

## **SMART CARD READER AND WRITER WITH ATTENDANCE ACCESS**

### **ABSTRACT:**

The aim of this project is to maintain the attendance of employee/student in computer. Nowadays so many companies and schools are maintaining their employee/students attendance in note only. It damage by insects or water or fire. Anybody can change their details easily. To avoid these disadvantages we developed this project. In this project the smart card contains the student/employee details. Whenever the person enter to the campus they have to insert the card into the card reader, that time the person details will stored in computer with current time.

### **COMPONENTS USED**

- ❖ Power Supply : 5v DC
- ❖ Micro controller : AT89S52
- ❖ Buzzer : Freq-1 to 18 kHz (5v-12Vdc)
- ❖ RS 232 converter : MAX 232
- ❖ LCD : 16x2 characters
- ❖ EEPROM memory : AT 24C64 (64Kbytes)
- ❖ Real Time Clock : DC1307
- ❖ Smart card.
- ❖ Smart card reader
- ❖ Computer min Pentium 1

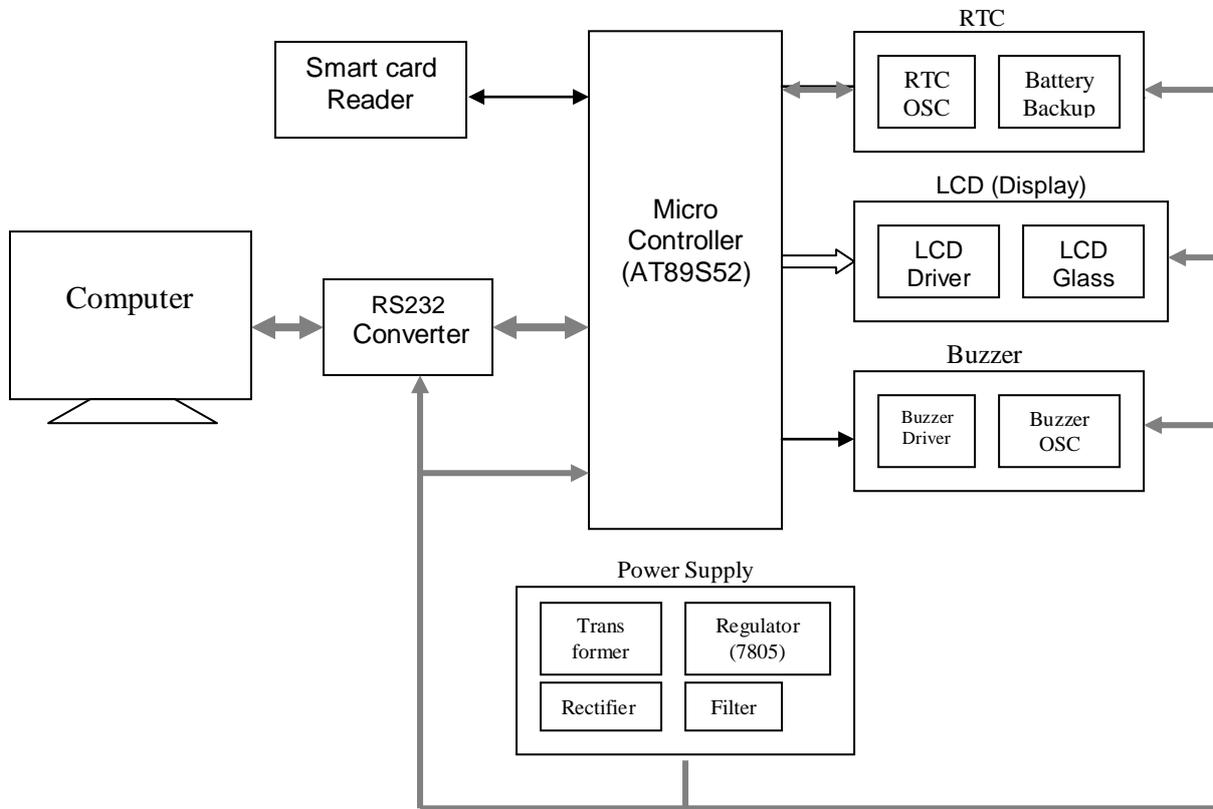
### **SOFTWARE USED**

- ❖ Embedded C
- ❖ Visual Basic

### **WORKING PRINCIPLE**

This project is used to maintain the employee/student attendance. The student/employee details are stored in smart card. VB application software we can add/remove the person details. Before entering the room that person should insert the card in to the reader. Now the microcontroller will read the details of persons from card through reader slot. After reading the details the microcontroller sends these details to the VB application through serial port. The VB application software will receive the details from microcontroller and it will check with its database. If permission is available the software will store the person ID, date and time in its own database.

