PASSWORD BASED DOOR LOCK SYSTEM

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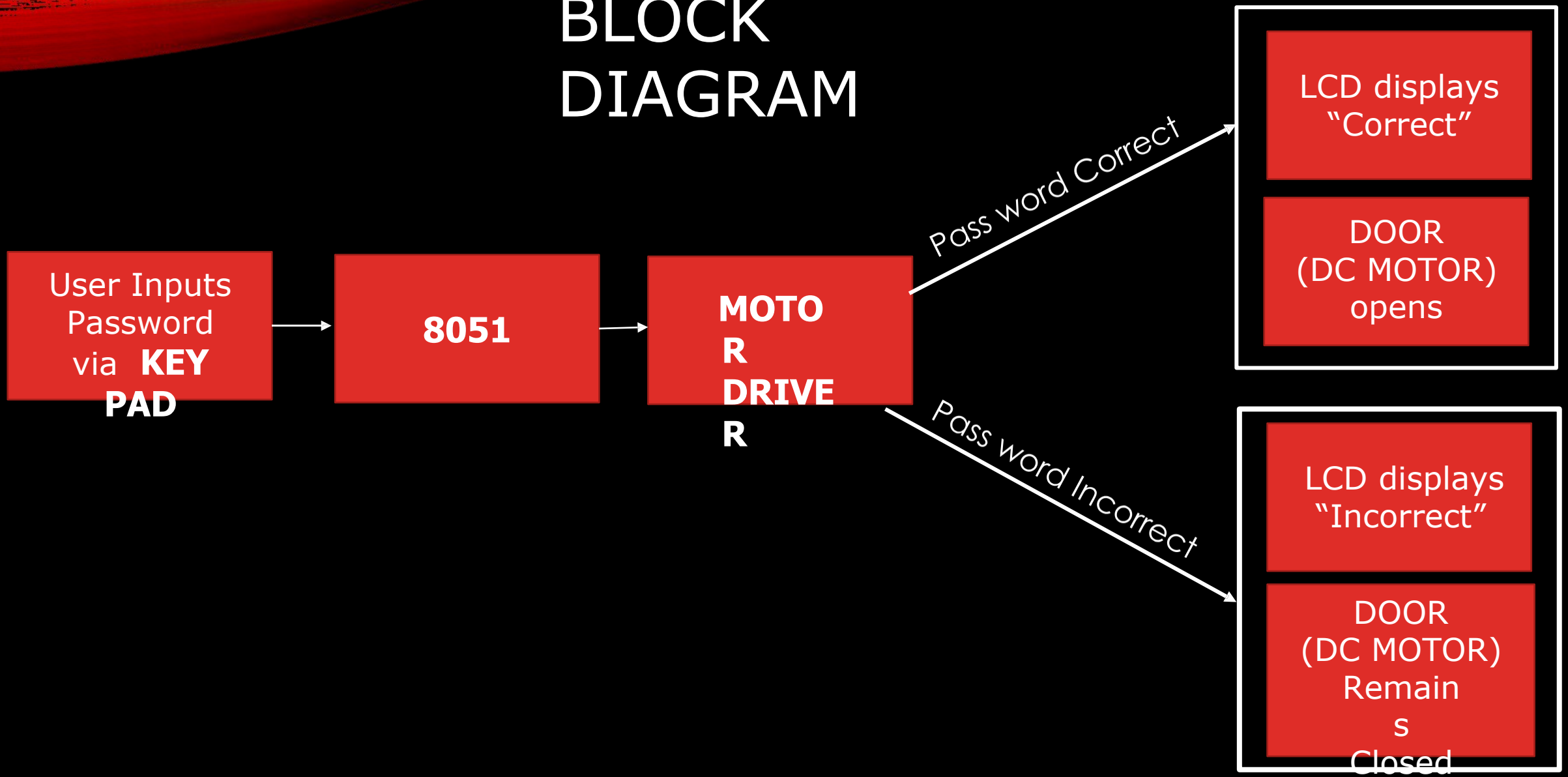
INTRODUCTION

