# HOME AUTOMATION SYSTEM

## USER GUIDE

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# 1. Safety Information for User

- Use the power pack (3v – 12v) to input voltage for the Solenoid door lock. 12v is recommended.

- Do not used water, liquid or any spray to clean the system component.

- Do not place the system in excessive heat, humidity and dust places.

- Do not change the jumping wires.

- Connect correct Positive terminal & Negative terminal to the power source(5v).

# 2. System Overview

## ❖ Password Based Door Lock

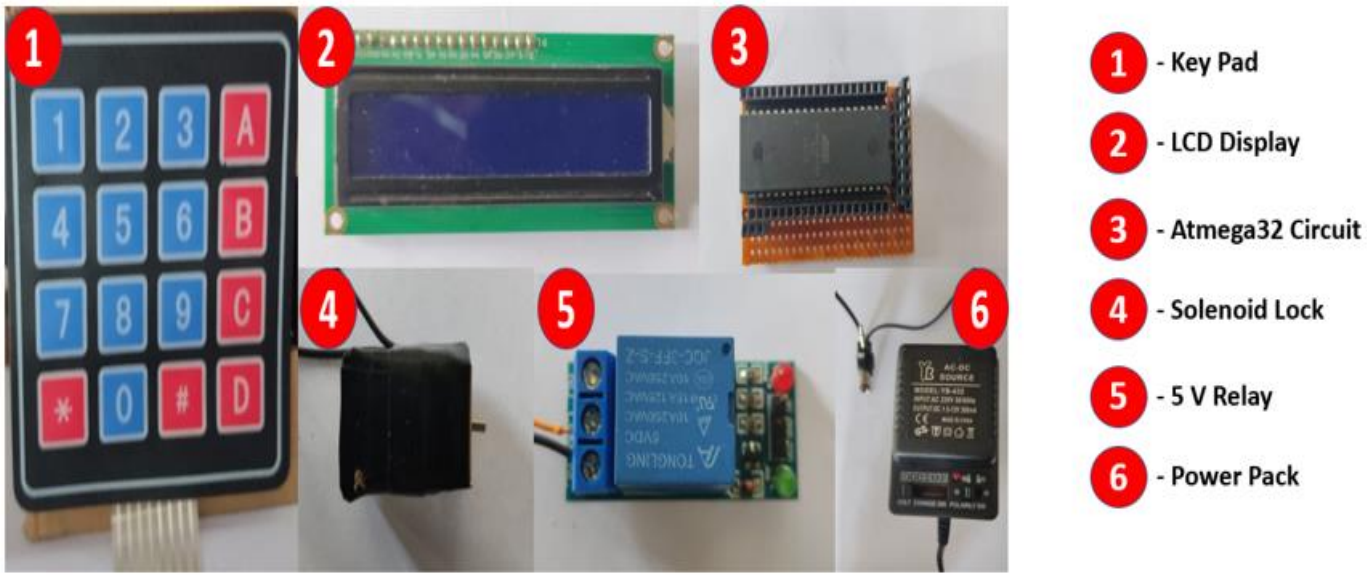



*FIGURE 2. 1 COMPONENTS WHICH ARE USED TO BUILD PASSWORD BASED DOOR LOCK*

In this section user has to enter correct password to unlock the door lock. To enter data Key pad is used. There is 5 digits length password. LCD Display is used as output of this system. First user has to enter password and if the entered password is correct then the lock will be unlocked, if the entered password is wrong then the buzzer will be activated. After unlocking the lock user has to press “1” to activate door lock again. 5V Relay is used to Solenoid Lock and 12V Power Pack is used as voltage source for the Solenoid Lock. Input voltage for the Atmega32 and LCD Display is 5V.

