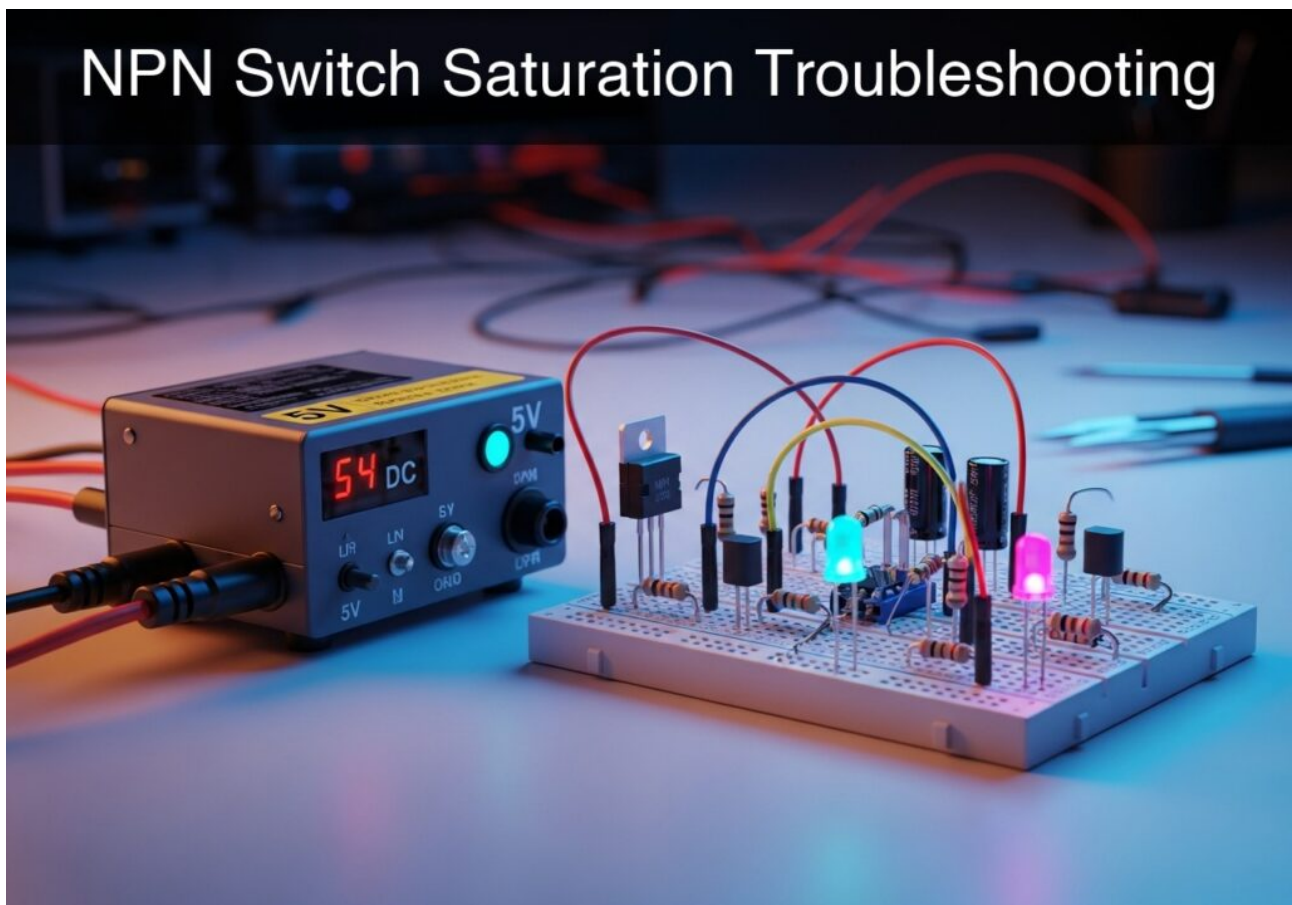


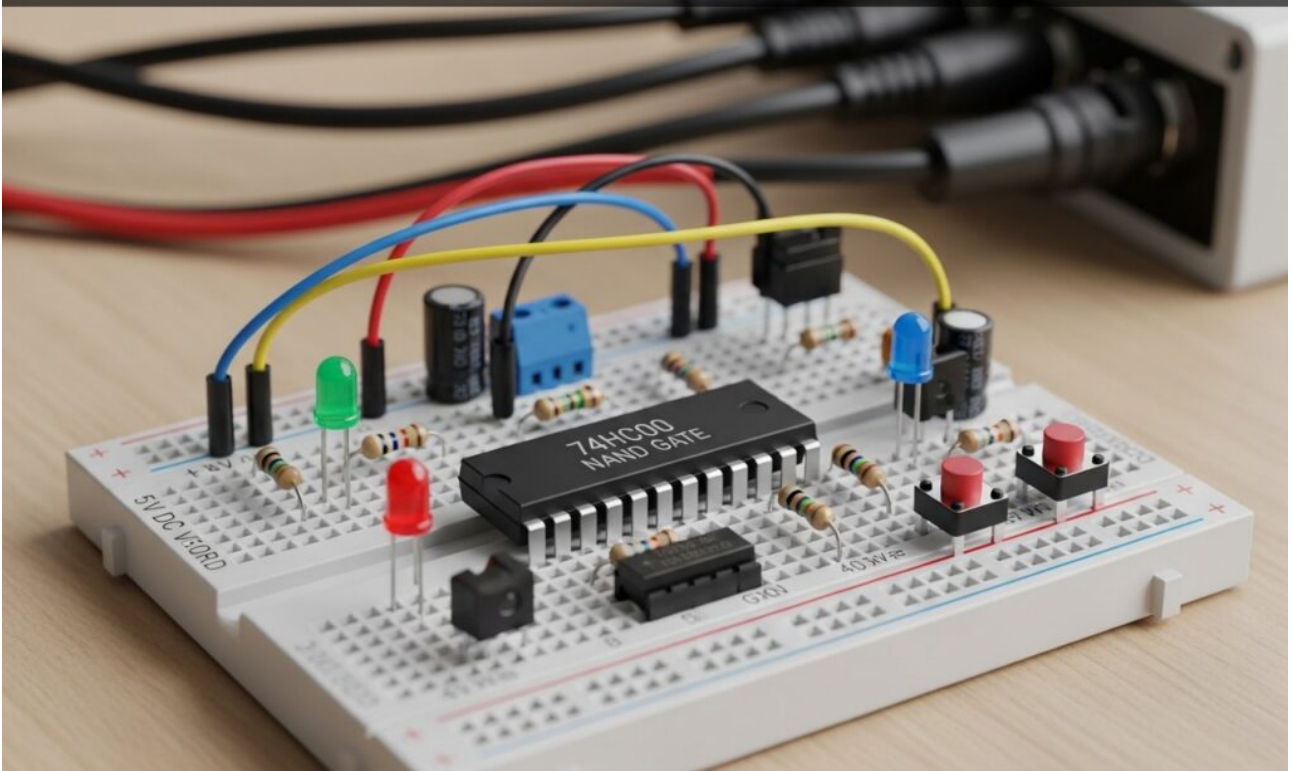
Practical case: NPN Switch Saturation Troubleshooting



Master Analog Electronics by fixing a flawed NPN Transistor switch. Diagnose dim LEDs and high V_{ce} voltage, then correct bias to achieve full saturation.