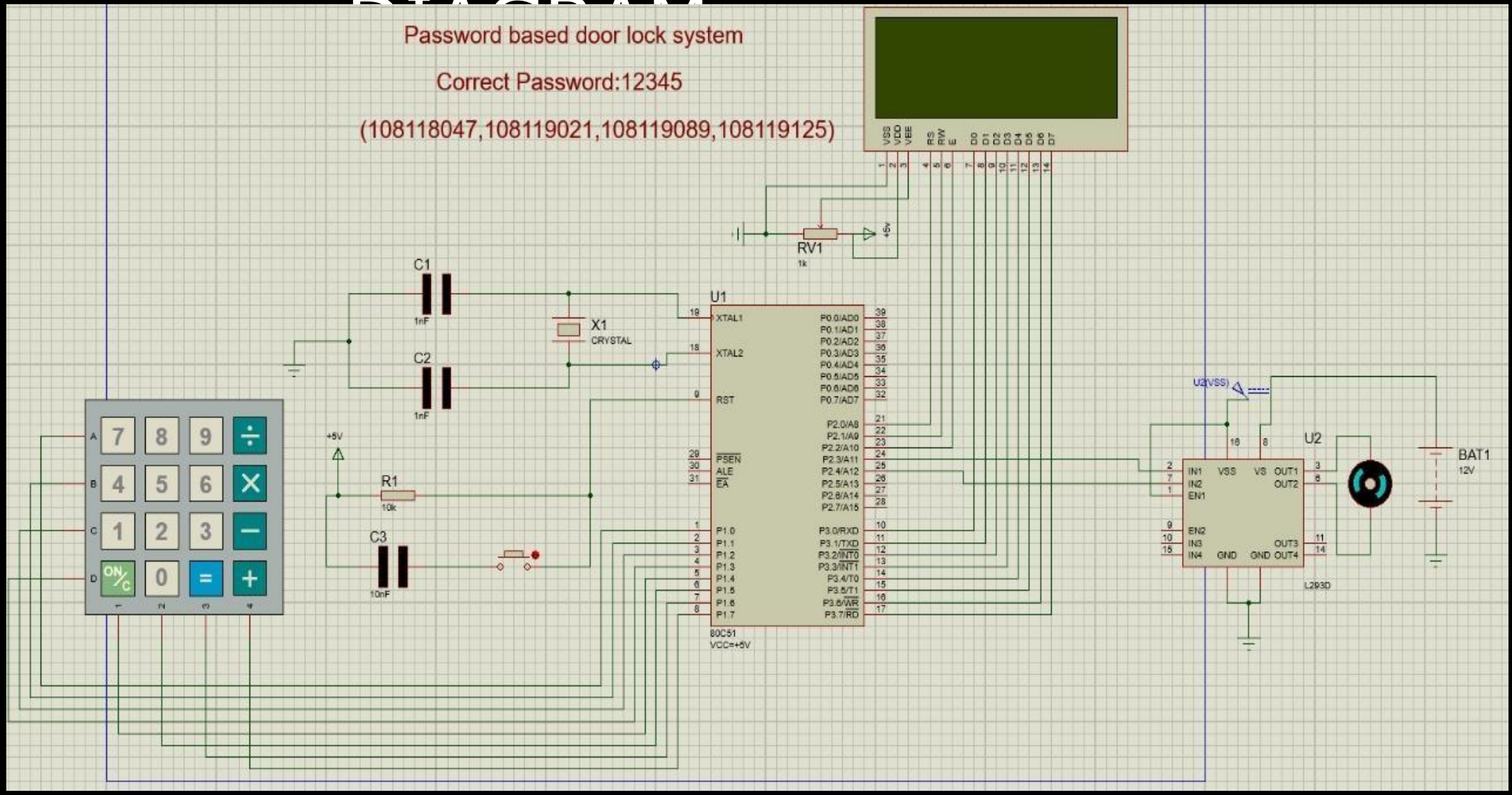
- Our project is a digital password-based door lock. The lock works by verifying the digitally inputted password with the predefined passcode. The digital door lock is operated by the help of 8051 microcontroller.
- In this project, we have designed the digital door lock using an 8051 microcontroller,
  a keypad, and a DC motor.
- The system collects 5 digit user input, compares the user input with the preset password inside the program, and if the user input and stored password matches, access will be granted