## ❖ Automatic Room Temperature Control Fan

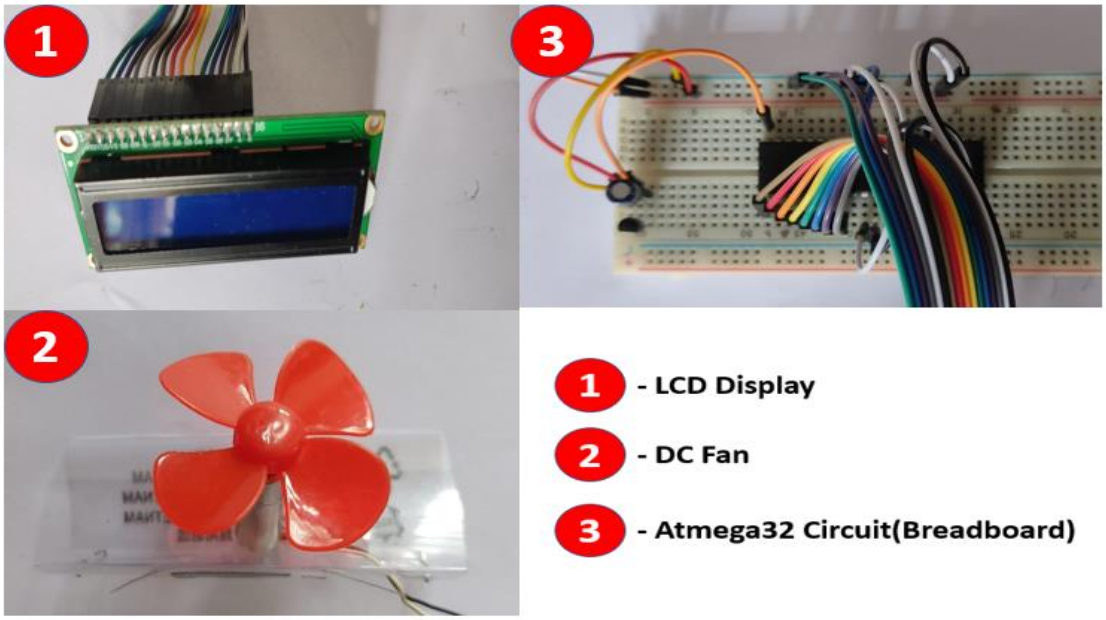



*FIGURE 2. 2 COMPONENTS WHICH ARE USED TO BUILD AUTOMATIC ROOM TEMPERATURE CONTROL FAN*

In this section LCD Display is used as to display Room Temperature. LM35 is used as a Temperature Sensor. If the room temperature become greater than 40 $C^0$ the Fan will be switch on and after decrease the room temperature below the pre-defined temperature value Fan will be switch off.

