Automated Dispenser for Harmful Chemicals

An Arduino-based Embedded System

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Project Description

- This project is a smart automatic dispenser for harmful chemicals,
- designed to prevent direct human contact.
- It detects objects (hands, glass, bottles) and releases a fixed quantity of liquid.
- Reduces chemical burns, contamination, and improves hygiene.
  - Useful for sanitizer, acid, and chemical dispensing.

Components Used

- 1. Arduino Uno – Microcontroller
  - 2. Ultrasonic Sensor / IR Sensor – Object detection
- 3. Servo Motor / Pump / Solenoid Valve – Fluid control
- 4. Relay Module – For high-power control
- 5. Power Supply – Battery or USB
- 6. Fluid Container – Stores liquid
- 7. Tubes/Pipes – For dispensing

Working Principle

- • Sensor detects object near dispenser.
- • Sends signal to Arduino Uno.
- • Arduino activates motor/valve.
- • Dispenses fluid for a fixed time/amount.
- • System ensures touchless operation.

Final Outcome

- • Safe, contact-free chemical dispensing.
  - • Reduced human skin exposure to hazardous fluids.
- • Accurate, automatic liquid release.
- • Low-cost and scalable for industrial/lab use.
- • Suitable for sanitizers, acids, and chemicals.