

**DEPARTMENT OF INFORMATION SCIENCE  
AND ENGINEERING**

**A Project Report On**

**PASSWORD SYSTEM**

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## **ABSTRACT**

This project is used to design a door locking system operated through the simple key using NOR and XOR gate. This system only allows person who knows the password to unlock the door. The password is entered using the dip switch. If any unauthorised person tries to unlock the door by trying with different passwords on the dip switch, then this system circuit will be disabled then generates an alarm.

This experiment is built using 4 position DIP switch. The idea is, one switch acts to hold the correct code for unlocking the lock, while the other switch serves as a data entry point for the person trying to open the lock. In real life, of course, the switch assembly with the "key" code set on it must be hidden from the sight of the person opening the lock, which means it must be physically located elsewhere from where the data entry switch assembly is. This requires two switch assemblies. However, if you understand this concept clearly, you may build a working circuit with only one 8-position switch, using the left four switches for data entry and the right four switches to hold the "key" code.

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# CHAPTER 1

## INTRODUCTION

Generally a locking system will have a key and lock which we should manually rotate the key to unlock and we can't unlock if we doesn't have key with us. So we came with an idea of doing a password based locking system for which we just need to remember the password to unlock the system.

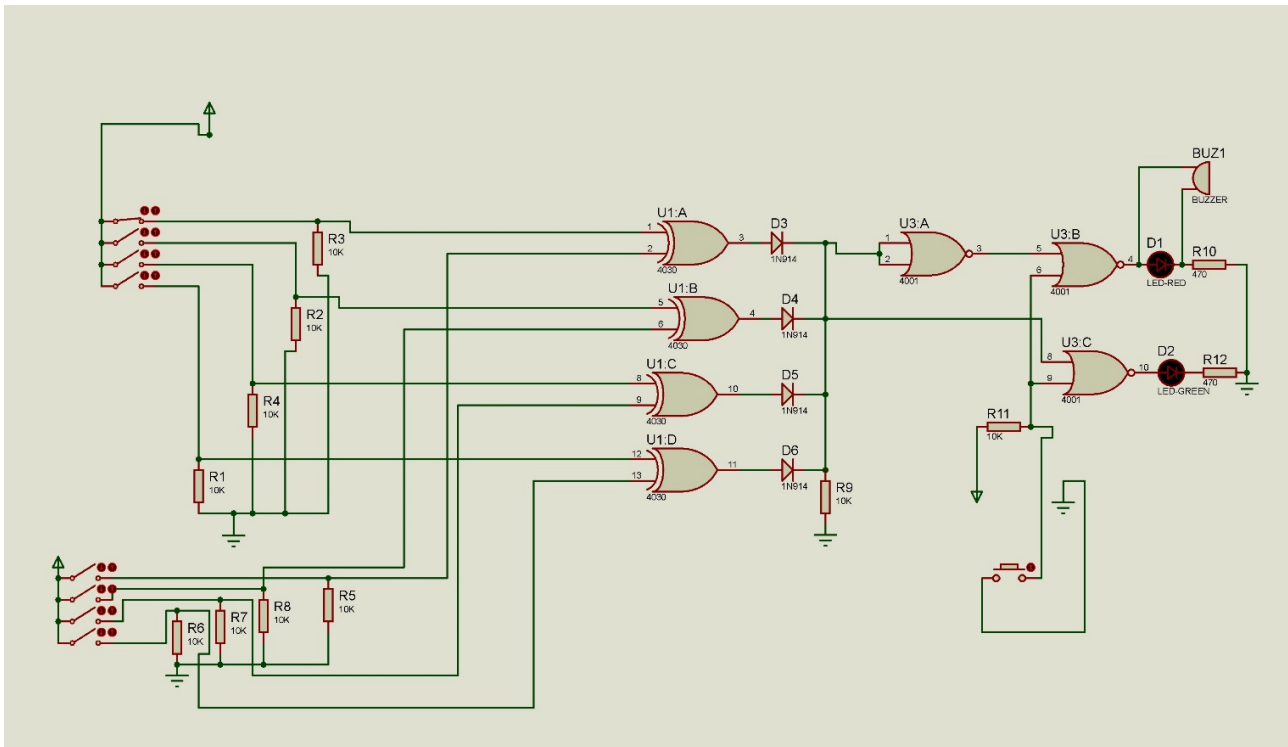
The idea is of this system is that the 4 switches "Key Code Switches" acts as holding the correct password for unlocking the lock. On the other hand, the other 4 switches "Data Entry Switches" acts as data entry points where the code is to be entered to open the lock.

