TOUCHLESS HANDWASH SYSTEM USING IOT

Abstract

This project presents a Touchless Handwash System Using IoT, designed to improve hygiene by eliminating physical contact. The system uses an ultrasonic sensor to detect hands, automatically dispensing soap and water via a microcontroller-controlled mechanism. IoT integration allows real-time monitoring of usage and alerts for refilling soap and water.

System Overview:

- Sensors detect hand presence.
- Ultrasonic sensor controls soap and water flow.
- IoT platform monitors usage and sends alerts.

Advantages:

- Improved hygiene by eliminating touch.
- Water and soap conservation through controlled dispensing.
- Real-time monitoring for maintenance alerts.
- Ideal for public places like hospitals, schools, and offices.
- This system enhances sanitation and promotes smart, efficient handwashing.

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Existing System:

Traditional handwashing stations require manual operation, where users physically press soap dispensers and turn taps on and off. Some semi-automated systems use mechanical foot pedals or basic motion sensors but lack IoT integration for monitoring and efficiency.

Disadvantages of the Existing System:

1. Risk of Germ Transmission: Physical contact with soap dispensers and taps can spread bacteria and viruses.

2. Water Wastage: Users may leave taps running, leading to excessive water consumption.

3. Lack of Monitoring: No real-time tracking of soap and water levels, leading to delays in refilling.

4. Maintenance Challenges: Difficulty in detecting faults or empty dispensers without manual checks.

5. Limited Accessibility: Manual and foot-operated systems may not be user-friendly for people with disabilities.

A touchless, IoT-based solution overcomes these limitations by automating the process, reducing contact, and enabling real-time monitoring.

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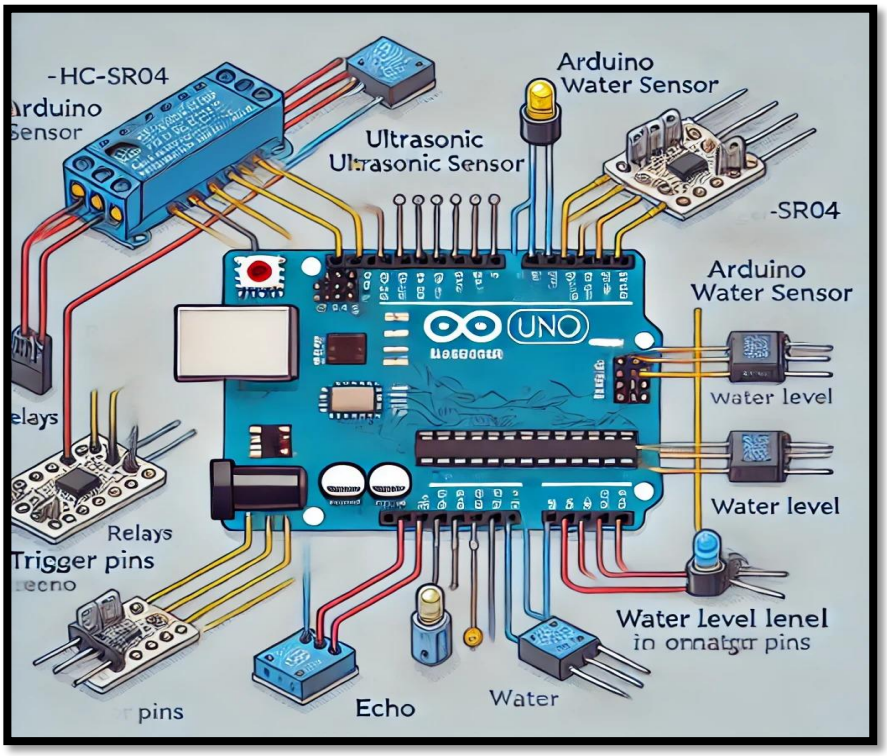
BLOCK DIAGRAM:



Feature Enhancements :

1. Smart Liquid Level Monitoring – Sends alerts when soap or water is low.
2. Automatic Water Flow Control – Prevents wastage by dispensing only as needed.
3. UV Sterilization – Keeps the dispensing area germ-free.
4. Mobile App Integration – Allows remote monitoring and maintenance alerts.
5. Battery Backup & Solar Power – Ensures continuous operation during power outages.

These upgrades enhance efficiency, hygiene, and sustainability.