

## **VISITOR AUDIT SYSTEM USING RFID AND LoRa - DESIGN DOCUMENT**

The project aims to provide information about visitors/outsiders who have come to the institution by using RFID. When the visitor arrived at the gate he has given a card(RFID tag) which contains his/her name and details. The system should be operated by security guards of the institution.RFID is connected to the Arduino Nano board, which is used to communicate the information of the receiver in every block of the institution. The mobile app pushes the data into the cloud and pops the notification to the monitoring system.

Hence the monitoring system will digitize and automate the visitor entries. Therefore the project will automatically keep track of visitors and their count.

### **Visitor audit system project consists of the following components:**

- Custom-built Arduino compatible board
- Mobile phone with custom project app

### **Hardware :**

The custom-built board contains the following resources:

- Microcontroller: ATmega328 microcontroller with Arduino bootloader running at 16 MHz
- Power supply :

- The Arduino Nano can be powered using mini-USB,6-20v unregulated external power supply at pin 30 or 5v regulated external power supply at pin27.
- The 3.3V supply required for the LoRa module is not generated using Arduino nano but done using an external regulator.
- Custom board Arduino compatible Mobile app.
- Lora Rs-02 module is connected to the Arduino nano board.
- Eagle PCB CAD software is used for the design of the two-layer custom board.

### •RFID :

It is an electronic device that has 2 parts.

- 1.RFID reader.
- 2.RFID tag or card.

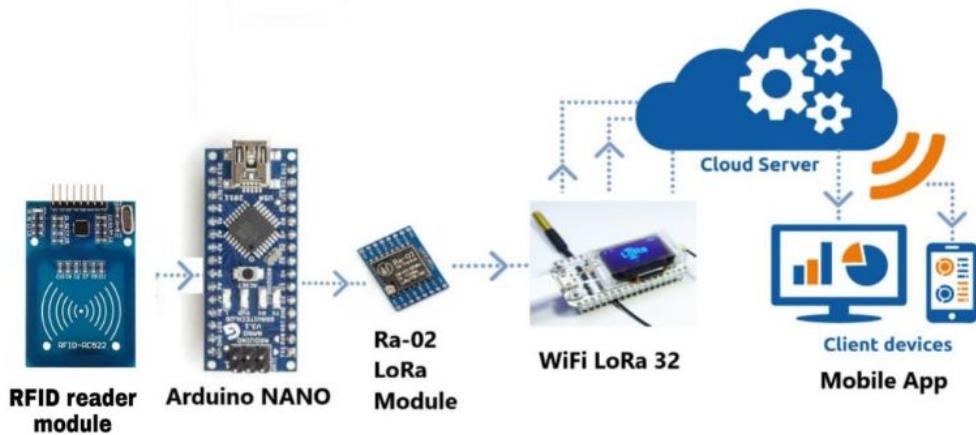
### **Software:**

#### Firmware-

The firmware will be written using the Arduino IDE. This is possible since the ATmega328 microcontroller is loaded with the Arduino bootloader.

The firmware will do the following functions:

- The firmware reads the commands from the sketch and collects the data using the sensors, and it pushes the data into the cloud via gateway through LoRa and sends a message.
- The firmware reads the commands received from the mobile app, performs the related functions.
- After a fixed time delay sends back the message to the mobile app using LoRa.



### **Mobile App Development:**

The Mobile App development will be done using the kodular App Inventor utility for Android-based mobile phones. The mobile app will do the following functions:

- Receives the message that visitor whenever the visitors enter the different places of the institution.e.g:visitor1 has entered the ECE block in the college.