SMART PUBLIC RESTROOM USING IOT

Team member

610821106002 : ADIL AHMED.R

Project : Smart Public Restroom

OBJECTIVE

IoT Based Cubicle Occupancy Indicator is a project that aims to create a new system for monitoring public restroom cubicle occupancies to present an automated IoT solution relevant to the pandemic situation. Through the system, users can view available cubicles without entering and checking each door, thereby providing a better user experience.

Phase 1 : project definition and design thinking

Data source :

Remote Monitoring : Set up remote monitoring to receive real-time alerts and data analytics, allowing for proactive maintenance and improvements.

Abstract:

The concept of a smart public restroom utilizing the Internet of Things (IoT) technology offers innovative solutions to enhance the user experience, improve operational efficiency, and promote hygiene and sustainability. This abstract provides an overview of the key modules and functionalities of a smart public restroom system powered by IoT.

Modules:

Smart Access Control System:

➢ IoT-enabled smart locks and access control mechanisms to ensure authorized entry.

- ➤ Integration with mobile apps for touchless access via QR codes or smartphone authentication.
- ➤ Real-time occupancy monitoring to prevent overcrowding.

Hygiene Monitoring and Alerts:

- ➤ Sensor-based soap and sanitizer dispensers with refill notifications.
- ➤ Smart waste bins equipped with fill-level sensors to optimize trash collection routes.
- ➤ Automated alerts for maintenance when hygiene supplies are low.

Energy Efficiency:

- ➤ Smart lighting systems that adjust brightness based on occupancy and natural light.
- ➤ Temperature and ventilation control to conserve energy when the restroom is not in use.
- ➤ Integration with renewable energy sources, such as solar panels.

Water Conservation:

- ➤ IoT-connected water fixtures like faucets and toilets to reduce water wastage.
- ➤ Leak detection sensors to identify and address plumbing issues promptly.
- ➤ Data analytics for optimizing water consumption patterns.

Occupancy and Cleaning Management:

- ➤ Occupancy sensors to monitor restroom usage in real-time.
- ➤ Automatic scheduling of cleaning based on usage data.
- ➤ Remote monitoring and alerts for maintenance staff.

User Feedback and Experience Enhancement:

- ➤ Interactive touchscreens or mobile apps for users to provide feedback.
- ➤ Integration with AI chatbots for quick responses to user queries.
- ➤ Customizable ambiance settings, like music and fragrance dispensers.

Accessibility Features:

- ➤ IoT-powered accessibility solutions, such as voice-activated controls.
- ➤ Automatic door opening for people with disabilities
- ➤ Real