Student Monitoring System using an Iot & Cloud Mediator

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ABSTRACT:
Student Monitoring System is the latest approach to track the student's academic and college activities by their parents. It utilizes the RFID Readers and RFID Tags with an Arduino Ethernet Connectivity and Cloud Brokerage as a Mediator. RFID deployment in education is student monitoring system, by using IoT and Cloud technology; it will generate a real time monitoring system that can be retrieved by parents. Whenever a student enters the college campus it forwards and store the information in the college Database. The data can be accessed by every parent through an App or a Web-based Application. The parent has to get registered during the student admission in order to get touch with the College Administration. So, without the assistance of other the parent will know their child progress using a simple click on button. Using IoT and Cloud we can access it from anywhere and anytime which will impart us the better pliability.
Keywords: RFID Sensors, IoT, Ethernet, Network, Tags**,** Cloud.

I. INTRODUCTION:

The Internet was introduced to the world on January 1, 1983, which connected the network of networks fabricated a big boom in the communication system. After the interconnected computers throughout the world, there is a drastic change in the communication from the virtual world to real world.The "Internet of Things" is that which connects the real world objects or devices to the virtual world.Auto-Id Center, Massachusetts Institute of Technology(MIT) was the first to popularize the term "Internet of Things" in 1999 with a design to propagate a cross-company RFID Infrastructure [1].Kevin Ashton, co-founder and former head of RFID Infrastructure quoted that "We need an internet for things, a standardized way for computers to understand the real world", which was entitled as "Internet of Things", the first documented in 2002 [1].

The first conference on the Internet of things was held in 2008 which started with a great revolution in the Internet World. The word "Internet of Things" is familiar to everyone. But what does it mean and what are the infinite possibilities we can do with this is familiar to very few people.

In this paper, one of the applications we can do with the real world is explained.

Personalized Network:
With the help of "IoT", one can create their own personal network [2]. We can take an example for this. Let us consider that we are distant from home but within a frequency range and omit to turn off the power system of the home or other appliances. At this point in time, we can arrogate the IOT technology where the devices have connected the Internet and can be monitored and controlled with a simple Smartphone [2].

Technology-driven in IoT:
IoT uses the basic sensors and actuators for accomplishing the task. With the help of sensing technology, we can scan the surrounding atmospheric changes and react according to them. It helps a lot for the luxurious and safe survival of human beings.

The actuators are the one that reacts to the sensors and does the physical job of moving or changing the position [5]. Whenever the data is sent from the sensors it will be given to the actuators who run according to the task given by the developers to accomplish the requirement [5].

II. IOT APPLICATION:

One of the major Applications we can develop with the IoT is Monitoring a Student within the college campus by his/her parents far away from the college surroundings. As well as the academic details also can be known with a simple login. When a parent wants to check out a detail he requests through the college website or through a simple app.

The Structure involved in Student Monitoring:
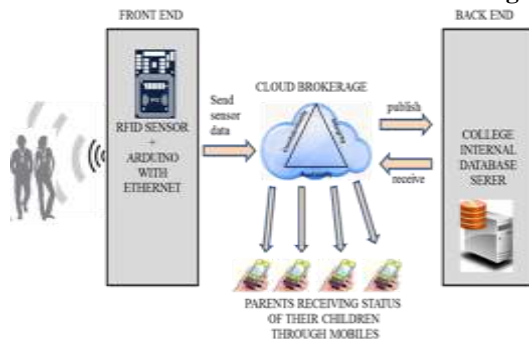
Figure 1: Student Monitoring System

Working process:

In the fast-growing techno world, everyone is so busy with their gadgets and their office stuff; no one is so good enough to monitor their children [3]. RFID sensor system is the one which assists the parents to monitor the children's behavioral or academic aspects.

Whenever a student enters the college campus the RFID sensors sense the Tags worn by them and send the unique identification number to the college database server through the cloud brokerage. The information will be extracted for the college timings and the students who left the campus will be inferred to their respective Parents mobile number.

Sample Kit for Monitoring:

For the real-time application, we use the RFID MFRC522 [4]with the combination of Arduino Ethernet connectivity and uses the contactless based reading of Student Identification tags.

Figure 2: RFID MFRC522

The MFRC522 is easy to connect with Arduino kit. Just plug it once and play the game for rest of time [5]. It is capable of sending with Baud rate 2400bps~ 115200bps. It is excellent in performing the MIFARE standard Encryption algorithm as it is using the IS014443 chipset and capable of storing the data in EEPROM whenever there is a shortage of power supply.
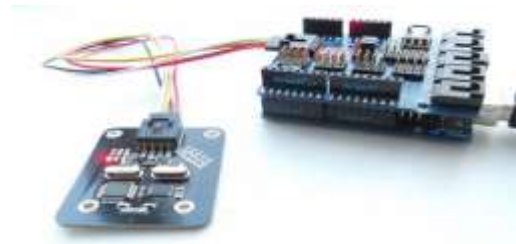
Figure 3: MFRC522 connection with Arduino Board

RFID Sensors:
We have two types of Sensors.
1. Active Sensors
2. Passive Sensors

Active Sensors:

These are the Sensors where we get the information like a reverberation or an acknowledgment from the RFID Tag [5]. The information is then read by the RFID Reader through Ethernet Connectivity to the Database where the information is stored.

Passive Sensors:

The passive sensors interaction is the way of one-way communication or like a barcode Scanner where the RFID Tag should be placed near to the Reader with a distance in 5 to 10 cm Range. There are no passive UHF tags that can be read at more than 100meters (328feet) using conventional RFID Interrogator.

The type of Sensor implemented and that can be used for this Application development is the Active Sensor.

The RFID Reader differs depending on the coverage range and amplitude. RFID systems throughout the world operate in low frequency (LF)**,** high frequency (HF), and ultra-high frequency (UHF) bands [5]. Radio Waves are used as a communication between the Reader and Tag.

III.   IMPLEMENTATION:

The Application can be accessed by every student's parent by using an Android App or from a Web Source. The information required for the parents is retrieved by Cloud Brokerage from College database server.
The process involved is
1.   When the Student enters College Campus, the Readers that are placed at different locations detect the Student RFID Tag by sending and receiving signals in the form of Radio waves.
2.   The information is dispatched to the College Database through an Ethernet Connectivity to RFID Reader.
3.   In the Middle of all the Communication process the Cloud Brokerage where we take an

inter help, play the key role in sending the information to the Parents.

4. Whatever the information that is urged by the Parents about their kid will be answered by the Cloud Brokerage.

5. For all the process to take place all the Parents has to get registered at the time of Admission.

6. So, that every Parent gets an individual Login to check the academic, as well as their Kid's College attending information at a daily Schedule.

IV. CONCLUSION:

In the busy world of mechanical life, no one has the time to take care of their Children. If there exists a system, then that can give the care of acquiring the information of their child as a nanny at the house, no one will be furious. The proposed system helps the parents to accomplish their work peacefully. The simple web page or an app lets them trace the children activities and academics both at a time. In the coming future, there is a need for this type of upgrading technologies that can be acquainted with a simple click of a button.

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