

RFID ACCESS CONTROL SYSTEM AND SECURITY WEBCAM WITH VOICE ACKNOWLEDGEMENT

Abstract:

The main aim of this project is power security for companies or Lab. In this project we are using RFID.

In order to organize or control different access systems by person or items, this application should provide accurate security. So RFID is used to provide security by embedding access control in ID cards. These cards are used monitoring attendance and also prevent authorizing access.

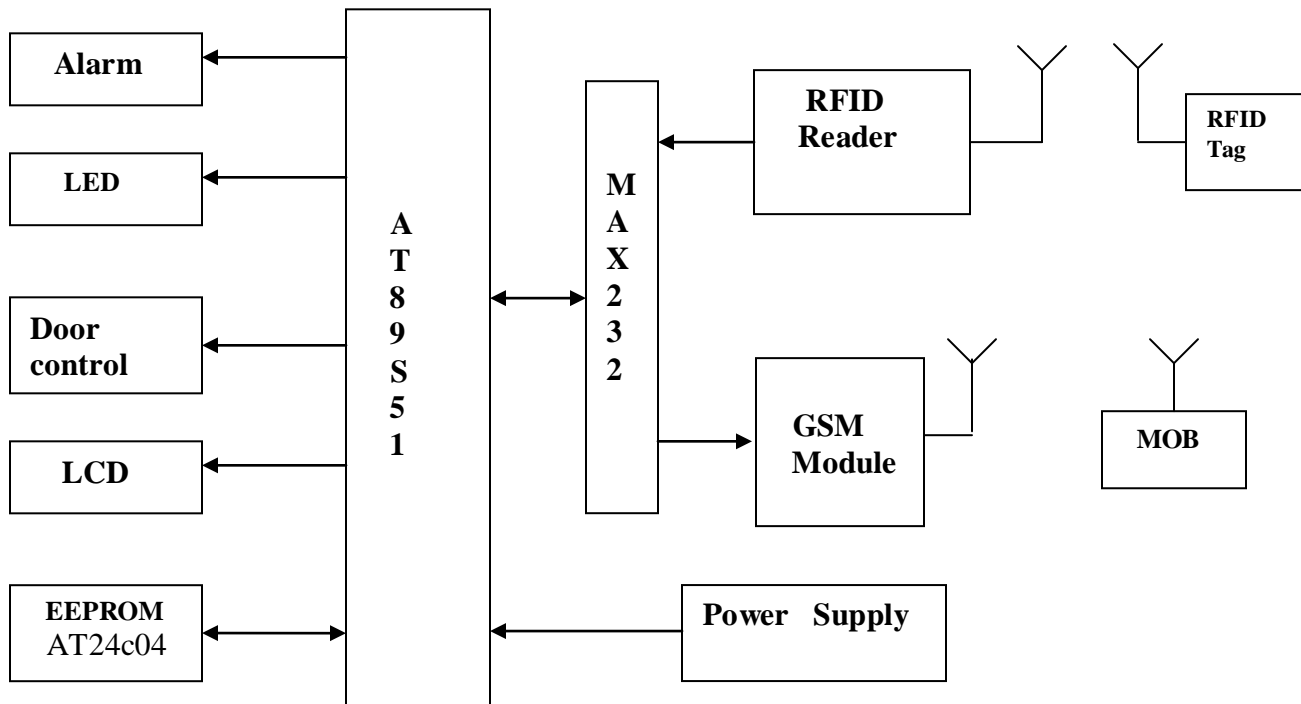
Software requirements:

1. KEIL μ Vision-3.0
2. Pro-load.

Hardware requirements:

- 8051 Micro controller
- RFID reader and tag
- GSM Module and a mobile
- AT 24c04(EEPROM)
- LCD display
- ALARM
- LED
- ULN 2803(line driver)
- MAX 232 IC
- Relay
- Power supply
- Web Cam
- Voice chip

Block Diagram:



Block diagram for Access Control Using RFID

Working:

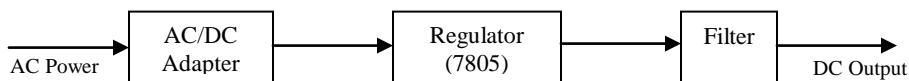
Controller will check whether the tag identification number provided by the RFID reader have the access permission or not. If have, access permission will be provided to that particular person, i.e. door control signal enabled. Otherwise an alert message will be sent to a predetermined mobile number and alarm will be activated. Each person's entry timing and access permissions can be seen on the LCD.

EEPROM (AT24c04) is used to keep the employ database. Relay circuit regulates communication to controller by GSM module and computer. Computer is used to modify database and to list entry details. MAX 232 and ULN 2803 are used as line drivers.