IMAGE OF A PASSWORD BASED DOOR LOCK

BLOCK DIAGRAM



CIRCUIT DIAGRAM



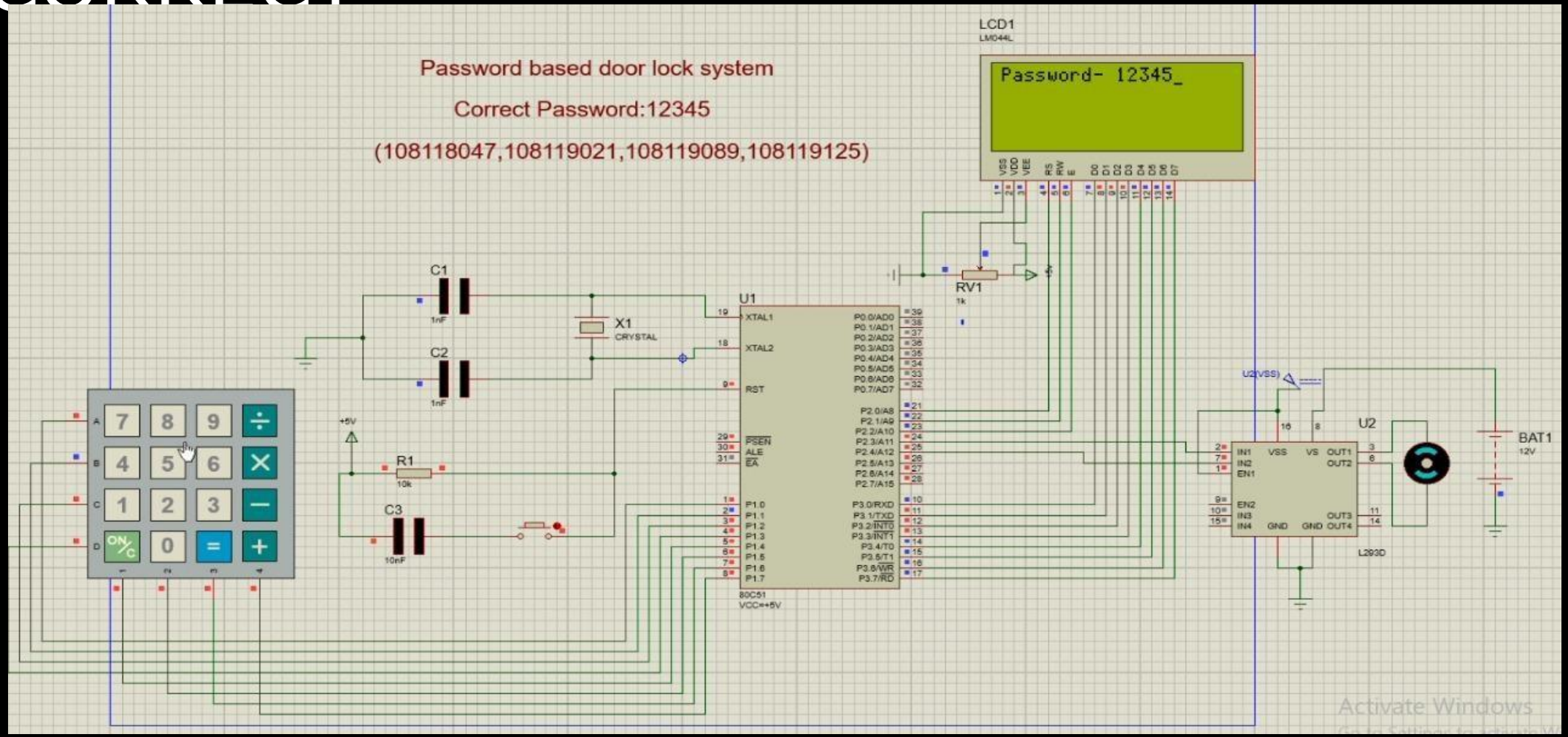
COMPONENTS OF CIRCUIT DIAGRAM

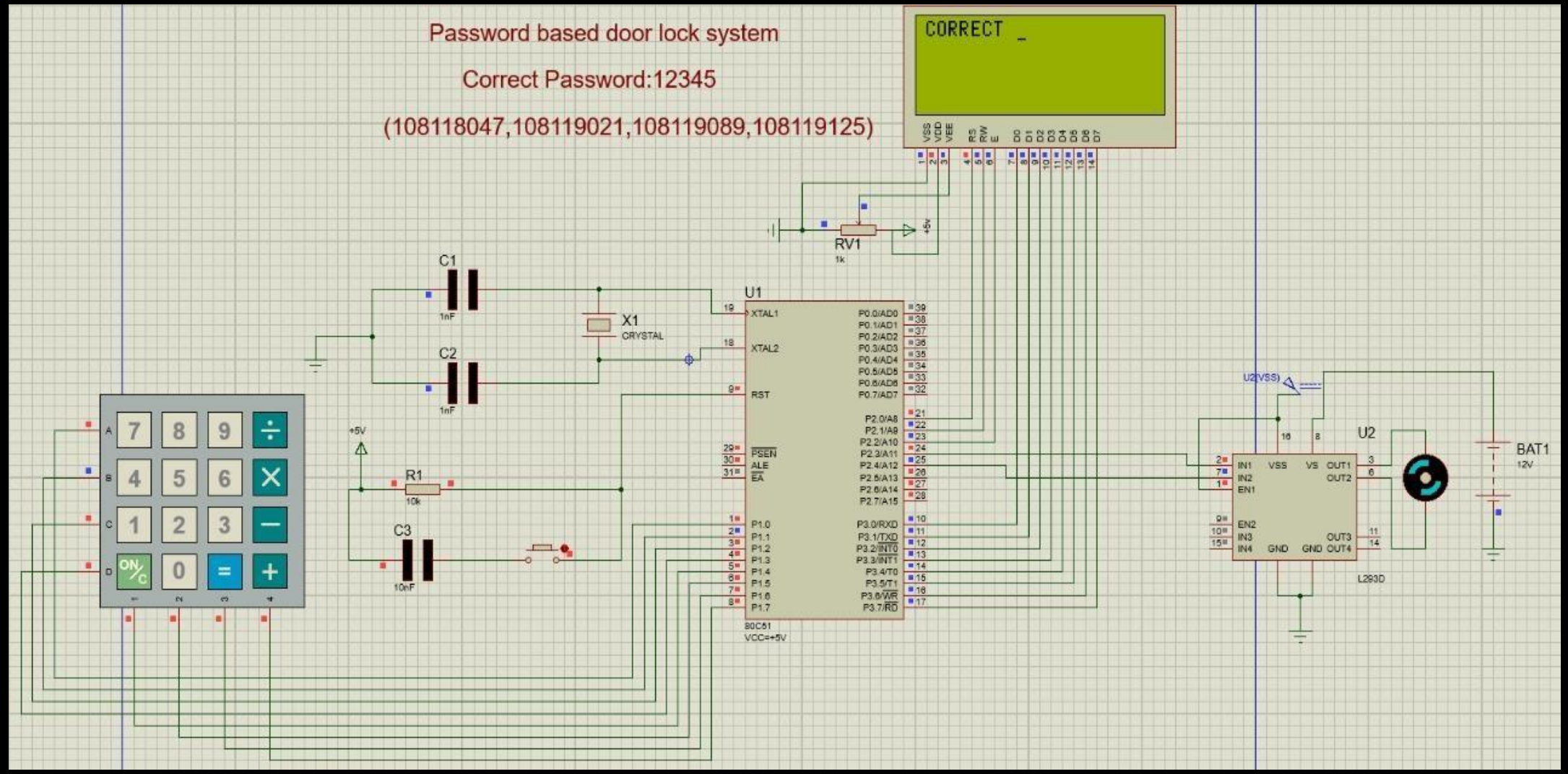
- **4*4 Keypad:** It is used to input the password which will be read and compared with the predefined password.
- **80C51:** It is used to send commands to all components of the circuit to execute the required functions.
- **20*4 LCD Module:** It is used to display the entered password and the status message of whether the password is correct.
- **MOTOR DRIVER(L293):** It controls the motor to be either on or off based on the result of comparing the entered and defined password.
- **DC MOTOR:** It acts as a substitute for the door in this circuit. The 'ON' state representing an
open door and the 'OFF' state representing a closed door.

