COMBO MAGIC

Team Name- The Innovators

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Description of Problem Statement-

We need to design a digital lock which take a 2-digit number as input and can be changed by the will of the user provided the lock is open. The opening of the should be indicated by the glowing of the LED. The lock is designed using Integrated Circuits, Single Stranded wire, Switch and Logic Gates, the Whole System is to be installed on the breadboard.

Solution to The Problem Statement-

The Design consists of 7 Segment Display(common cathode) used to display the user input, 74HC160(Counter IC) used to get input from user ,7448(7 segment decoder ), 74HC273(Flip Flop IC) used to store the user password, XNOR gate(74HC266), AND gate(74HC08), OR gate(74HC32),Single stranded wire, 5mm LED, 220 ohm and 1Kohm resistors, 5microF capacitor, Tactile push button, Breadboard, 5V power supply.

The Desired password is saved using a combination of a counter IC’s and a flip flop IC. The desired inputs are given to counter IC which are displayed on 7 segment display with the help of 7 segment decoder IC. The password saved in the flip flop IC is then compared with the new inputs, another flip flop IC which acts as OK button is used to check the password. The password is then compared with the stored password using a desired combination of XNOR and AND gates.

If we want to change or reset the existing password, we firstly need to enter the existing password and the following circuit gives the result as 1. The reset system gets active and the new password can be feeded into the circuit as per the user choice.

List of Components with Price

74HC160(2) – 86

74HC48(2) – 90

74HC273(2) – 48

7 SEGMENT DISPLAY (COM CATHODE) – 10

POWER SUPPLY – 69

BREAD BOARD (3) – 231

74HC266(2) – 128

74HC08(2) – 50

5mm LED – 4

Tactile push button(7) – 35

220 ohm resistor – 10

74HC32 – 50

74HC04 – 15

1 kohm resistor – 10

Capacitor (6micro farad) (7) – 40

Multimeter – 200

TOTAL - 1126