

Automated Dispenser for Harmful Chemicals

An Arduino-based Embedded System
Project

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
- 8. LED/Buzzer (Optional) - Indication

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.