WORKING

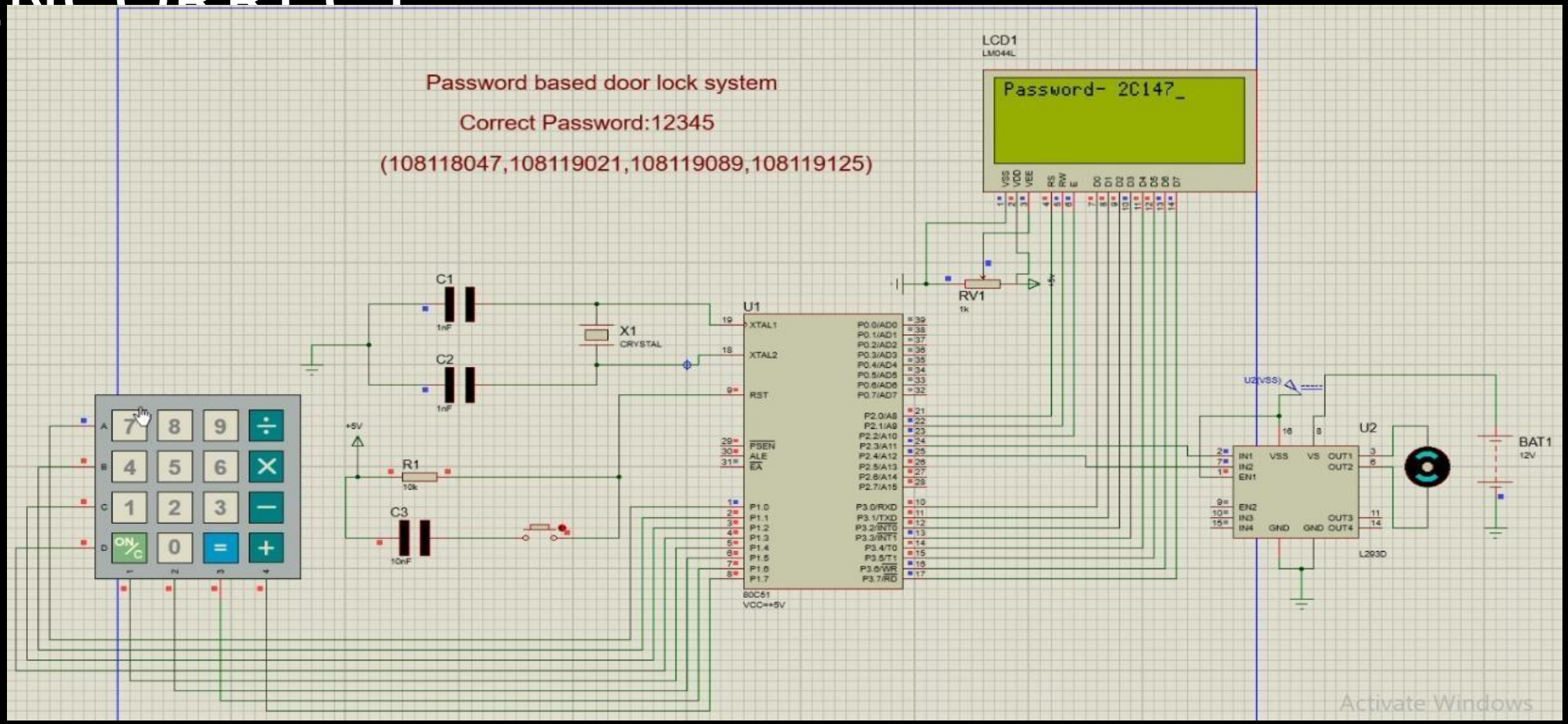
- When the program is initialized, the LCD will prompt the user to enter the password through a 4*4 Keypad.
- After the user enters the 5 digit password, the LCD will display it on the screen and the program reads the user input and compares it with the predefined password.
- All the functions are executed in 80C51.If the entered password is correct then the status message ”CORRECT” is displayed on a 20X4 LCD Module, and then using a Motor DRIVER(L293) the DC motor is made to rotate indicating that the door is unlocked.
- If the entered password is incorrect then the status message ”INCORRECT” is displayed on a 20X4 LCD Module, the DC motor stays in its “OFF” state indicating that the door is locked and the LCD will prompt the user for new password

