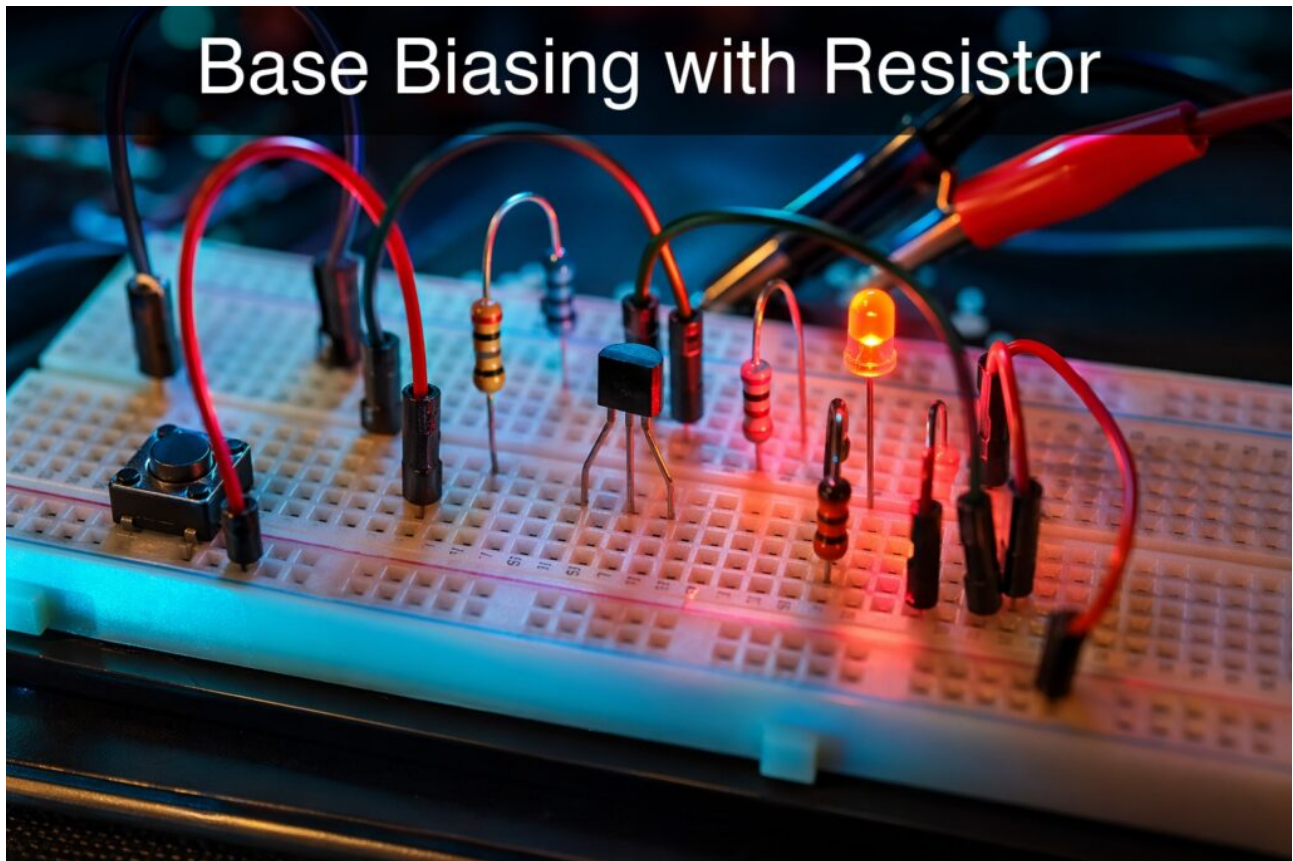


## Practical case: Base Biasing with Resistor

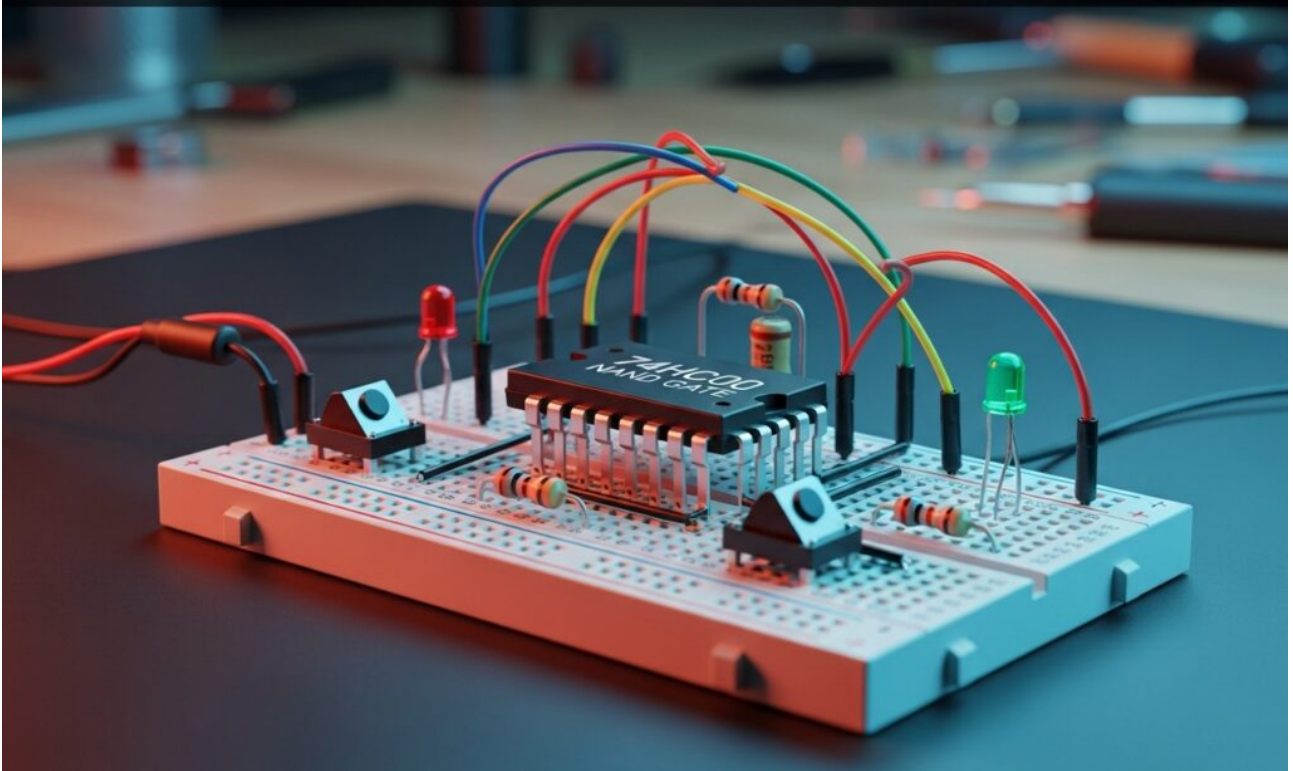


Level: Medium — Calculate and verify a base resistor to switch an NPN transistor safely from a logic output.

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## Practical case: Light switching from two points