The "Key Code Switches" have static value and is hidden from the person who is trying to open the lock. If the person who is trying to open the lock enters the code at "Data Entry Switches" which is similar to the code kept static the "Key Code Switches" then the green LED will light up and the lock will open while, if he enters the wrong code then the red LED will lit up which is an alarming situation that some wrong person is unlocking the lock.

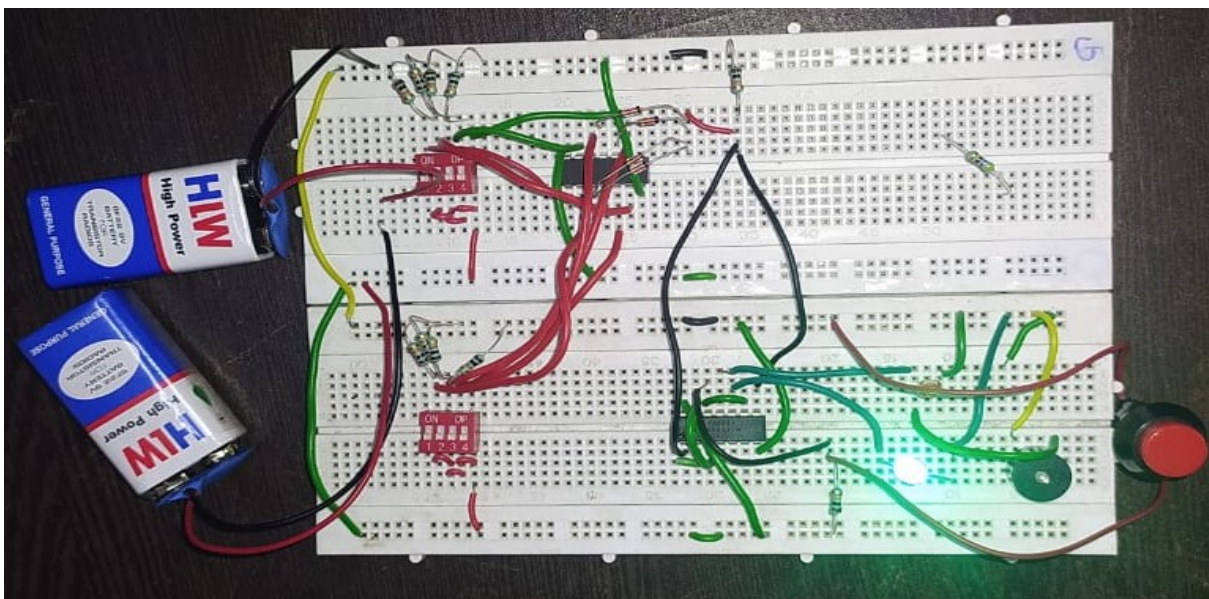
## CHAPTER 2

### DESIGN AND IMPLEMENTATION

#### 1. : CIRCUIT DESIGN:



**Figure 1:** Basic circuit implemented using Proteus software.



**Figure 2:** Hardware implementation of the Password system using IC4001 and IC4070

## 2. COMPONENT DESCRIPTION

The key component of the circuit is the IC 4001 and IC 4070.

### 1.1. : IC 4001

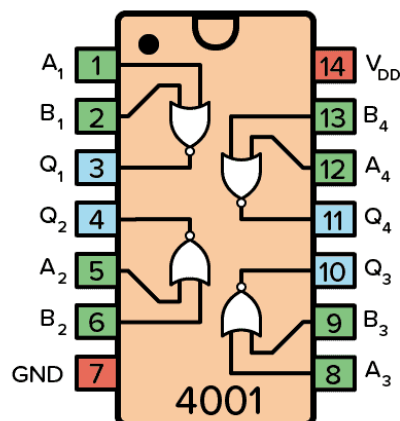
This chip contains four NOR gate, each with 2 inputs, which can operate individually or in combination. It consists of 14 pins where the 14<sup>th</sup> pin is connected to Vcc or positive supply and 7<sup>th</sup> pin is connected to GND or negative supply. [4]

A NOR gate combines the functionality of OR and NOT gates. It gives a HIGH output only when both inputs are LOW; otherwise, the output is LOW. [4]