Practical case: Dual Safety Motor Activation

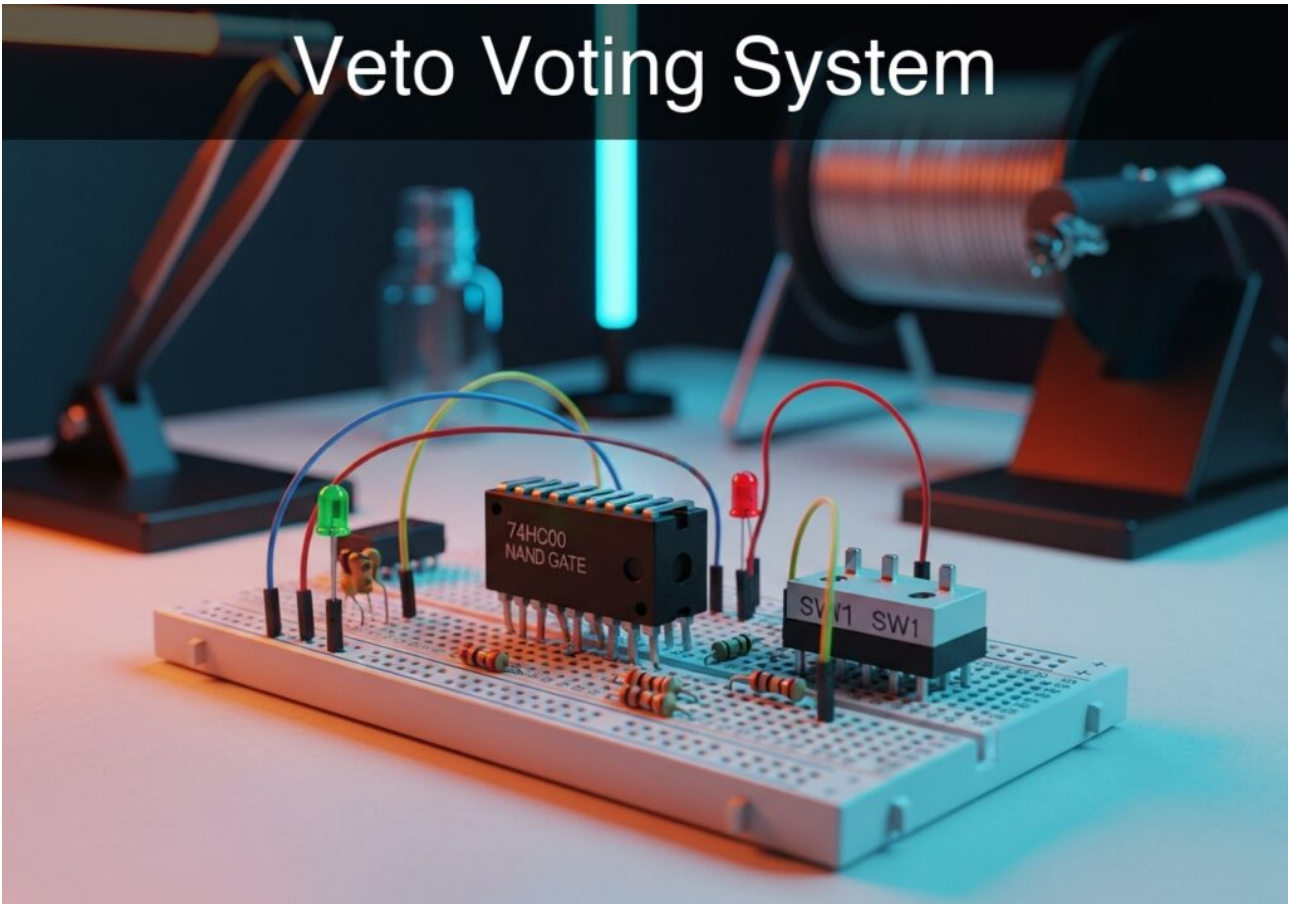
Dual Safety Motor Activation



Learn Digital Electronics by building a safety circuit with a NAND gate. Create a two-hand motor control system that activates 5V output only on dual press.