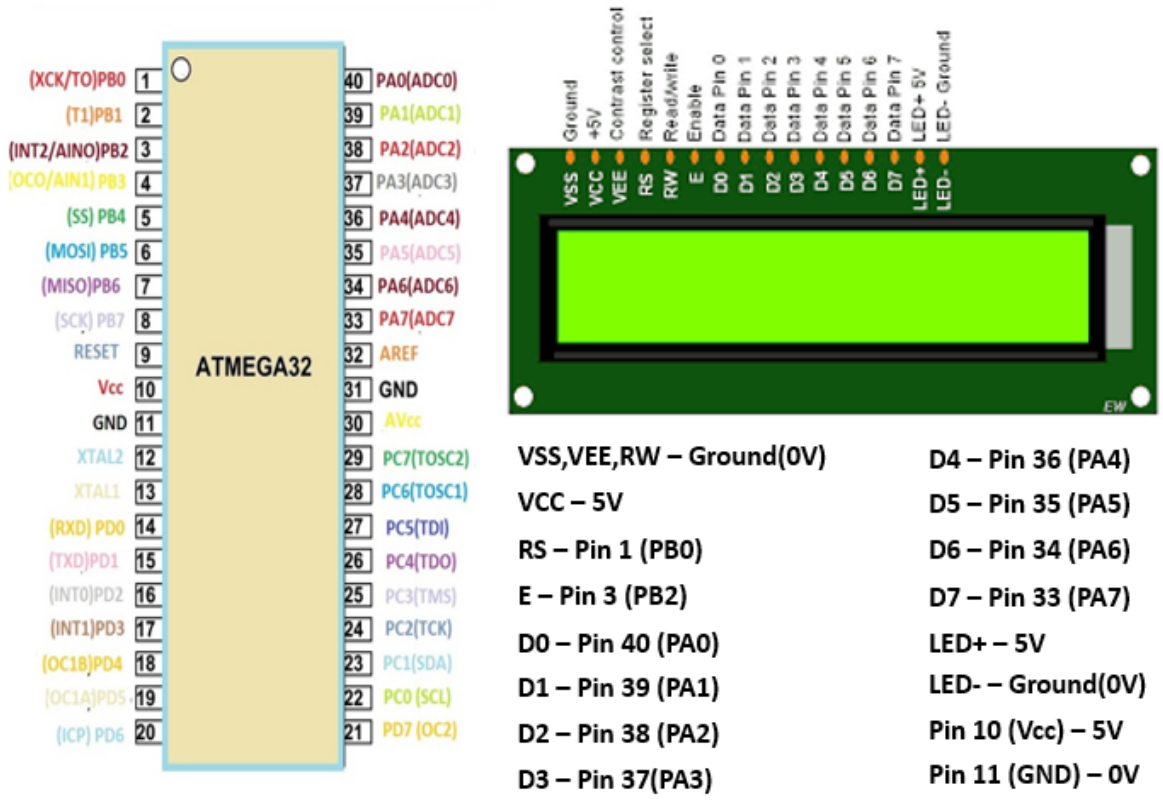
## ❖ Remote Control and Light Sensor Bulb

In this section TSOP 1738 used as IR Sensor. User can switch on the light using the remote and switch off the light. During the day time or the time when room not dark, light won't be lit. At the night, light automatically switch on and it can be switched off using the remote. LDR Sensor used to detect darkness.

