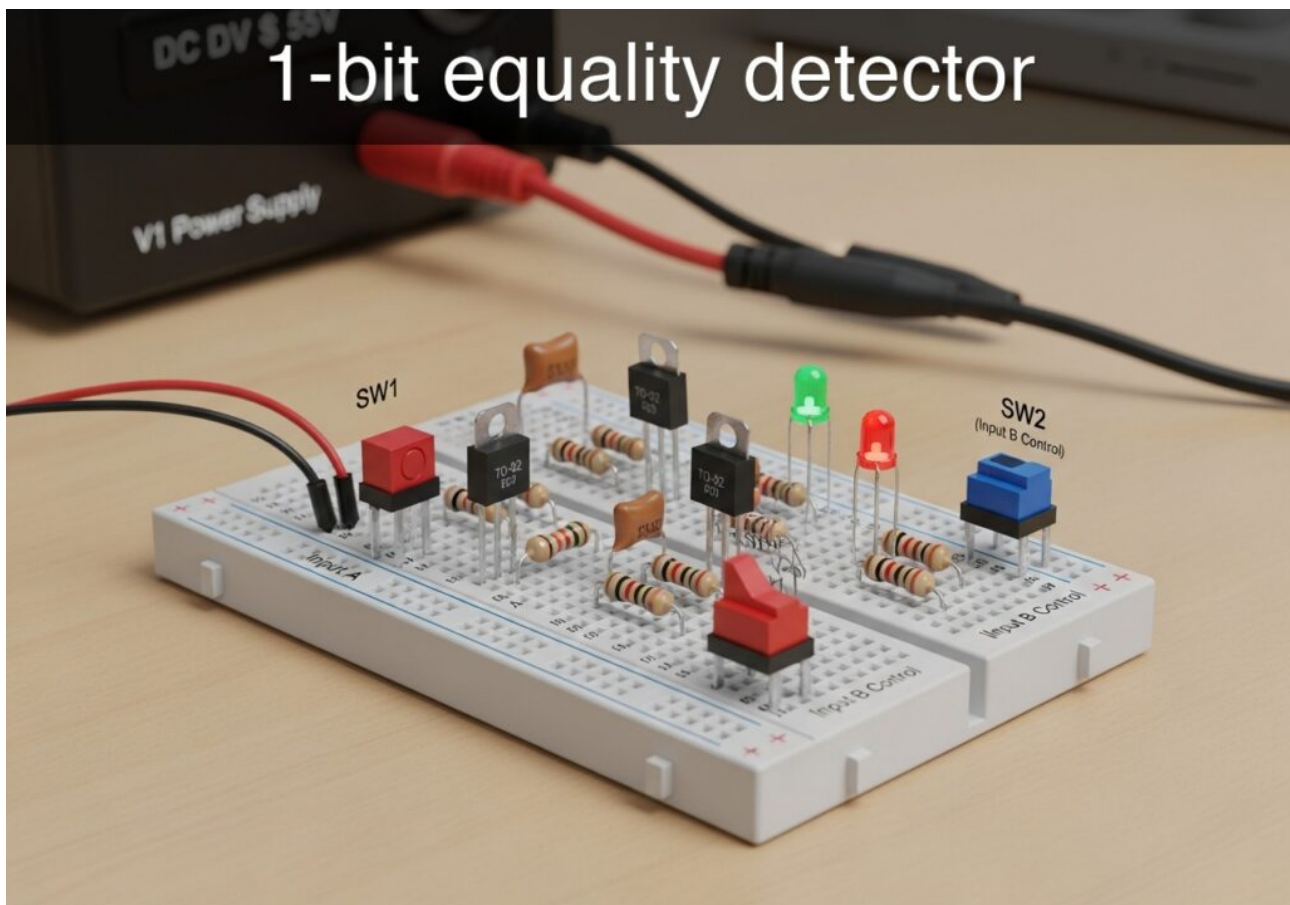


## Practical case: 1-bit equality detector

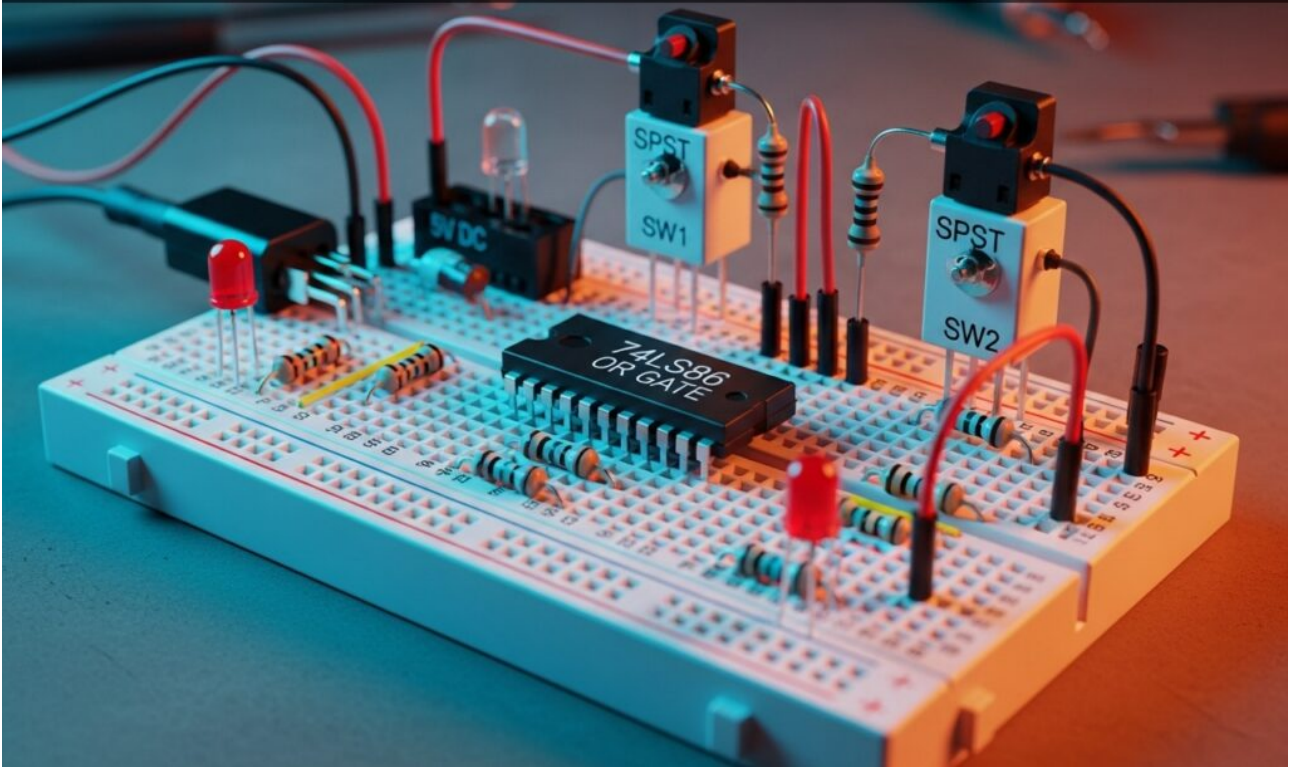


Level: Basic - Verify the operation of a 74HC7266 XNOR gate as a logical equality detector using its truth table.

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## Practical case: Sensor fault detector