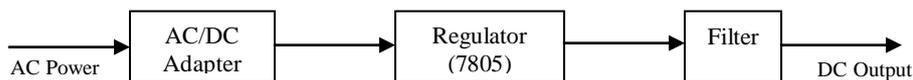
**BLOCK DIAGRAM:**



**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.



### **Vital role of power supply in 'smart card reader and writer with attendance accesses'**

The adapter output voltage will be 12V DC non regulated. The 7805/7812 voltage regulators are used to convert 12 V to 5V/12V DC.

### **MICRO CONTROLLER-AT89S52**

The AT89S52 is a widely available in market, cost effective, low power and high-performance CMOS 8-bit microcontroller with 8K bytes of in-system programmable Flash memory. The device is manufactured using Atmel's 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

### **Vital role of Micro controller-AT89S52 in 'smart card reader and writer with attendance accesses'**

This is used to read the person name and ID from smart card by using IIC protocol. The details of the person will send to the computer through serial port. After that person insert the cart in card slot the microcontroller will enable the buzzer.

### **SMART CARD MEMORY (2K)**

These memory devices are used to store the data for off line process. The device provides 2048 bits of serial electrically erasable and programmable read only memory (EEPROM) organized as 256 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.

#### **Features**

Internally Organized 256 x 8 (2K

2-Wire Serial Interface (I2C protocol)

High Reliability

- Endurance: 1 Million Write Cycles
- Data Retention: 100 Years
- ESD Protection: >3000V

**Vital role of smart card in ‘smart card reader and writer with attendance accesses’**

This is a memory device which used to store the employee/students details. The microcontroller will communicate with device through IIC protocol.

**SMART CARD SLOT:**

This is used to hold the smart card. So the microcontroller can able to read the person details from smart card without any disturbance.

**BUZZER:**

The buzzer subsystem produces a 2 KHz audible tone when powered. The buzzer will sound when the signal coming into the driver is high. It must be connected to a transistor, Darlington or transducer driver subsystem.

The buzzer is connected between the supply rail (+V) and the input signal. This acts as **load** on the driver. When the input signal coming into the buzzer subsystem is low, a **potential difference** across the buzzer causes current to flow. It is this flow of current that causes the buzzer to sound.

**Vital role of Buzzer in ‘smart card reader and writer with attendance accesses’**

The buzzer will give beep sound after card is inserted in reader slot. So the person can able to identify the process status.

**RS 232 CONVERTER (MAX232N)**

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

### **Voltage range**

The standard voltage range on RS-232 pins is  $-15V$  to  $+15V$ . This voltage range applies to all RS-232 signal pins. The total voltage swing during signal transmission can be as large as  $30V$ . In many cases, RS-232 ports will operate with voltages as low as  $-5V$  to  $+5V$ . This wide range of voltages allows for better compatibility between different types of equipment and allows greater noise margin to avoid interference.

Because the voltage swing on RS-232 lines is so large, the RS-232 signal lines generate a significant amount of electrical noise. It is important that this signal does not run close to high impedance microphone lines or audio lines in a system. In cases where you must run these types of signals nearby one another, it is important to make sure that all audio wires are properly shielded.

The main role of the RS232 chip is to convert the data coming for the 12-volt logic to 5 volt logic and from 5 volt logic to 12 volt logic

### **Vital role of RS232 Converter (Max 232n) in 'smart card reader and writer with attendance accesses'**

This converter converts TTL/ rs232 into rs232/ TTL form of signal.

### **LCD (LIQUID CRYSTAL DISPLAY)**

LCDs can add a lot to your application in terms of providing an 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. Using this interface is often not attempted by inexperienced designers 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.

### **Vital role of LCD in 'smart card reader and writer with attendance accesses'**

The LCD display displays current time and employee details (name and ID).

### **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

#### **Vital role of Real-time clock in 'smart card reader and writer with attendance accesses'**

By using RTC the system can get exact current time.

#### **COMPUTER:**

This is used to monitor the system status and controls the system devices. Here the front end application is developed by using VB software. The computer is communicating with microcontroller through serial port.

#### **Vital role of computer in 'smart card reader and writer with attendance accesses'**

The student/employee details are maintained by computer by using front end software developed by using visual basic software. By using this front end application we can add/remove the person details from database. The pc is communicating with microcontroller through serial port.

#### **FEATURES OF THIS PROJECT:**

- Student/Employee attendance will update automatically. No need of separate person to maintain their attendance.

#### **APPLICATIONS OF THIS PROJECT:**

- Organizations
- Colleges, schools