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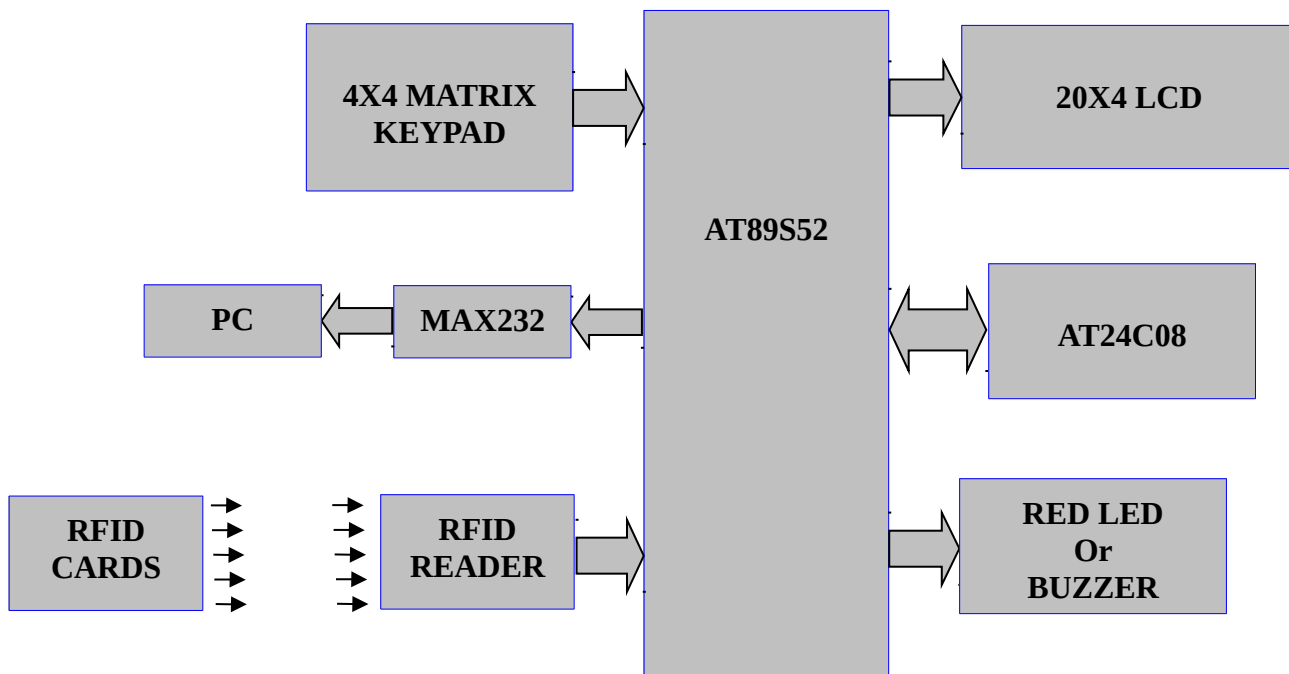- ➢ **CONCLUSION**

Electronic Voting System

AIM:

Electronic voting system design using RFID cards to save the man power.

INSIGHT:

- ➢ Good knowledge of C-Programming.
- ➢ Knowledge of Embedded-C programming
- ➢ Thorough with the 8051 Architecture, General purpose I/O Interface
- ➢ Understanding of RFID usage.
- ➢ Understanding of I2C protocol.
- ➢ Understanding of LCD and KEYPAD.

BLOCK DIAGRAM:

```
┌──────────────┐         ┌──────────┐         ┌──────────────┐
│  4X4 MATRIX  │ ───────►│          │ ───────►│   20X4 LCD   │
│   KEYPAD     │         │          │         │              │
└──────────────┘         │          │         └──────────────┘
                         │          │
                         │ AT89S52  │         ┌──────────────┐
┌──────┐    ┌──────────┐ │          │ ◄──────►│   AT24C08    │
│  PC  │◄───│ MAX232   │◄│          │         │              │
└──────┘    └──────────┘ │          │         └──────────────┘
                         │          │
┌──────┐   ┌──────────┐  │          │         ┌──────────────┐
│ RFID │   │  RFID    │ ►│          │ ───────►│   RED LED    │
│CARDS │   │  READER  │  │          │         │     Or       │
└──────┘   └──────────┘  └──────────┘         │   BUZZER     │
                                              └──────────────┘
```

CONNECTIONS TO BE USED:

LCD: (series1.2 board inbuilt connections)

DB0-DB7	-	PORT0.0-PORT0.7
RS	–	PORT3.4
RW	–	PORT3.5
EN	–	PORT3.6

4X4 MATRIX KEYAPD:

C0 – PORT1.0
C1 – PORT1.1
C2 – PORT1.2
C3 – PORT1.3
R0 – PORT1.4
R1 – PORT1.5
R2 – PORT1.6
R3 – PORT1.7

RFID READER & PC:

D0 (of RFID READER) -	P3.1 (RX)
T2IN (of MAX232)	-	P3.0 (TX) (**series1.2 board** in-built connection)

BUZZER or LED:

BUZZER or LED	-	P3.7

AT24C08: (series1.2 board inbuilt connections)

SDA	-	PORT2.0
SCL	–	PORT2.1

REQUIREMENTS:

