OBJECT COUNTER USING IR

Project Proposal
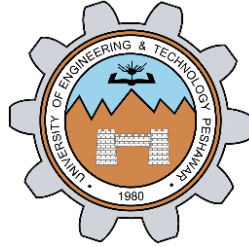
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ABSTRACT

In this small project, we will create a completely automatic object counter with a simple segment display. This project is rather simple and only incorporates simple electronics. This circuit is based on Infrared to detect objects.

SUPPLIES:

Raw materials:

- A4 CardBoard (To build the body and base)

Circuit:

- Breadboard x1
- CD4026BE x2
- LM358 x1
- 2n222/BC547 x1 (or any equivalent transistor)
- 2pin push-button x1
- 10k potentiometer x1
- 220ohm resistor x2
- 680ohm resistor x2
- 10k resistor x2
- 2x Common Cathode 7-segment display
- IR LED x1
- Photodiode x1
- Jumper wires 9v power supply

Tools:

- Soldering Iron
- Wire stripper/cutter
- Cutting knife
- PVA Glue
- Protractor
- Ruler etc.

PREVIEW:

The idea of this project is to create an object counter to count small things such as components, Lego bricks, beads etc. Objects would be dropped onto a ramp, it would roll down into a container at the bottom but will be detected by a pair of IR detectors. The output of the Photodiode will go through a NOT gate and then into the comparator.

Output: 1 Photodiode — IR LED   **Output: 0** Photodiode — IR LED
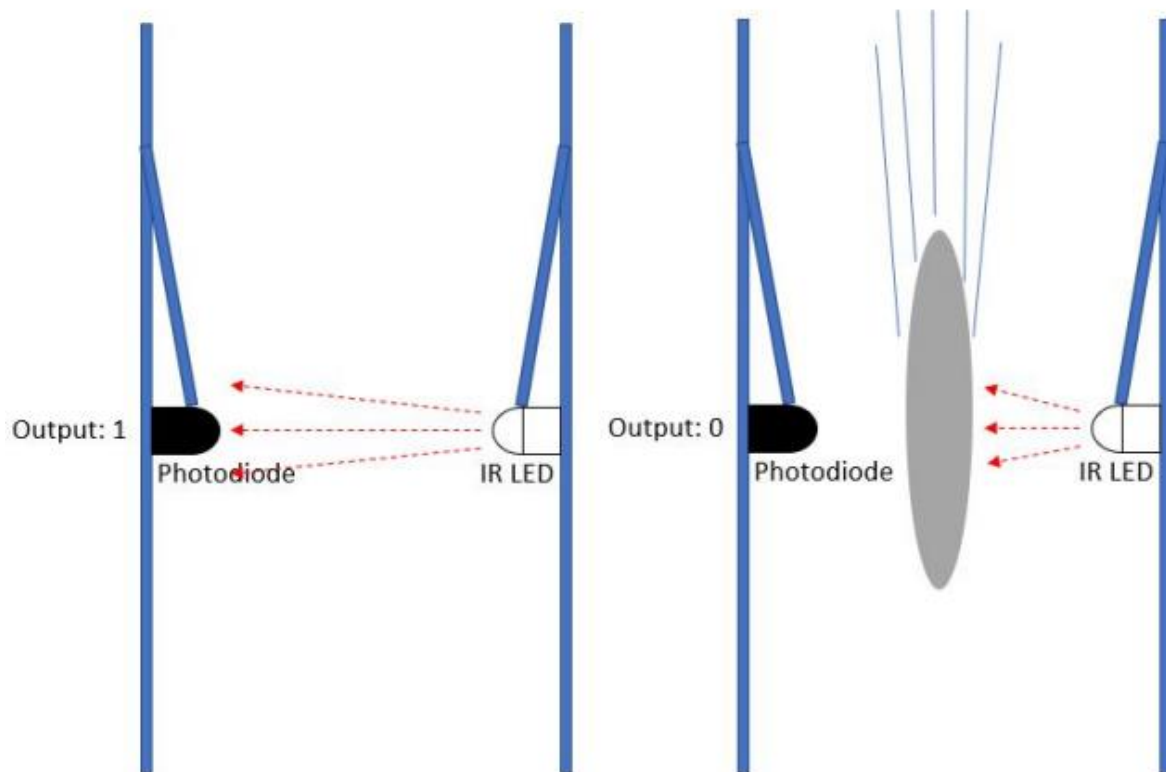
CIRCUIT:

The circuit used for this project is not complicated, it uses an OP amp (LM358) as the input regulator for the 7-segment display chip (CD4026BE). I designed the circuit so it has 2 7-segment displays which give it 99 digits or 99 possible objects to count. That should be plenty, but if it's not, then you can link another display which will give you 999 digits, definitely enough. The button in the circuit is for reset. The potentiometer is to adjust the sensitivity of the photodiode. The circuit diagram below is the same as the breadboard circuit. It might be a little difficult to read as it is compressed into a confined space.
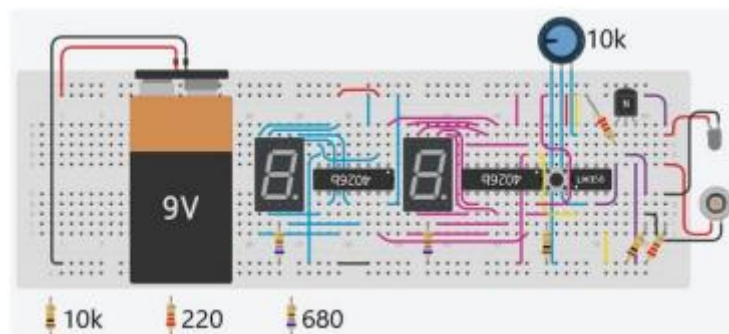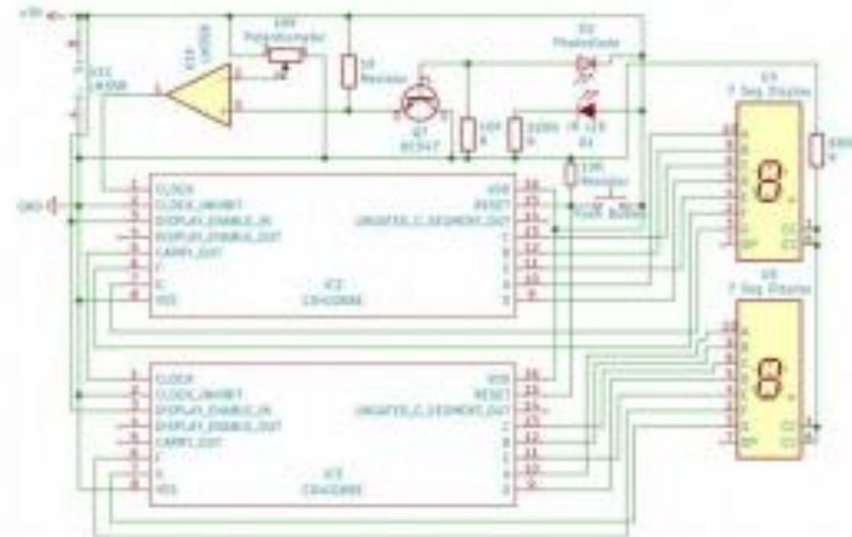
BODY:

We can use cardboards to physically implement this circuit into a fully functional object counter.