Practical case: Veto Voting System

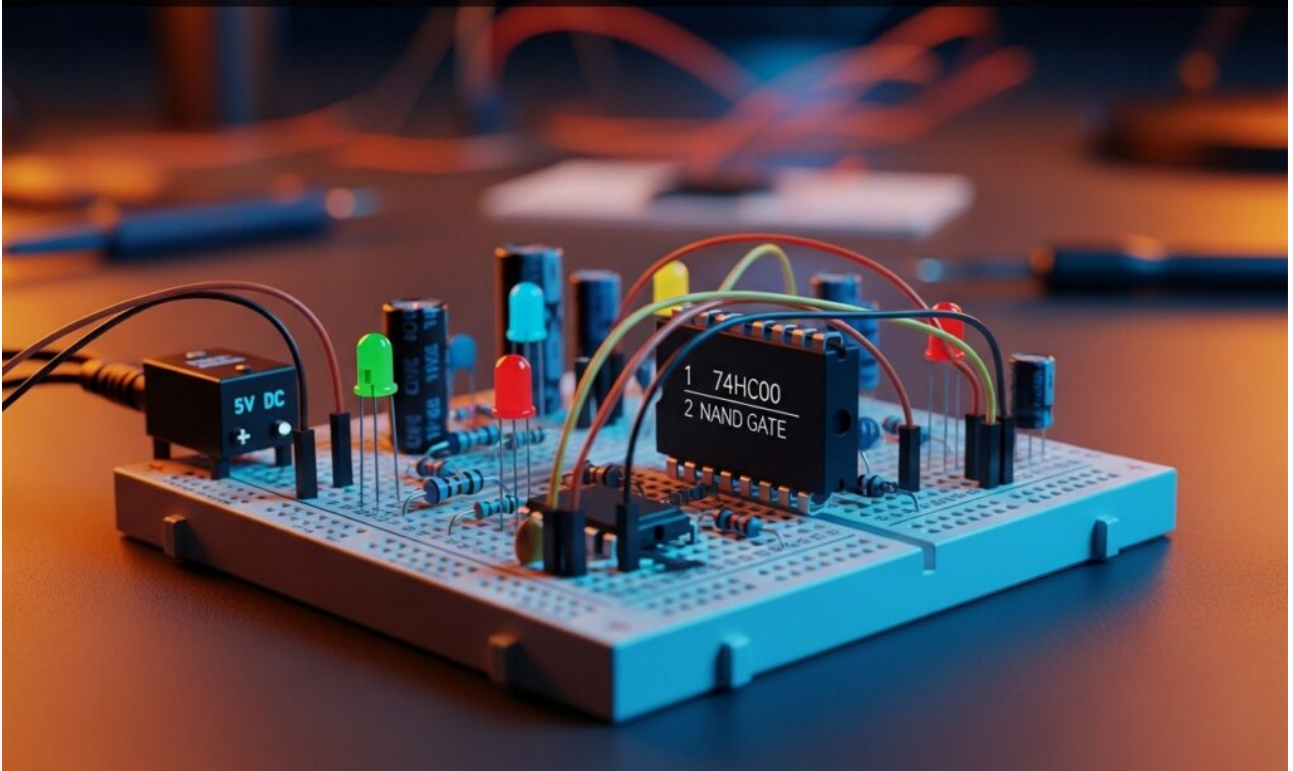
Veto Voting System



Master Digital Electronics by building a voting system using a single 74HC00 NAND gate IC. Create a safety interlock circuit where LED output signals approval.

