Arduino II

LCD & Sensors

Recap

- What is I/O in microcontrollers?
- Pins: Digital vs Analog
- Voltage levels: HIGH/LOW, 0–5V

Digital Inputs

- What are Digital Sensors - A signal that is either HIGH (1) or LOW (0).

- Demo

Analog Inputs

- What are analog sensors? (potentiometer, LDR, temperature) - A continuous voltage between 0–5V read as a value between eg. 0–1023.

- Demo

Digital Outputs

- **What is a digital output?**
  A pin that outputs either HIGH (5V) or LOW (0V).

- **Function to control digital output?**
  digitalWrite(pin, HIGH/LOW).

Analog Output

- Arduino doesn't have true analog output — uses PWM
- **What does PWM control?**
  Simulates analog voltages for LEDs, motors, servos
- Demo with LED brightness

Demo

- Control LED brightness with a potentiometer

7-Segment Display

- How a 7-segment display works (common cathode/anode)
- Segments A–G + optional DP
- Need for current-limiting resistors

LCD Display (16x2)

- Uses the I^2C protocol
- Great for output display (sensor values, menus)
- Demo

Final Demo

- Display a sensor value on the LCD display