Each logic gate works as shown in the truth table

Input		Output	
A	B	Q	
0	0	1	
0	1	0	
1	0	0	
1	1	0	

### PIN DIAGRAM:



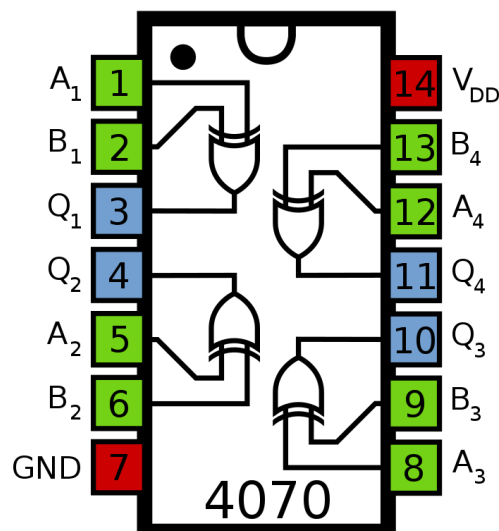
### 2.2.2: IC 4070

This chip contains four XOR gate. An XOR gate (sometimes referred to by its extended name, Exclusive OR gate) is a digital logic gate with two or more inputs and one output that performs exclusive disjunction. The output of an XOR gate is true only when exactly one of its inputs is true. If both of an XOR gate's inputs are false, or if both of its inputs are true, then the output of the XOR gate is false each with 2 inputs, which can operate individually or in combination. It consists of 14 pins where the 14<sup>th</sup> pin is connected to Vcc or positive supply and 7<sup>th</sup> pin is connected to GND or negative supply. [5]

Each logic gate works as shown in the truth table:

Input	Input	Output
A	B	Q
0	0	0
0	1	1
1	0	1
1	1	0

### PIN DIAGRAM:

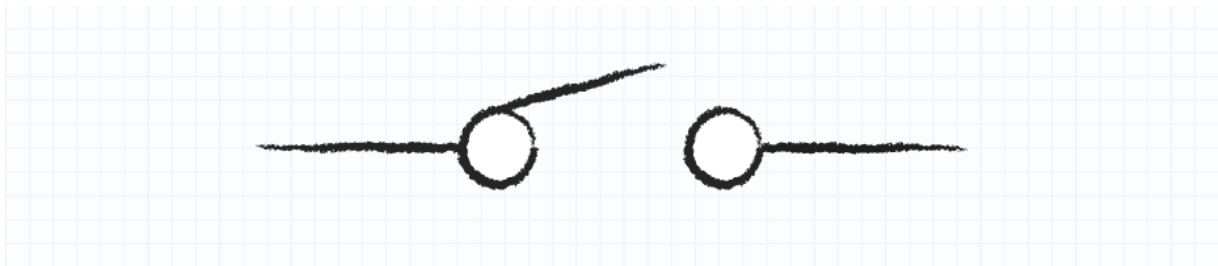


3. :

#### a) DIP SWITCH

A DIP switch is a dual in-line package switch, meaning that it consists of a series of switches in a single unit. It is an electromechanical device requiring a user to manually move the actuator so that a different electronic circuit is activated or deactivated. Commonly mounted on a PCB or breadboard, DIP switches allow users to quickly preconfigure or toggle an electronic device between a variety of settings or operating modes. [3]

When referring to any switch, consideration must be given to the principle of poles and throws. A single pole, single throw (SPST) switch implies that the device sits in an electronic circuit where it is either closed and allows current to flow or open and interrupts the current flow. [3]



Drawing of an SPST circuit

Here for this project we are using 4 bit DIP switches having SPST type of circuit mentioned above.





## **b)SWITCHING DIODE :**

Switching Diode (also called a Pulse Diode, Schottky Diode) – semiconductor diode used in pulse (discrete) systems. It mainly operates in switching configurations, which generate a pulse of only one sign (+), forward-bias. Depending on the application, switching diode can also operate as a simple rectifier diode, transient-voltage-suppressor or detection diode). It is characterized by a very fast operation rate (measured in nanoseconds, whereas for higher voltages – microseconds).

[2]



Switching Diode

## **CHAPTER 3**

### **CONCLUSION**

The working of the circuit starts with setting a key code for the circuit (which is actually meant to be hidden) using DIP switch. To unlock the circuit, input is given through another DIP switch through which the input is given to the IC's. If the given input code matches the key code then the NOR gate which is connected to green led will get output 1 which results in green light will lit it means the system is unlocked . If the given input code doesn't match the key code then red light will lit up and buzzer will sound it means the code entered is wrong and the system will unlock.

## CHAPTER 4

### **REFERENCES**

#### **E-MATERIAL\SITE:**

- [http://www.learningelectronics.net/vol\\_6/chpt\\_7/7.html](http://www.learningelectronics.net/vol_6/chpt_7/7.html)
- <https://911electronic.com/what-is-switching-diode-characteristic-symbol/>
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- <https://logic.ly/lessons/xor-gate/>