# 3. System Initializing

## ➢ Password Based Door Lock

### Connect wires to the Microcontroller (Atmega32) & LCD

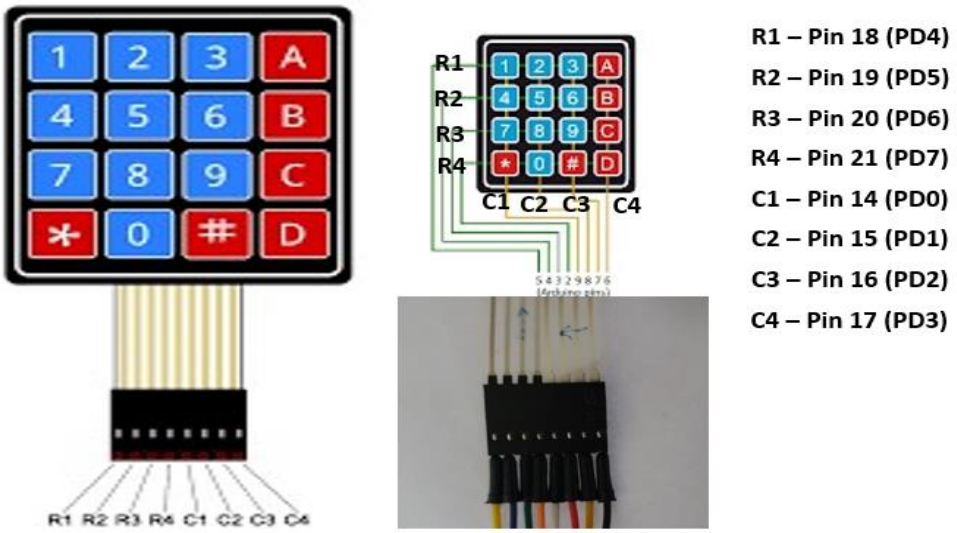



**VSS,VEE,RW – Ground(0V)**
**VCC – 5V**
**RS – Pin 1 (PB0)**
**E – Pin 3 (PB2)**
**D0 – Pin 40 (PA0)**
**D1 – Pin 39 (PA1)**
**D2 – Pin 38 (PA2)**
**D3 – Pin 37(PA3)**
**D4 – Pin 36 (PA4)**
**D5 – Pin 35 (PA5)**
**D6 – Pin 34 (PA6)**
**D7 – Pin 33 (PA7)**
**LED+ – 5V**
**LED- – Ground(0V)**
**Pin 10 (Vcc) – 5V**
**Pin 11 (GND) – 0V**

*FIGURE 3. 1 ATMEGA32 MICROCONTROLLER & LCD PIN CONNECTION FOR PASSWORD BASED DOOR LOCK*

## Key Pad wire connections

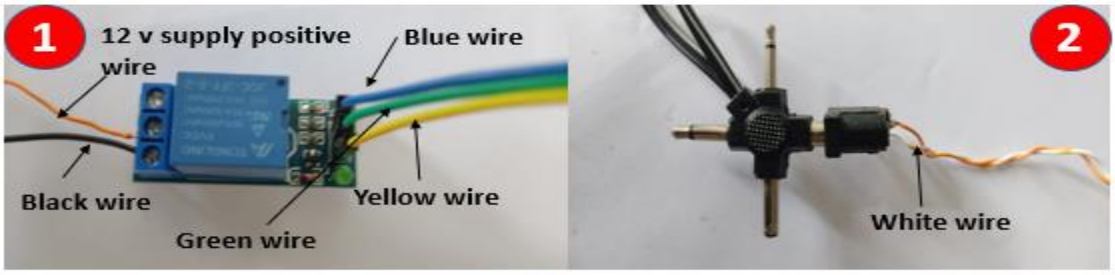
- ✓ **Refer Atmega32 pin diagram (***figure 3. 1 atmega32 microcontroller & lcd pin connection*




*for password based door lock***)**

*FIGURE 3. 2 ATMEGA32 & KEY PAD WIRE CONNECTION FOR PASSWORD BASED DOOR LOCK*

## Solenoid Lock wire connections




1 - 5V relay module

2 - 12V power pack and solenoid lock & Relay connection

Blue wire – Pin 22 (PC0)

Green wire – 0V

Yellow wire – 5V

Black wire – Solenoid lock positive wire

Solenoid lock negative wire to 12V negative (White) wire

*FIGURE 3. 3 ATMEGA32, SOLENOID LOCK AND POWER PACK WIRE CONNECTION FOR PASSWORD BASED DOOR LOCK*

- ✓ Connect positive terminal of Buzzer to pin 23(PC1) & negative terminal to ground(0V).