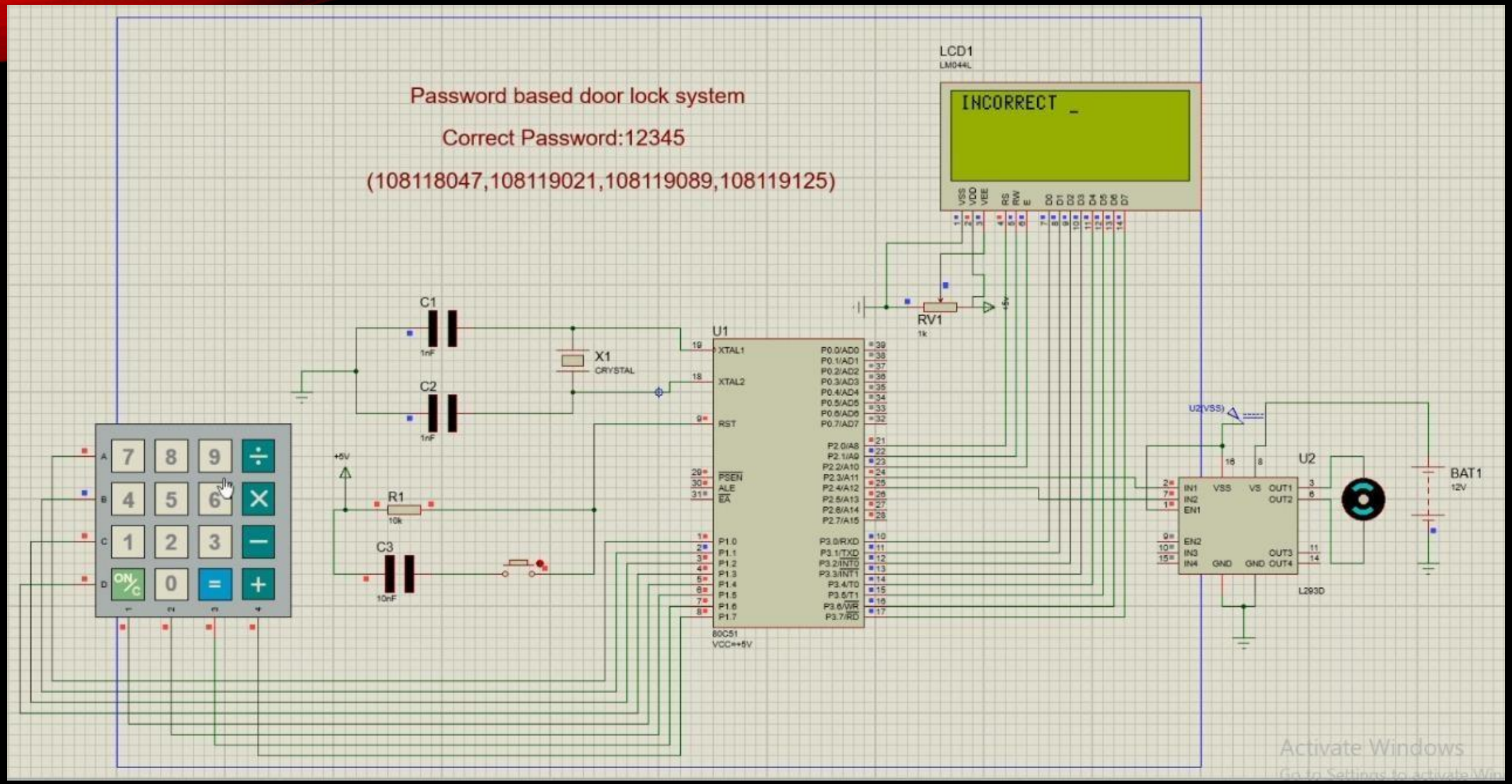
OUTPUT WHEN THE PASSWORD IS CORRECT




Password based door lock system
Correct Password:12345
(108118047,108119021,108119089,108119125)
CORRECT _
VSS VDD VEE RS RW E D0 D1 D2 D3 D4 D5 D6 D7
RV1
1k
+5v
C1
1nF
C2
1nF
X1
CRYSTAL
U1
XTAL1
XTAL2
RST
PSEN
ALE
EA
P0.0/AD0
P0.1/AD1
P0.2/AD2
P0.3/AD3
P0.4/AD4
P0.5/AD5
P0.6/AD6
P0.7/AD7
P2.0/A8
P2.1/A9
P2.2/A10
P2.3/A11
P2.4/A12
P2.5/A13
P2.6/A14
P2.7/A15
P1.0
P1.1
P1.2
P1.3
P1.4
P1.5
P1.6
P1.7
P3.0/RXD
P3.1/TXD
P3.2/INT0
P3.3/INT1
P3.4/T0
P3.5/T1
P3.6/WR
P3.7/RD
80C51
VCC=+5V
+5V
R1
10k
C3
10nF
A 7 8 9 ÷
B 4 5 6 ×
C 1 2 3 −
D ON/C 0 = +
U2(VSS)
U2
IN1 VSS VS OUT1
IN2 OUT2
EN1
EN2
IN3 OUT3
IN4 GND GND OUT4
L293D
BAT1
12V

OUTPUT WHEN THE PASSWORD IS INCORRECT




Password based door lock system
Correct Password:12345
(108118047,108119021,108119089,108119125)
LCD1
LM044L
INCORRECT _
VSS VDD VEE RS RW E D0 D1 D2 D3 D4 D5 D6 D7
RV1
1k
C1
1nF
C2
1nF
X1
CRYSTAL
U1
XTAL1
XTAL2
RST
PSEN
ALE
EA
P0.0/AD0
P0.1/AD1
P0.2/AD2
P0.3/AD3
P0.4/AD4
P0.5/AD5
P0.6/AD6
P0.7/AD7
P2.0/A8
P2.1/A9
P2.2/A10
P2.3/A11
P2.4/A12
P2.5/A13
P2.6/A14
P2.7/A15
P1.0
P1.1
P1.2
P1.3
P1.4
P1.5
P1.6
P1.7
P3.0/RXD
P3.1/TXD
P3.2/INT0
P3.3/INT1
P3.4/T0
P3.5/T1
P3.6/WR
P3.7/RD
80C51
VCC=+5V
+5V
R1
10k
C3
10nF
U2(VSS)
U2
IN1
IN2
EN1
EN2
IN3
IN4
VSS
VS
OUT1
OUT2
OUT3
OUT4
GND
L293D
BAT1
12V
Activate Windows

ADVANTAGES AND APPLICATIONS

Advantages:

- This project provides security.
- Power consumption is less.
- Uses commonly available components.

Applications:

- This simple circuit can be used at residential places to ensure better safety.
- It can be used at organizations to ensure authorized access to highly secured places.

CONCLUSION & FUTURE SCOPE

- The digital door lock is constructed in proteus simulation software and its executed successfully.
- This door lock can not be operated remotely, it has to be operated manually. In future, it could be developed so that it can be operated remotely with a handheld device.
- There is no method to recover the password if the user forgets it. So it could be developed in future to have a recovery method if you forget the password like an OTP can be sent to the mobile phone of the user in order to reset the password

REFERENCES

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