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Bluetooth Smart based Attendance Management System

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ABSTRACT:Bluetooth Smart is a wireless technology designed for innovative healthcare, fitness, beacons, security and home entertainment applications. The technology makes use of electronic tags with a Bluetooth Smart enabled device to facilitate automatic wireless identification. In this study, we are trying to solve the attendance tracking issue using a Bluetooth Smart based system. A Bluetooth Smart application to student attendance reduces the time taken during manual attendance and human errors and provides administrators with attendance scores data for use in further managerial decisions.

KEYWORDS: Bluetooth Smart; Lecture; Attendance; Tag; Student; Database.

I. INTRODUCTION

Valuable lecture time is dedicated to attendance and it is unreliable at times. It's arduous and time-consuming. Besides, it is very prone to personal errors as when the method is manual. Reconfiguring this problem by using Bluetooth Smart technology makes it more efficient and effective. Bluetooth Smart technology can be used as it is an automatic tool for identifying and collecting data. It is reliable and allows prompt data entry. It comes into existence only recently, but because of its low cost and compatibility with a vast number of mobile phones, tablets and computers, it has enormous potential for the future.
Bluetooth Smart integrates microchip technology with radio frequency to create a secure network that can be used to recognize, track and manage inventories of items. Smart Bluetooth devices use tiny tags called chips. The tags themselves contain some identifiable information and then transmit it to a Bluetooth Smart device activated.

Bluetooth Smart devices can provide reliable and accurate data on tagged products that increase performance and this capacity will bring many other benefits in the near future to both the business community and customers. In this paper, we present a smart Bluetooth Smart-based lecture attendance and control system tailored to the University policy of ensuring students attend a 75 percent course for a course prior to the possibility of writing a semester exam for any course.

Applying Bluetooth Smart Technology to student lectures would result in a student database management system that is not manipulated by anyone and is not prone to errors, it will eliminate / reduce the loss of quality time during manual attendance collection and, most significantly, helps to better manage classroom statistics for the distribution of attendance scores, in a particular course, in the final classification of student performance.

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II. REVIEW OF RELATED WORK

An integrated attendance management system was implemented on the mobile and electronic platform respectively using both a stationary RFID reader with four circulatory antennas and a handheld RFID reader. The attendance management system on the online platform portrays a framework consisting of an antenna at the entrance of the classroom and a student database. As students enter their class, their names are displayed on the screen to determine that the professor's database has marked their attendance. One major drawback of this system, however, is that as the distance between the RFID tags and the electronic device radically decreases the read rates of the RFID tag. Another type of automated attendance system that uses fingerprint identification technique has been proposed. The abnormal point extraction technique on the ridge of the user's fingerprint or minutiae made it possible to verify the fingerprint technique. This method is used to validate an approved user's authenticity by comparing the captured fingerprint template with the templates contained in the database. The system is based on the true or false value of the identity of the individual previously checked. Authors also reviewed and proposed a bio-metric system for employee attendance in an organization using fingerprint identification.

Tags are detected and marked by an RFID-based system and used to identify the attendance of students. To carry out this mission, a computer was used as the tool. The RFID reader senses the existence of a tag and, according to the programmed instructions; the device processes this information on the computer. The technology's tractability, usability and receptivity have a major impact on the ease with which RFID device can be integrated into current operations. The system provides an effective solution to the problem of blathering attendance by integrating software and hardware design along with efficient data exchange between the computer-interfaced RFID tag and reader.

III. PROPOSED MODEL AND WORKING

For RFID-based systems, the tag must be near or in touch with the RFID reader while scanning the tag to transmit the information to an existing database representing the data stored on the tag. In order to avoid proxies, this process needs to track who scans the tag. The scanning time is about the same as the time it takes for the students in the class to be counted manually.

Industrial wireless sensor technology has resulted in significant demands for wireless technologies such as low energy consumption and a resource-saving simple protocol stack. Bluetooth Smart is a rather new wireless standard that fulfils these basic requirements fully.

The proposed Bluetooth Smart system offers many advantages as electronic tags can be embedded in student ID cards (student ID card); has low power consumption; the electronic tag can also be read during motion and no line of sight is needed for wireless communication between the tag and the reader. Even if submerged or covered with dirt, tags can be read, are almost indestructible, and have unchanging permanent serial code that prevents manipulation.

A Bluetooth Smart Chip is programmed and configured to run via Bluetooth in connection with the Android app. A unique tag is given to each user, which can then be detected via Bluetooth Low Energy by the application. A serial number (related to the SAP number of each student) of the tag is associated with the entry of the student database while he / she is attending the lecture. Therefore, each time a student holds his / her card and attends the lecture, entries with the time stamp will be entered in the database as the instructor travels around the class and the application senses the tags. Also, the application is configured to detect tags only within a particular range in order to avoid detection of tags that are outside the class.

