01 · Arduino and LED



Arduino Uno



LED



Resistor

Key concepts

D13 is a digital output: HIGH / LOW. A series resistor limits LED current. GND is the 0 V reference. USB powers the board, not a motor.

Autonomous navigation rules

1. Front ≥ 20 cm: forward.

2. Otherwise, clear side ≥ 20 cm: turn toward the clearest (right on a tie).

3. Otherwise, rear ≥ 20 cm: reverse.

4. Everything blocked: stop.

Check my understanding

Predict the LED state when D13 changes from HIGH to LOW. Why must you keep its resistor?

My answer / observation:

Four essential components

Resistor: limits current. Capacitor: stores charge and helps stabilise the supply. Diode: conducts mainly one way. Transistor: switches or amplifies a signal.

Safety: disconnect before changing wiring. Check polarity, voltage and grounds. Simulation does not validate real hardware.