## ➢ Automatic Room Temperature Control Fan

### Connect wires to the Microcontroller (Atmega32) & LCD

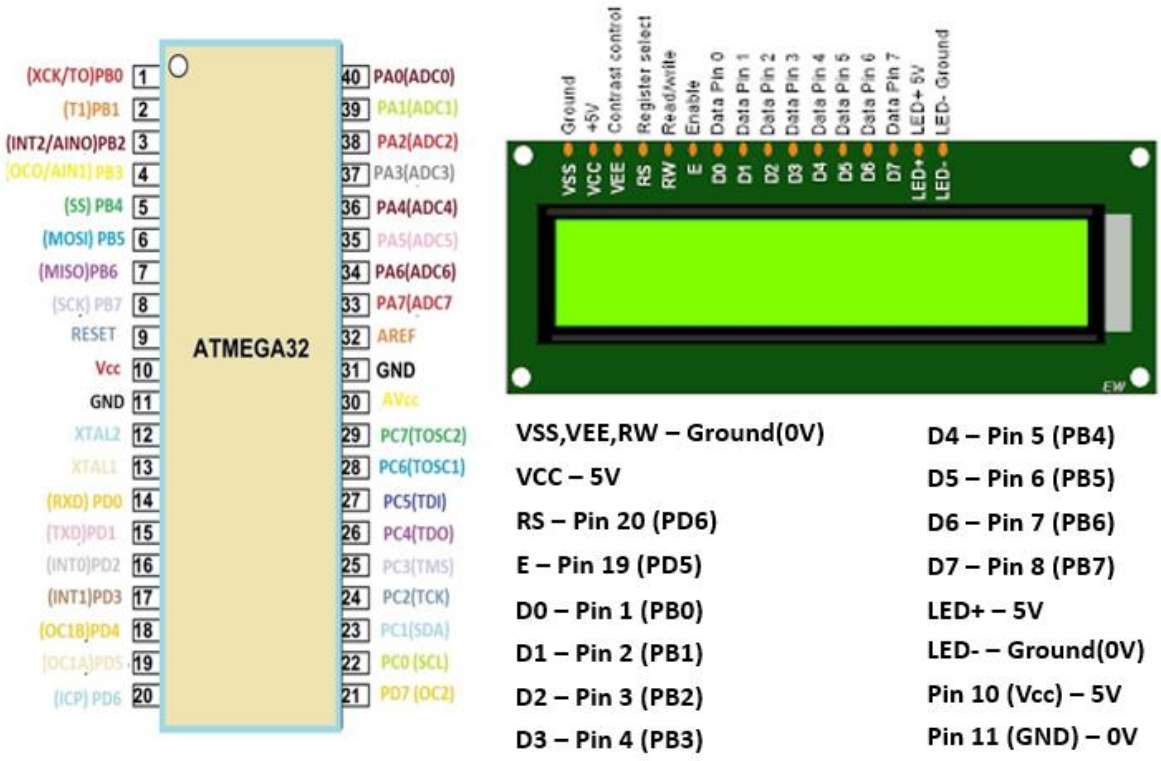



*FIGURE 3. 4 ATMEGA32 MICROCONTROLLER & LCD PIN CONNECTION FOR AUTOMATIC ROOM TEMPERATURE CONTROL FAN*

### Connect wires to the Microcontroller (Atmega32) & Fan

Positive wire – Pin 22 (PC0)