HARDWRAE REQUIREMENTS:

➢ AT89S52

➢ RFID Reader

➢ RFID cards

- 20x4 LCD
- 4x4 Matrix keypad
- Buzzer or Led
- AT24C08
- SERIAL ISP (For chip Programming)

SOFTWARE REQUIREMENTS:

- EMBEDDED C – PROGRAMMING
- KEIL-C COMPILER

BLOCK DIAGRAM EXPLANATION WITH PROJECT FLOW:

Initially project name is displayed on the LCD for some time. After that, controller is waiting for the RFID card from the voter or user. Once voter or user is placed the RFID card in front of the RFID reader then reader is reading the card number and giving that card number to the controller through serial communication. After reading the card number, controller is checking the card number with predefined card numbers which are already there in the application program. If the card is matched with any one of the card number then one time password is generated and that password should be displayed on the LCD for some time. Then voter or user has to enter the password from the keypad. If the entered password is correct then one menu will display on the LCD with party symbols. By using keypad voter has to select the one party. If the password is wrong the one led is ON just for giving information about wrong password is entered. Menu contains the following options.

********* MENU *********
1. PARTY1 - SYMBOL
2. PARTY2 - SYMBOL
3. PARTY3 - SYMBOL
4. PARTY4 - SYMBOL

Based on the voter interest he/she has to select one option from the menu. If the voter is selecting the wrong option again same menu will display until voter is selecting the correct option from the menu. After voting is completed that status is added to the previous result of that particular party. For this we are using the EEPROM to save the voting result for all parties. For each party we are going to use one memory location to save the result status. Here for each voter we are issuing

one RFID card. Finally to see the voting result voter officer's card is required to place. Then reading the all parties information from EEPROM and that result is displayed on the PC hyper terminal.

EXPLANTION OF EACH BLOCK RESPONSIBILITY:

Note: *Refer to datasheets where necessary for required details during implementation.*

Keypad (4x4 Matrix)

It is an input device consists of switches arranged in a matrix format to reduce the port pin usage. It is used for enter the password and selecting the party for voting.

LCD:

It is an output device used for displaying the program status which is used to debug easily.

BUZZER or LED:

It is used for indicating wrong password entry.

RFID READER:

This is used to read the RFID card number and giving the result through serial communication with the help of 9600 baud rate. In this application we are using 125 KHz RFID reader. Once check the below mentioned example for card number

0x02 0x31 0x32 0x33 0x34 0x35 0x36 0x37 0x38 0x03

First byte is 0x02 – start of the text

Last byte is 0x03 – end of the text

Middle bytes are giving the card number i.e. 12345678

Note: for more details refer the RFID reader data in reference data folder

AT24C08 (EEPROM):

It is used to store the voting result permanently. If the voting system is going on in between system power gone then what is the data is stored in the memory locations it is saved. So for correct voting result irrespective of the power failure it is very useful.

--------------------------------- ---------

EEPROM memory location   party

0x01	party1
0x02	party2
0x03	party3
0x04	party4

SEQUENCE TO BE FOLLOWED FOR IMPLEMENTATION:

➢ Display Project Name on LCD for some time.

➢ Then display "Waiting for card" String in 1st line on LCD

➢ Once the RFID card is placed in front of RFID reader then reader is sending the card number through serial communication with the help of 9600 baud rate.

➢ After reading the card number controller is checking with the predefined card numbers and displaying the voter number on the LCD. Example "voter1"

➢ Then based on the application program one random password is generated and that password is displayed on the LCD for some time.

➢ Then that password entry is required from the voter by using keypad

➢ For every key press instead of displaying number display only '*' to hide the password for security reason

➢ After password entry is over then press enter button to accept the password. If the password is wrong then red led is on for wrong indication. If the password is correct then one menu will display with party number with symbols.

         ********* MENU *********

         1. PARTY1 - SYMBOL

         2. PARTY2 - SYMBOL

         3. PARTY3 - SYMBOL

         4. PARTY4 - SYMBOL

Note: here by mistake any wrong key is entered that should be deleted by user by using delete key. And user defined symbol is designed with the help of CGRAM concept.

For reference use the following keypad array.....

1	2	3	4
5	6	7	8
9	0	'*'	'#'
'!'	'@'	'$'	'&'

* - delete

\# - enter

- Based on the voter interest he/she has to select the one party which he/she has to vote.
- Here EEPROM is used to save the result. For each party one memory location is allocated. Based on the party selection application program is reading the party related memory location value and adding one to that status and updated result is saved in the same memory location.
- This is continuous process for different voters.
- Apart from the voters one more card is assigned for the officer. Once the officer card is placed then OTP is generated and displayed on the LCD. If password is correct then reading the all parties memory locations and display the result on the LCD as well as on the system hyper terminal.

```
---------------------------------          ---------
EEPROM memory location             party
---------------------------------          ---------
        0x01                       party1
        0x02                       party2
        0x03                       party3
        0x04                       party4
```

REPORTS OF HURDLES & SOLUTIONS DURING IMPLEMENTATION:

Should be provided by the team involved in the project implementation

CONCLUSION:

It can be used in real time applications like to select particular person among team members.

- Industrial Appliances
- Security Appliances
- General applications