COMPONENT APPLICATIONS:

Power supply:

The microcontroller and other devices get power supply from AC to Dc adapter through voltage regulator. The adapter output voltage will be 12V DC non-regulated. The 7805 voltage regulators are used to convert 12 V to 5VDC.



Microcontroller:

The AT89S52 is a low-power, high-performance CMOS 8-bit microcontroller with 8K bytes of in-system programmable Flash memory. The device is manufactured using ATMEL high-density nonvolatile memory technology and is compatible with the industry- standard 80C51 instruction set and pin out.

Features:

8K Bytes of In-System Programmable (ISP) Flash Memory

Endurance: 1000 Write/Erase Cycles

4.0V to 5.5V Operating Range

256 x 8-bit Internal RAM

32 Programmable I/O Lines

Full Duplex UART Serial Channel

Fully Static Operation: 0 Hz to 33 MHz

Memory:

These memory devices are used to store the data for off line process. The AT24C02A / 04A/ 08A/ 32/64 provides 2048/4096/8192/32,768/65,536 bits of serial electrically erasable and programmable read only memory (EEPROM) organized as 56/512/1024/4096/8192 words of 8 bits each. The device is optimized for use in many industrial and commercial applications where low power and low voltage operation are essential. The AT24C02A/04A/08A is available in space saving 8-pin PDIP.

Features

Internally Organized 256 x 8 (2K), 512 x 8 (4K) or 1024 x 8 (8K)

2-Wire Serial Interface (I2C protocol)

High Reliability

– Endurance: 1 Million Write Cycles

– Data Retention: 100 Years

– ESD Protection: >3000V

Voice chip:

Voice chip is used to give the place details in the form of audio signal to speaker.

RS 232 CONVERTER (MAX 232N) Serial Port:

This is the device, which is used to convert TTL/RS232 vice versa.

RS-232Protocol

RS-232 was created for one purpose, to interface between Data Terminal Equipment (DTE) and Data Communications Equipment (DCE) employing serial binary data interchange. So as stated the DTE is the terminal or computer and the DCE is the modem or other communications device.

RS-232 pin-outs for IBM compatible computers are shown below. There are two configurations that are typically used: one for a 9-pin connector and the other for a 25-pin connector.

9-pin RS-232 Pin-out

PIN	DESIGNATION
1	Data Carrier Detect
2	Receive Data
3	Transmit Data
4	Data Terminal Ready
5	Signal Ground
6	Data Set Ready
7	Request to Send
8	Clear to Send
9	Ring Indicator

Real Time Clock (RTC – DS1307)

This is used to maintain the current time in off line processing. The DS1307 Serial Real-Time Clock is a low power; full binary-coded decimal (BCD) clock/calendar plus 56 bytes of NV SRAM. Address and data are transferred serially via a 2-wire, bi-directional bus. The clock/calendar provides seconds, minutes, hours, day, date, month, and year information. The end of the month date is automatically adjusted for months with fewer than 31 days, including corrections for leap year. The clock operates in either the 24-hour or 12-hour format with AM/PM indicator. The DS1307 has a built-in power sense circuit that detects power failures and automatically switches to the battery supply.

Features

It uses I2C protocol

_ Real-time clock (RTC) counts seconds, minutes, hours, date of the month, month, and day of the week, and year with leap-year compensation valid up to 2100.

_Two-wire serial interface Consumes less than 500nA in battery backup mode with oscillator running

LCD:

LCDs can add a lot to your application in terms of providing a useful interface for the user, debugging an application or just giving it a "professional" look. The most common type of LCD controller is the Hitachi 44780, which provides a relatively simple interface between a processor and an LCD. Inexperienced designers do often not attempt using this interface and programmers because it is difficult to find good documentation on the interface, initializing the interface can be a problem and the displays themselves are expensive.

LCD has single line display, Two-line display, four line display. Every line has 16 characters.

RFID:

Radio-frequency identification (RFID) is an automatic identification method, relying on storing and remotely retrieving data using devices called RFID tags or transponders.

An RFID tag is an object that can be applied to or incorporated into a product, animal, or person for the purpose of identification using radiowaves.

RFID tags contain mainly two parts. One is an integrated circuit for storing and processing information, modulating and demodulating a (RF) signal and can also be used for other specialized functions. The second is an antenna for receiving and transmitting the signal.

An RFID reader typically contains a module (transmitter and receiver), a control unit and a coupling element (antenna). The reader has three main functions: energizing, demodulating and decoding.

GSM technology can be incorporated to alert an authorized person about an attempt of an unauthorized person to access to the restricted area.

LPC 2129 is used to control the operations like allowing access to authorized person, attendance maintenance, alerting a specific person through GSM, modifying data base and to interface with computer system