Negative wire – 0V

*FIGURE 3. 5 ATMEGA32 MICROCONTROLLER & FAN PIN CONNECTION FOR AUTOMATIC ROOM TEMPERATURE CONTROL FAN*

## Connect wires to the Microcontroller (Atmega32) and Temperature Sensor

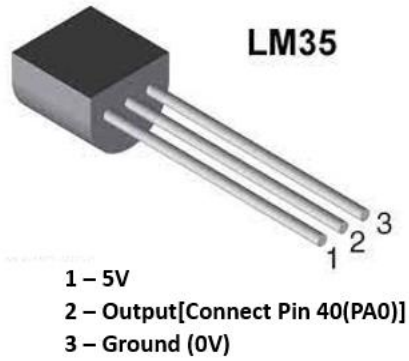



*FIGURE 3. 6 ATMEGA32 MICROCONTROLLER & LM35 PIN CONNECTION FOR AUTOMATIC ROOM TEMPERATURE CONTROL FAN*

## ➢ Remote Control & Light Sensor Bulb

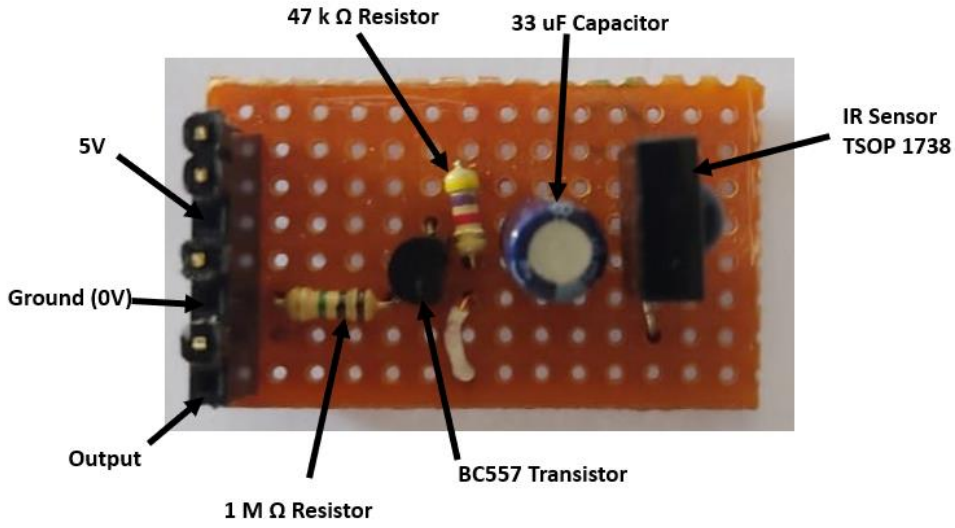



*FIGURE 3. 7 IR SENSOR CIRCUIT*

- ✓ **Output pin** connect to the **pin 16(PD2)** of Atmega32 Microcontroller (*figure 3. 4*).

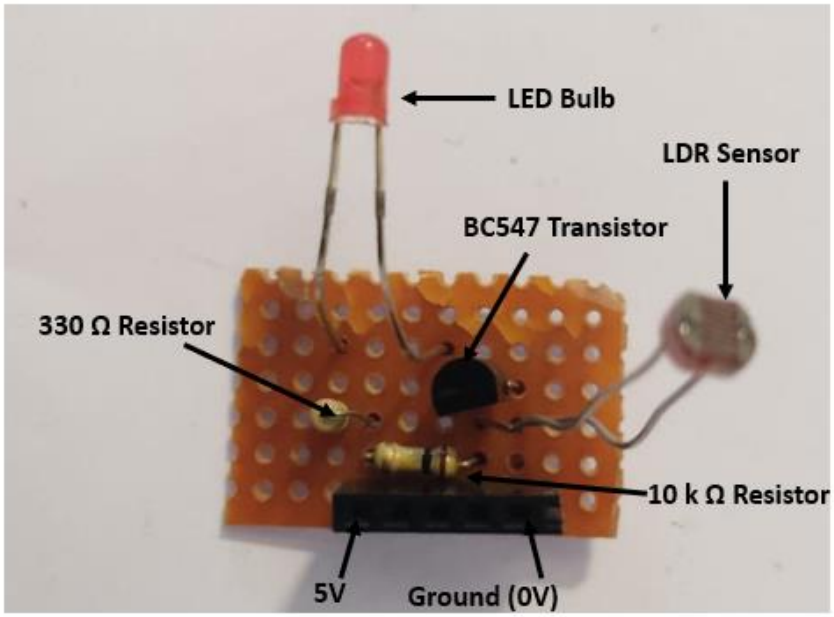



*FIGURE 3. 8 LDR SENSOR CIRCUIT*

- ✓ **5V pin** connect to the **pin 22(PC0)** of Atmega32 Microcontroller (*figure 3. 4*).

# 4. System Maintenance

- Use the power pack (3v – 12v) to input voltage.
- Only input 12v for the relay which is used to the Solenoid door lock.
- Other input voltages should be 5v. Better use another power pack or any voltage supply which has 5v output.
- Do not use any liquid to clean the component and circuits.
- Better use dry piece of cotton cloth and clean the surface of the circuit carefully.
- When clean the surface system should not be connected to the power.
- Jumping wires should not be changed.
- After cleaning the systems, recheck the wire connections correct and properly connect to the ports according to the user guide.
- If it is correct then connect power cables properly.