CONVEYOR BELT WITH COUNTER

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تحت اشراف:

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- **Introduction**

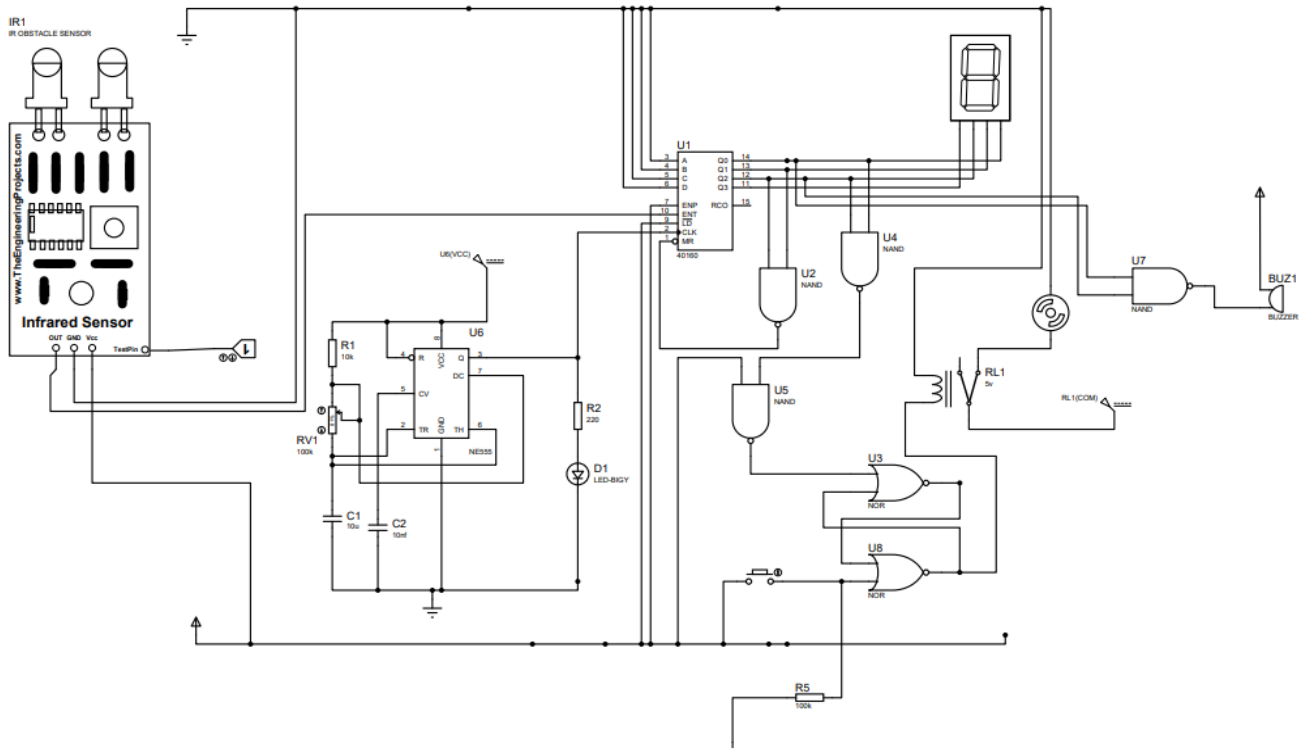
  This system is designed to demonstrate the operation of a conveyor belt associated with a counting circuit where upon the passing of each box (or any object on the belt) a signal is transmitted and decoded to a circuit. The count will be displayed by a 7-segment display.

- **Operation**

  1. The conveyor belt is operated by a 5-volt dc motor at the beginning of operation.
  2. An IR sensor is set up to detect any passing object (box, ball ,…etc.).
  3. As long as no objects have passed, the display shows 0 until the detection of an object by the IR sensor.
  4. When this detection occurs an NE555 timer circuit starts counting and sends clocks to the counter.
  5. Upon reaching the count of 5 this means that the operation needs to halt, and this happens simultaneously.
  6. The Nand gate sends a signal to stop the motor and the buzzer alerts us to this.
  7. To start over the operation we have a button, upon pressing the button a signal is sent to a S-R latch that drives the motor and the operation is repeated.

- **Components**
  - 7 segment BCD
  - 74HC160 Decade counter
  - 74HC47
  - Push button and Selector button
  - cap 10 uF
  - cap10 nF
  - IR sensor
  - LED
  - 10 k Resistor
  - 100 Kilo-ohm potentiometer
  - 220 ohm
  - Nand gate
  - Nor gate
  - Relay
  - DC motor
  - NE555

- **Schematics**


IR1
IR OBSTACLE SENSOR
www.TheEngineeringProjects.com
Infrared Sensor
OUT GND Vcc
TestPin
U1
40160
U2
NAND
U4
NAND
U5
NAND
U7
NAND
BUZ1
BUZZER
RL1
5v
RL1(COM)
U3
NOR
U8
NOR
U6
NE555
R1
10k
RV1
100k
R2
220
D1
LED-BIGY
C1
10u
C2
10nf
R5
100k

- **Proteus Simulation**