# Sensor fault detector

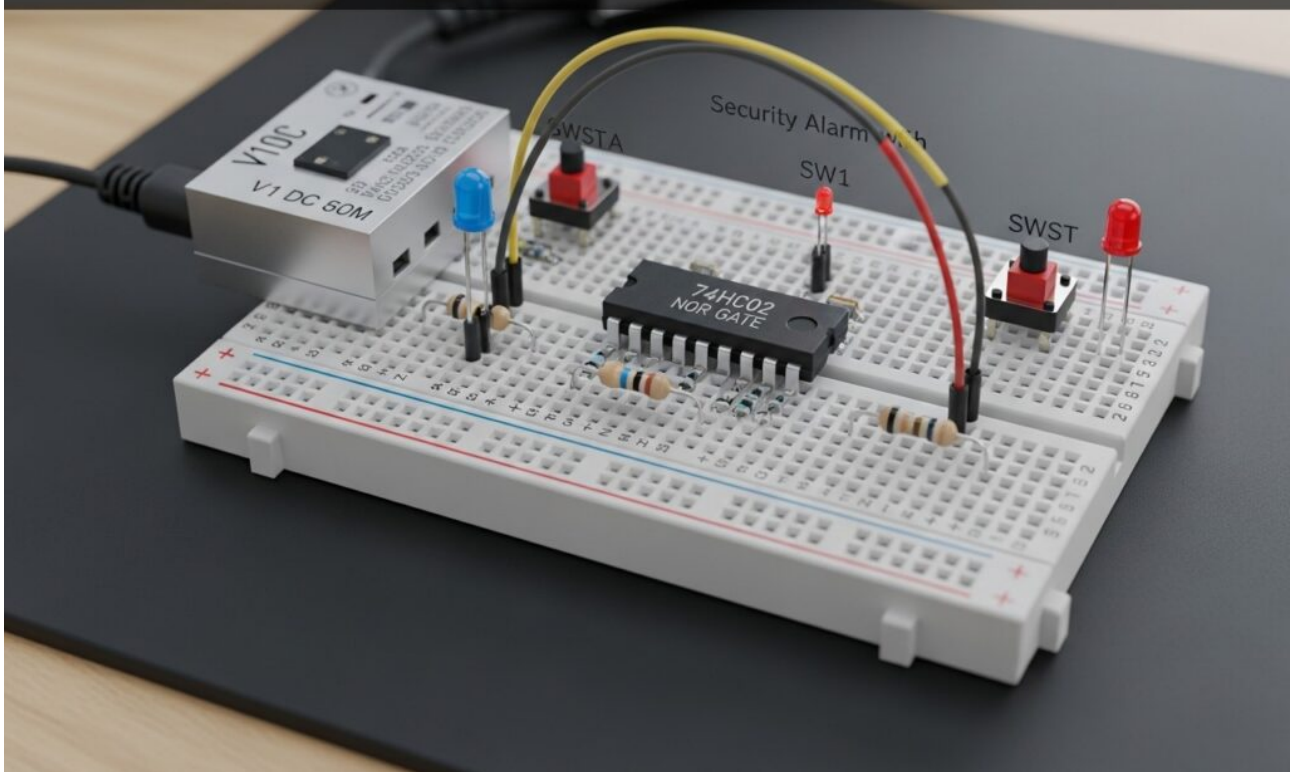


Level: Basic - Implement an XOR gate circuit to activate a visual alarm when two redundant sensors present different logic states.

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## Practical case: Security alarm with NOR

# Security alarm with NOR



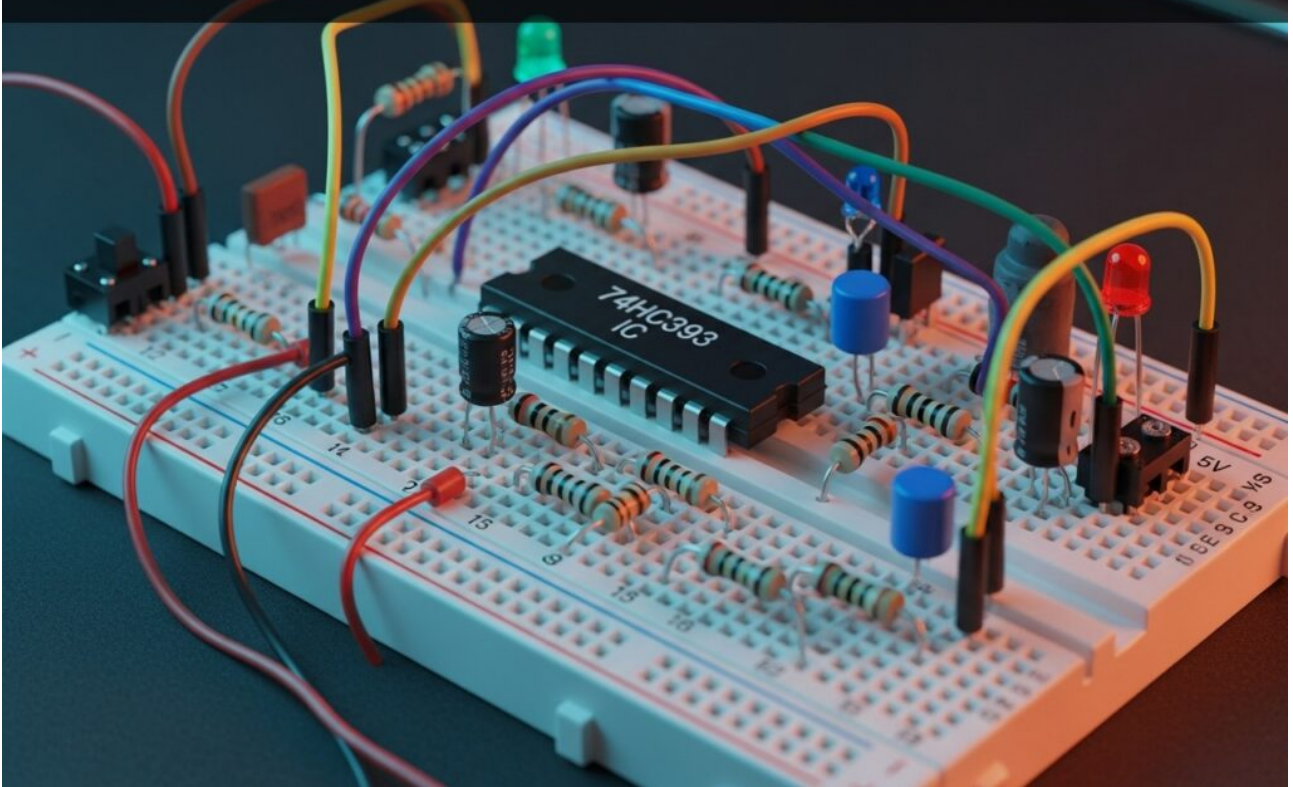
Level: Basic | Objective: Verify the NOR gate truth table using an alarm circuit that activates only when no sensors detect movement.

