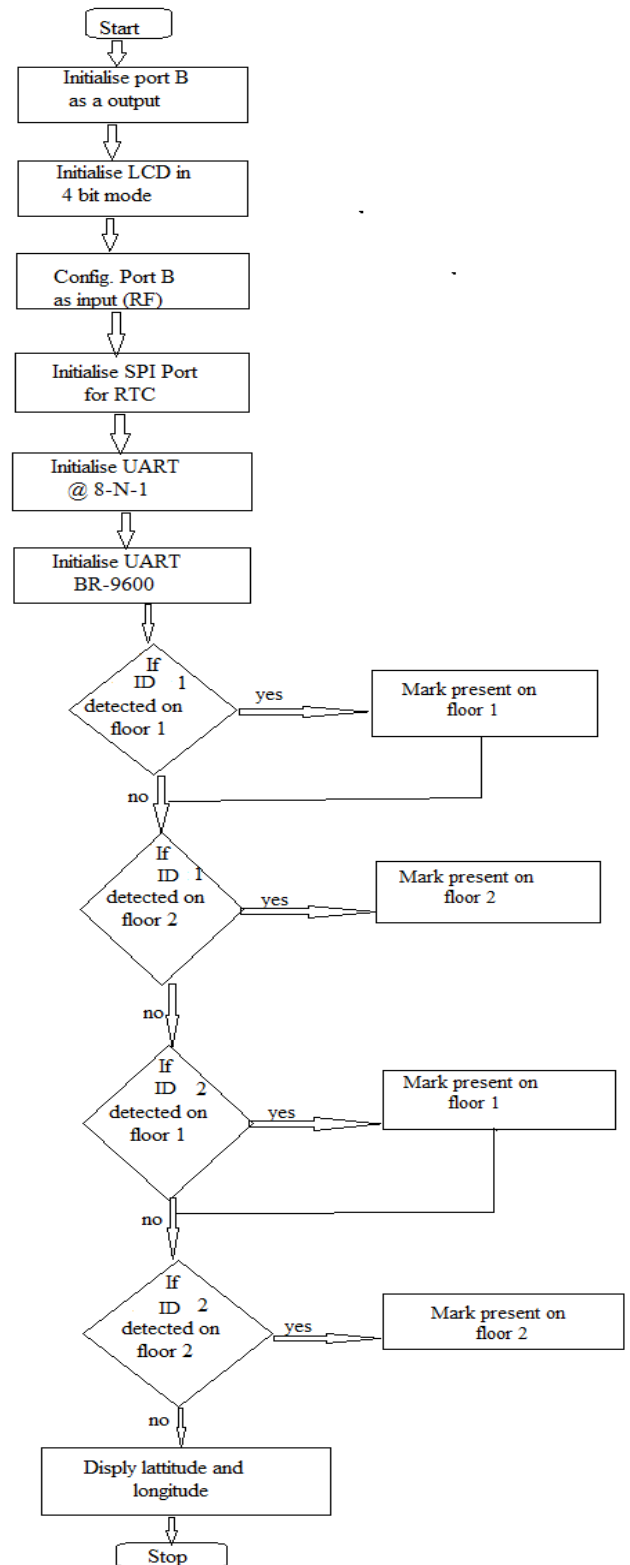
5. RESULT
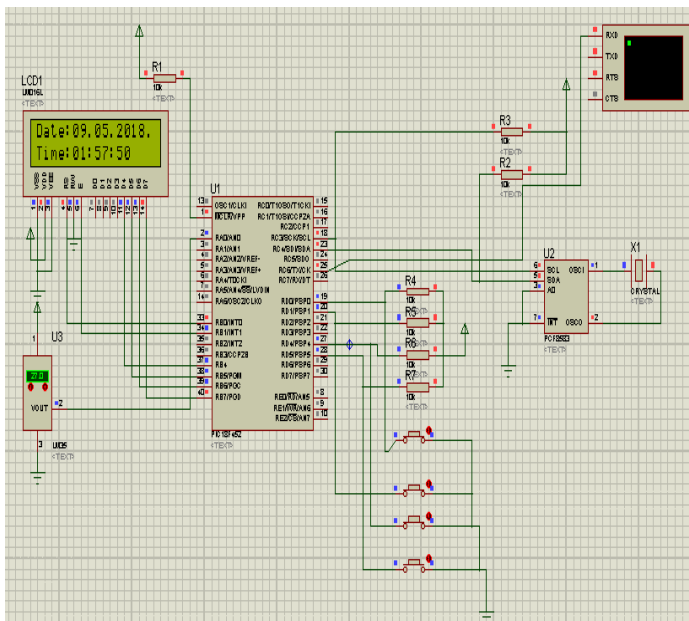
6. CONCLUSIONS

This paper proposes a system for tracking position and attendance of ID holder. The wireless internet technology is used to record the data of moving route. This record can be browsed by using a web site which is designed for authorities to get information online. The system used is real-time monitoring system for ID holders, This will help to get and save the data with the time and date of the ID holder entering or leaving from the campus.

7. FUTURE SCOPE

Application of sensors to detect the removal of the ID and prevent its misuse. Accordingly, a humidity/temperature sensor can be deployed to check whether the ID has been removed. Moreover, a pulse rate sensor which keeps a check on the pulse as soon as login is done can be used which will, in turn, prevent its misuse of one single person carrying multiple IDs. Future advances in this system may help Forest Departments to Geo Tag the animals in the vicinity, keep a note of their breeding habits and maintain a check on their population. We can also use this system in old age homes to get timely record of their position in the campus.

REFERENCES

[1] Ashwin K., Aswin Perumal A., Krishnakumar S., Maheshwari M."RFID Based Student Attendance and Monitoring System." International Journal of Innovative Research in Computer and Communication Engineering(IJIRCCE),2015.

[2] Ching -Lung Lin , Lin-Song Weng , Hsuech-Hsein Chang , and Ching-Feng Lin, "Telecare System Using RF Communication Technology in Elderly Center." Institute of Electrical and Electronics Engineers(IEEE).

[3] Anuradha Vishwkarma, Agraja Jaiswal, Ashwini Neware, Shruti Ghime, Antra Marathe, Asst. Prof. Rashmi Deshmukh, "GPS and RFID Based Intelligent Bus Tracking and Management System."International Research Journal of Engineering and Technology(IRJET),2016.

[4] Prof. Homera Durani, Prof. Neerav Bhatt, Prof. Hardik Mehta, "RFID and GPF Combination Approach Implementation in Fisher Boat Tracking System."International Journal of Computer Science and Information Technology (IJCSIT),2014.

[5] Mircea Nicolescu, "Dynamic Models for People Detection and Tracking",Institute of Electrical and Electronics Engineers(IEEE).

[6] Hong-Soon Nam, Dae-Young kim, Jong Won Park, "An Efficient Detection Method for Unknown Wireless Devices using SDR Receivers", Institute of Electrical and Electronics Engineers(IEEE).

[7] Mrs. Bhavna Ambudkar, "Sensored Car", Institute of Electrical and Electronics Engineers(IEEE).