CSE 260 Project

BRAC UNIVERSITY

Inspiring Excellence

Course: Digital Logic Design

Group: 05

4-Bit Password Security System

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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 otherhand, 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 ishidden 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 at 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.

Material Required:

7402 NOR gate

7486 XOR gate

Two, four-position DIP switches

Two light-emitting diodes

Four 1N914 “switching” diodes

Ten 10 k ohm resistors

Two 470 ohm resistors

Buzzer

6 volt bateries

Wire

Breadboard

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Equipment

NOR gate

X-OR gate

1N914 Switchinf Diode

Buzzer

DIP Switches

Resistors

Truth Table

X-OR

INPUT		OUTPUT
A	B	C
0	0	0
0	1	1
1	0	1
1	1	0

NOR

Input	Input	Output
A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

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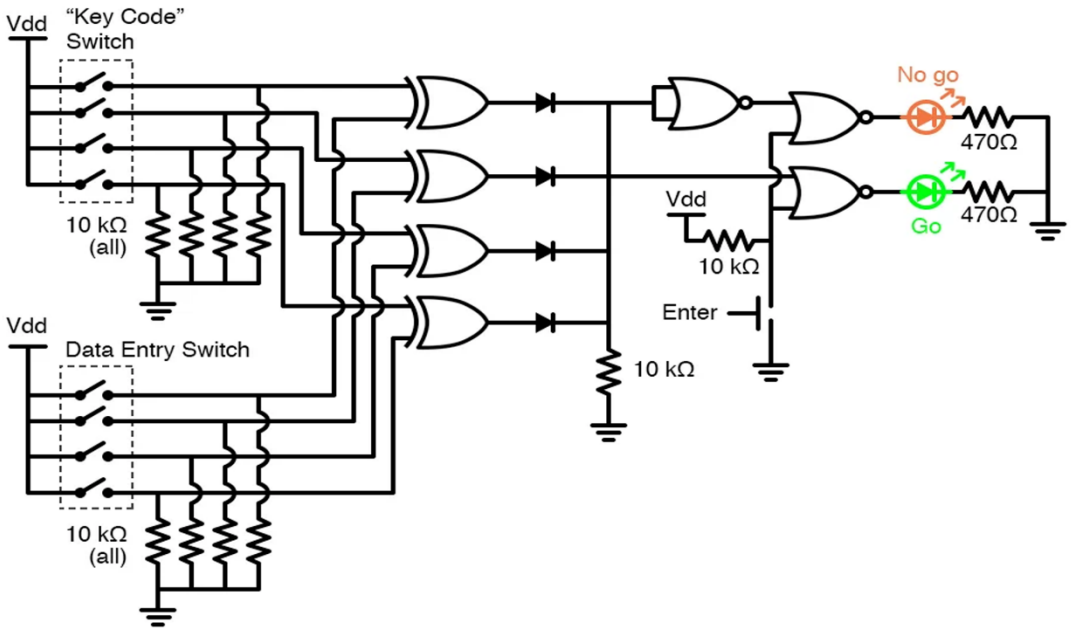
Circuit Diagram:



Procedure:

i. Install the IC's and resistors really on the bread board.

ii. Wire the pins 7 & 14 of both IC's to Vcc & GND respectively.

iii. Wire one end of the switches with Vcc.

iv. Wire one end of resistors to GND.

v. Now connect the other end of the switches to the resistors and wire it to the gates of XOR IC.

vi. Now the output of the XOR is sent as inputs in NOR IC and is grounded with help of a resistor simultaneously.

vii. Connect the led lights (green & red) and ground them with help of resistors.

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The real-life implification:

The use of logic gates is critical to industries worldwide. In today's world, copious individuals' input password into his/her security system to secure or to unsecure his/her home and/or business. A company like Ring provides a great number of homes with security systems so that individuals can protect his/her property. For example, individuals can receive alerts and video footage when someone is new his/her home. Individuals can also check the Ring app at all times to make sure there is not anything going on in or outside of his/her property. Above it all, a company like Ring is great with providing security systems to people's homes thanks to the use of logic gates within each security system.

Limitations:

Costly. Because, used here X-OR gate and NOR gate.

References:

https://www.allaboutcircuits.com/textbook/experiments/chpt-7/simple-combination-lock/?fbclid=IwAR0c-TSa-aUQZjJXVf-PHgbwj1srPUWz0moNNiTQyQ64d2mOfz4axf6U8sM

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