Practical case: Water tank level control

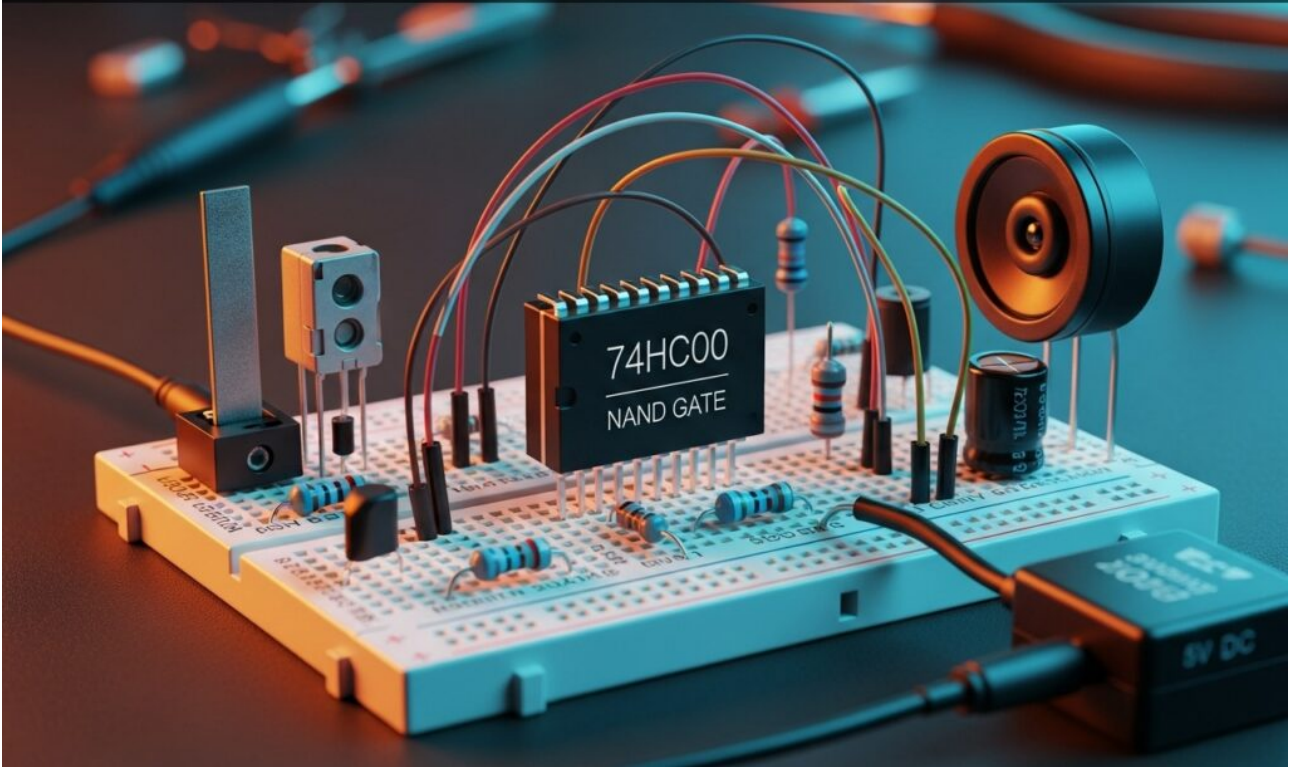
Water tank level control



Learn Digital Electronics by building a pump safety stop using a NAND gate. Design a circuit that cuts power to 0V only when two sensors detect a full tank.

Practical case: Window sensor security alarm

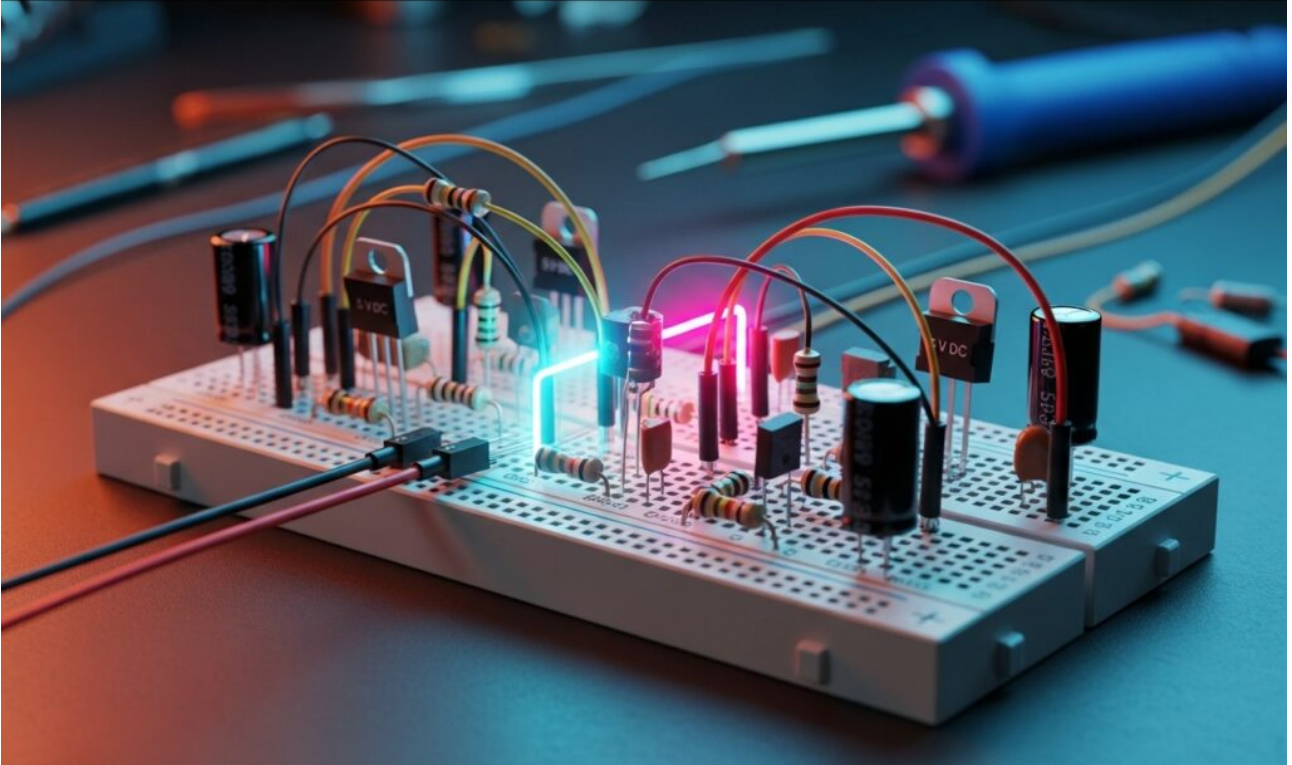
Window sensor security alarm



Master Digital Electronics by building a fail-safe alarm with a NAND gate. Detect open windows and trigger a 5V LED signal instantly when security is breached.

Practical case: High power circuit isolation

High power circuit isolation



Master Analog Electronics by building a Relay driver circuit. Learn to safely switch high-power loads with low-voltage signals and verify galvanic isolation.