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## Practical case: Selectable Frequency Divider



# Selectable Frequency Divider

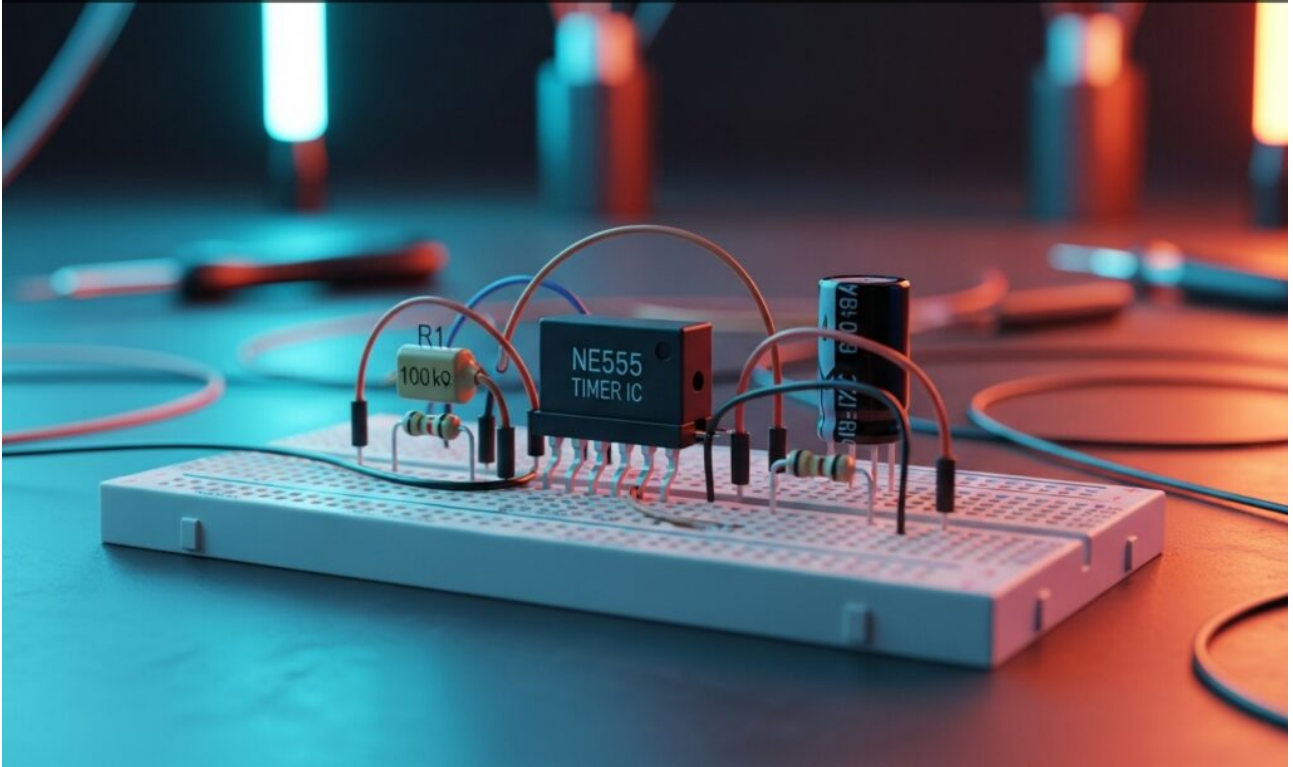


Level: Medium - Build a binary frequency divider using a 74HC393 ripple counter with a selectable output stage.

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**Practical case: NE555 Delay-On Timer for READY Indicator**

# NE555 Delay-On Timer for READY Indicator



Level: Basic - Build an RC-timed delay circuit to activate a READY indicator seconds after power is applied.

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## Practical case: 0 to 9 BCD Decimal Counter

# 0 to 9 BCD Decimal Counter

The image shows a breadboard circuit for a 0 to 9 BCD Decimal Counter. The central component is a 74HC90 IC, which is a decade counter. The circuit is powered by a 5V supply and includes a 1Hz clock source. Various resistors and capacitors are connected to the IC pins to configure it for BCD counting. The breadboard is labeled with component values and pin numbers, and the IC is clearly marked '74HC90 IC'.

Level: Medium | Build a 0-9 BCD counter using the 74HC90 IC to visualize binary progression via LEDs.