# Light switching from two points

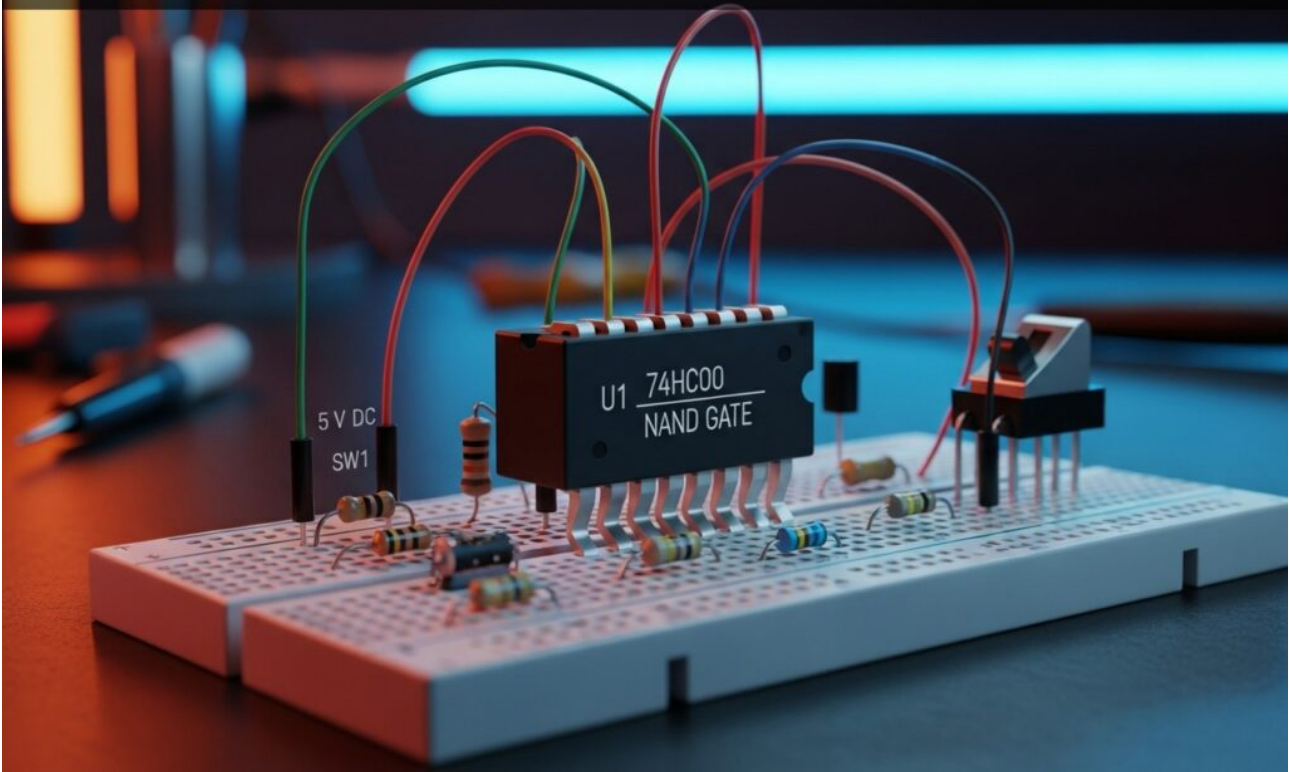


Master Digital Electronics by building a 2-way switch using the universal NAND gate. Synthesize XOR logic to toggle LED states based on dual input signals.

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## Practical case: Debouncing SR Latch with NAND

# Debouncing SR Latch with NAND



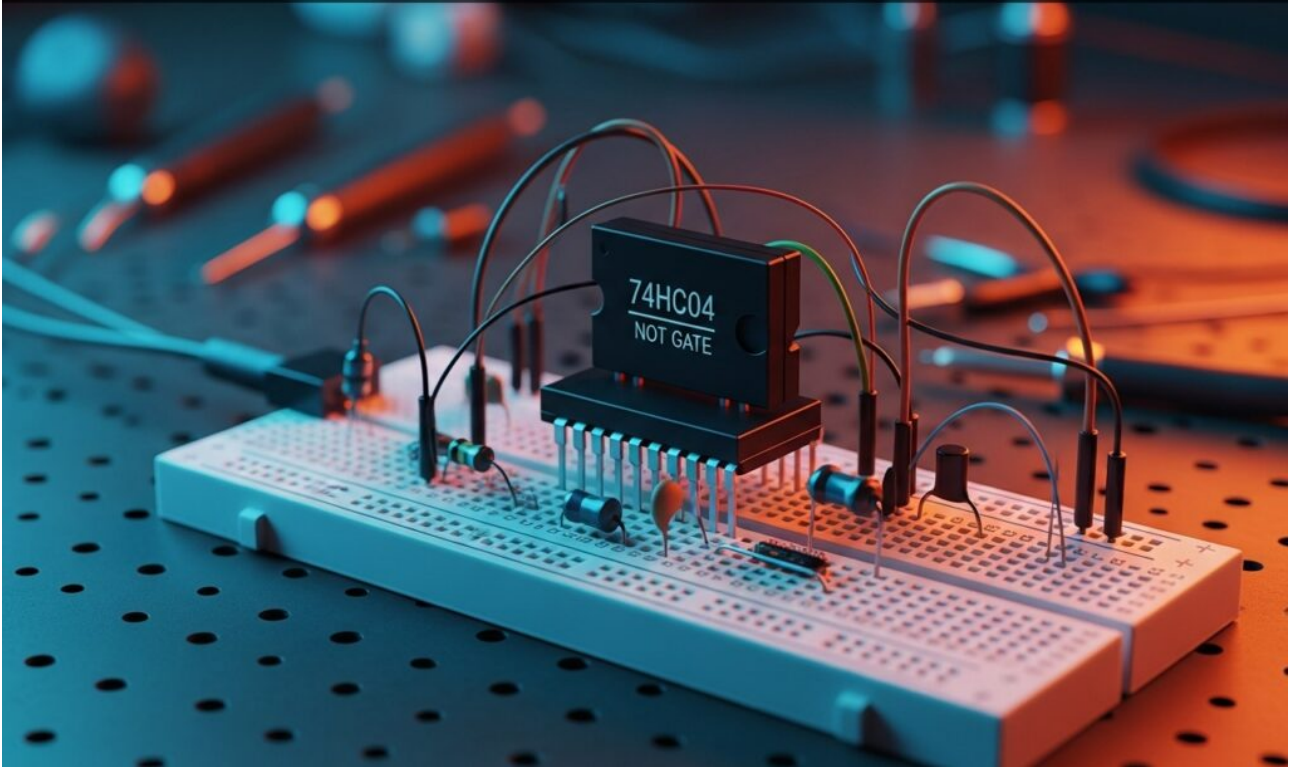
Master Digital Electronics by building a NAND gate SR latch to eliminate switch noise. Ensure clean signals and verify stable memory states with LEDs.

