DEPARTMENT OF INFORMATION TECHNOLOGY

Project name : *Smart Public Restroom*

Team name : project_224780_Team_1

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PROJECT

Creating a smart public restroom using IoT (Internet of Things) involves a combination of hardware, software, and connectivity. While web development technologies may not be the only requirement, they can play a crucial role in creating a user interface for monitoring and controlling the smart restroom system.

PLATFORM REQUIRED:

1. **Hardware for IoT**: You'll need various IoT devices and sensors to collect data from the restroom. This might include occupancy sensors, water quality sensors, temperature sensors, and more. These devices will gather data about the restroom's condition and usage.

2. **IoT Communication Protocols**: To connect the IoT devices to the web, you'll need communication protocols such as MQTT, CoAP, or HTTP(S) for data transmission.

3. **Microcontrollers and IoT Development Boards**: You might use platforms like Arduino, Raspberry Pi, or specialized IoT development boards to control and manage the IoT devices.

4. **Internet Connectivity**: You need a stable internet connection for the IoT devices to send and receive data. This could be through Wi-Fi, Ethernet, or cellular connectivity.

5. **IoT Cloud Platform**: You'll need a cloud platform like AWS IoT, Google Cloud IoT, or Microsoft Azure IoT to manage the data collected from the IoT devices. These platforms provide tools for data storage, processing, and management.

WEB DEVELOPMENT TECHNOLOGIES:

- **Front-End**: You can use HTML, CSS, and JavaScript for creating a web-based dashboard or user interface. Frameworks like React, Angular, or Vue.js can simplify the development process.

- **Back-End**: You might need a server to handle data processing, user authentication, and other backend functionalities. You can use Node.js, Python, Ruby, or any other server-side technology.

- **Databases**: Use databases (e.g., MySQL, PostgreSQL, MongoDB) to store and retrieve data.

- **APIs**: Create APIs to connect the front-end and back-end. RESTful or GraphQL APIs are common choices.

1. **User Authentication and Security**: Implement user authentication and access control to ensure that only authorized personnel can access and control the smart restroom system. Security measures should be in place to protect the data and the system from cyber threats.

2. **Mobile Application**: Consider developing a mobile app for users to access the smart restroom features and receive real-time updates.

3. **Data Analytics and Visualization**: Use tools and libraries for data analytics and visualization to gain insights from the data collected by the IoT devices.

4. **Remote Monitoring and Control**: Implement the ability to remotely monitor and control the restroom functions through the web interface or mobile app.

5. **Notifications and Alerts**: Set up notifications and alerts to notify maintenance personnel or administrators of any issues or anomalies in the restroom.

6. **Maintenance and Support**: Establish a system for regular maintenance, updates, and troubleshooting.

CONCLUSION:

The specific technologies and platforms you use may vary based on your project's requirements and constraints. Additionally, consider scalability and future expansion in your design to accommodate potential growth and additional features in your smart public restroom system.

THANK YOU