RFID Based Attendance System

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Project Aim

To use Radio frequency identification technology to take attendance

Project description:

RFID based attendance system consists of RFID Reader, RFID Tag, LCD display and microcontroller unit. RFID can be interfaced to microcontroller through USART. Data is transferred from RFID cards to reader and from there to microcontroller. In real time, one can issue active tags to the students, with their roll numbers as their tags. RFID reader contains a copper winding in it. This winding acts as an antenna.
Hardware Used:

- ATMEGA8 Microcontroller.
- RFID Reader
- RFID Tags.
- LCD display

Approach

Circuit Design:

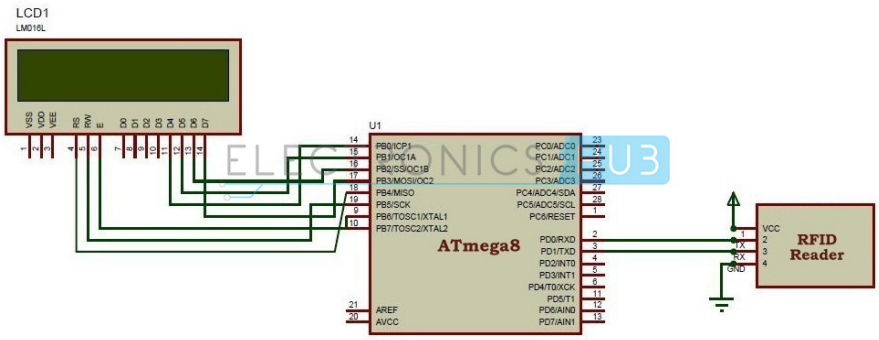

Figure 1: Circuit Diagram

1. RFID based attendance system has very simple circuit design. The RFID Reader has transmit and receive pins. These pins are connected to the transmit and receive pins of

the micro controller i.e. PD0 and PD1 pins of microcontroller.VCC is connected to 5v and GND is connected to ground.

2. RFID module communicates with the controller using USART, where USART is a communication protocol. USART is acronym for Universal Synchronous and Asynchronous Receive and Transmit.

3. Serial data can be transmitted from RFID module to microcontroller using UART. ATmega8 microcontroller has USART registers internally. One should declare these registers in order to transmit or receive data serially.

4. LCD display is connected to Port B of the microcontroller. Interfacing of LCD in 4 bit mode is in to microcontroller which is shown in the circuit diagram. D4 – D7 data pins are connected to the PB0 – PB3 pins of microcontroller.

5. RS pin is connected to PB4, RW pin is connected to PB5 and enable pin is connected to PB6 of microcontroller. To display data on LCD, initially set the LCD in 4bit mode. Then make Rw pin low, RS pin high, enable pin high. Send the data on data pins and make enable pin low.

Working:

1. After making all the above connections, Switch on the circuit.

2. On LCD it is displayed “PLEASE SWIPE THE CARD”.

3. Place the RFID tag near the reader.

4. Reader then reads the data in the tag and transmits to the controller.

5. Microcontroller compares the tag with the database. If the tag is matched LCD displays “authenticated” and takes your attendance

6. Now place another card which is not present in the database and check for authentication.

7. Now LCD displays “Unauthorised” and it will never take the attendance.