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## Practical case: CMOS linear amplifier



# CMOS linear amplifier

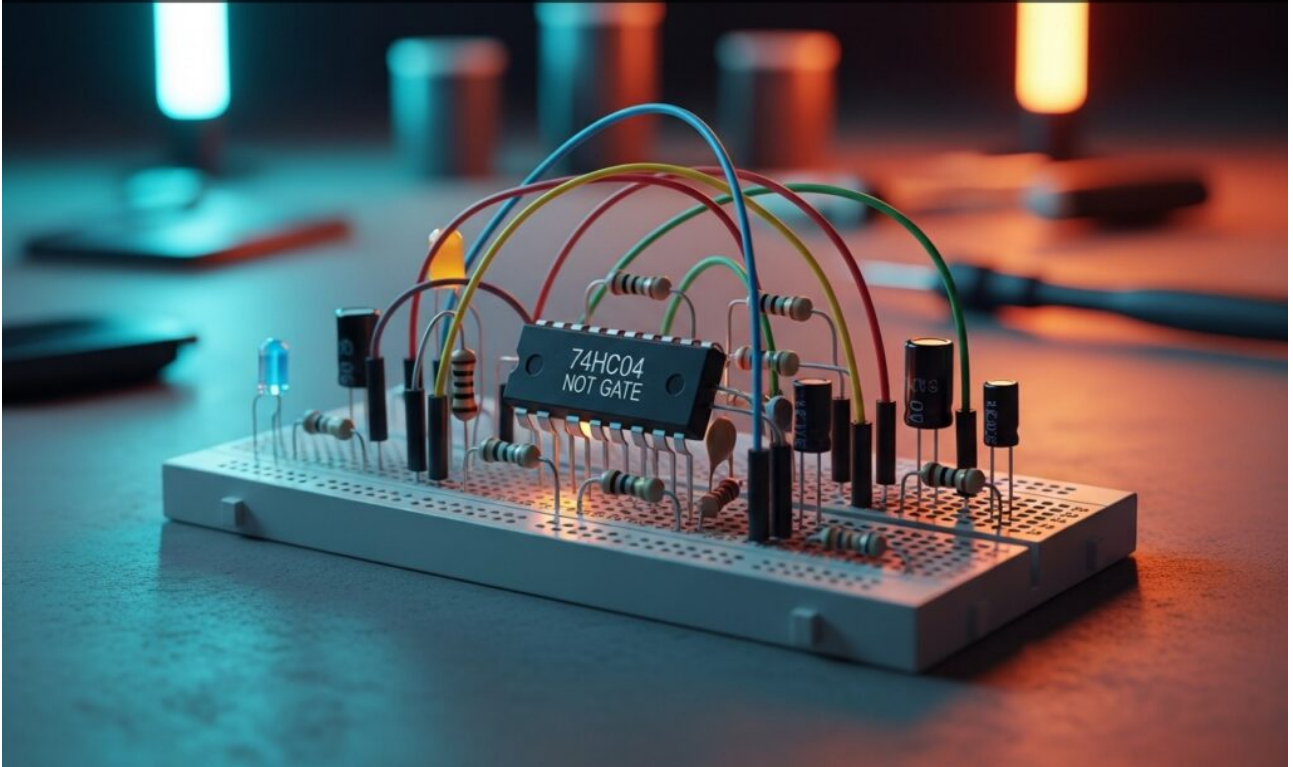


Explore Digital Electronics by configuring a NOT gate as a Class A linear amplifier. Build the circuit to observe measurable AC signal gain and self-biasing.

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## Practical case: Ring Oscillator and Delay

# Ring Oscillator and Delay



Master Digital Electronics by building a ring oscillator using NOT gates. Measure the MHz output frequency to calculate precise propagation delay.

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**Practical case: Frequency divider by 2, 4 and 8**

# Frequency divider by 2, 4 and 8

In this Digital Electronics lab, use a Binary counter to build a frequency divider. Verify square wave outputs at  $f/2$ ,  $f/4$ , and  $f/8$  relative to the clock.