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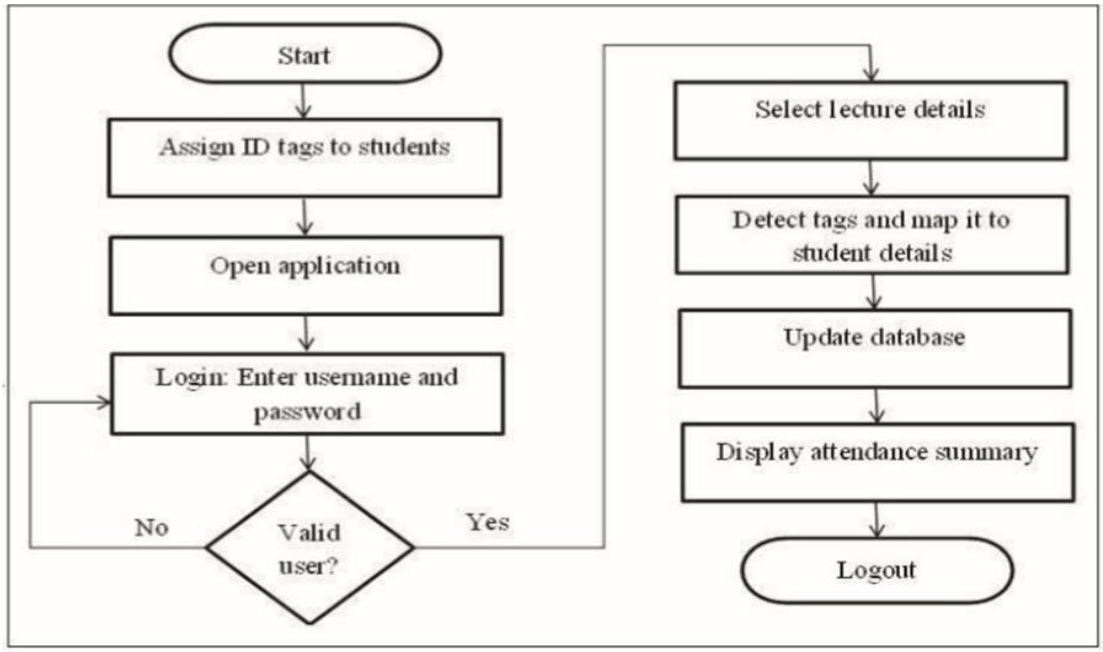

Fig.1. Flowchart showing the mode of operation of the student attendance management system

Bluetooth Smart technology operates in the same spectrum range as Classic Bluetooth technology (the 2.400 GHz-2.4835 GHz ISM band). Bluetooth enables the mobile device with the tag. The query verifies the tag's validity. If the tag is correct, it will proceed to the database system and then record the attendance of the student for the course. If the tag is found to be invalid, the application may warn the student that the tag has not been registered and that a legitimate tag must be issued by the user. The supervisor can use the application's questions to collect more information about a single student's attendance or the entire class. By entering the specific parameters in the application as defined by the university, the professor can grade students on the basis of their attendance for a particular course and can also produce reports weekly, monthly or for a whole semester. The device can also be used to alert the parents of the students who are deferring. The supervisor assigns tags to the students and can apply to other student not only new tags, but also an existing tag linked to a particular student.

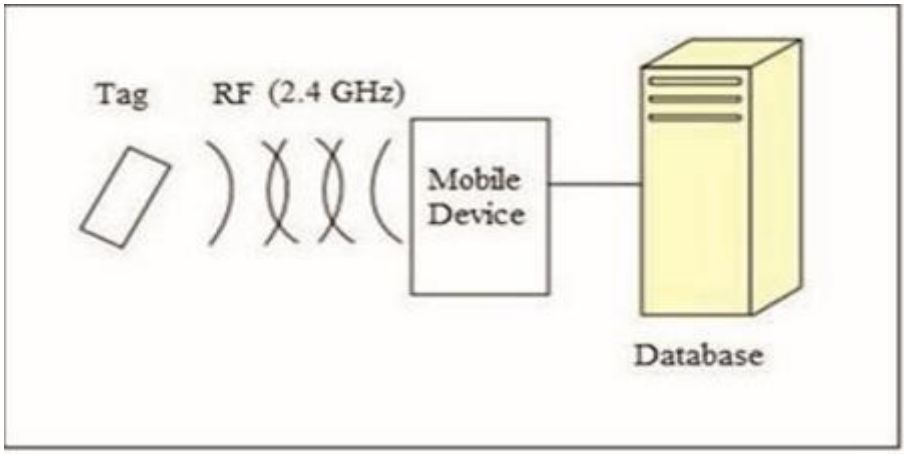

Fig.2. Depiction of Bluetooth Smart system operation

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IV. CONCLUSION

We discussed in this paper an automated attendance recording system using Bluetooth Smart technology capabilities. A Bluetooth Smart system's main advantages are:

- Low power consumption
- High data transfer rate
- Small size of chips and low cost
- Simple implementation of Bluetooth Smart based wireless sensors

When Bluetooth Smart technology evolves, advanced implementations will make use of this technology in a variety of fields such as healthcare, inventory management and sports to develop faster, cheaper and more efficient solutions.

REFERENCES

[1]Henry. S, S. Arivazhagan and L. Ganesan (2003), "Fingerprint Verification Using Wavelet Transform", International Conference on Computational Intelligence and Multimedia Applications, 2003.
[2]Maltoni D, D. Maio, A. K. Jain, S. Prabhaker (2003), "Handbook of Fingerprint Recognition", Springer, New York, Pp 13-20.
[3]Arulogun O. T., Olatunbosun, A., Fakolujo O. A., and Olaniyi, O. M (2013), "RFID-Based Students Attendance Management System", International Journal of Scientific & Engineering Research Volume 4, Issue 2, February-2013, ISSN 2229-5518.
[4]Krenare R. Pireva, JetonSiqeca, Shkelqim Berisha, "RFID: Management System for students' attendance", 15th Workshop on International Stability, Technology, and Culture The International Federation of Automatic Control June 6-8, 2013. Prishtina, Kosovo.
[5]Chitresh, S and Amit K (2010)," An efficient Automatic Attendance Using Fingerprint Verification Technique", International Journal on Computer Science and Engineering (IJCSE),Vol. 2 No. 2,pp 264-269.
[6]Zulkefli NA, Miskon S, Hashim H, Alias RA, Abdullah NS, Ahmad N, et al. A business intelligence framework for higher education institutions; 2006