



Smart Public Restroom

USING INTERNET OF THING

IOT

Basic Details of the Team

Team Name : Proj_224080_Team_1

Team Leader Name : Akash.M

Team Based : Smart Public Restroom

Institute Name : Chendu college of engineering and technology

Theme : Smart Public Restroom with Integrated Sensing and Control

Smart Public Restroom

A smart public restroom is a public restroom that uses IoT (Internet of Things) technology to improve its efficiency, cost-effectiveness, safety, and user experience. Smart public restrooms can use a variety of sensors to collect data on how the restroom is being used, such as occupancy levels, water and energy consumption, and air quality. This data can then be used to automate tasks, identify potential problems, and provide users with information and services.

Solutions

- ❑ Using **Infrared sensors** can be used to detect when someone is using a stall or restroom. This information can be used to display the status of each stall on a digital sign, or to send a notification to the maintenance staff when a stall has been vacant for a certain amount of time.
- ❑ Smart lights can be equipped with motion sensor like **Infrared sensor** that detect when someone is in the room and turn on the lights automatically. This can help to prevent lights from being left on unnecessarily when the restroom is empty.
- ❑ Occupancy sensor to display(**12c LED Display**) whether someone is using a restroom or it is available to users.
- ❑ Water level sensors can be used to track the amount of water in the toilet tank and send a notification to the maintenance staff when the water level is low. This can help to prevent the toilet from running out of water.



Smart Toilet System

Required Components

Arduino uno

Jumper cable

Exhaust Fan

12c Lcd Display

Water level sensor

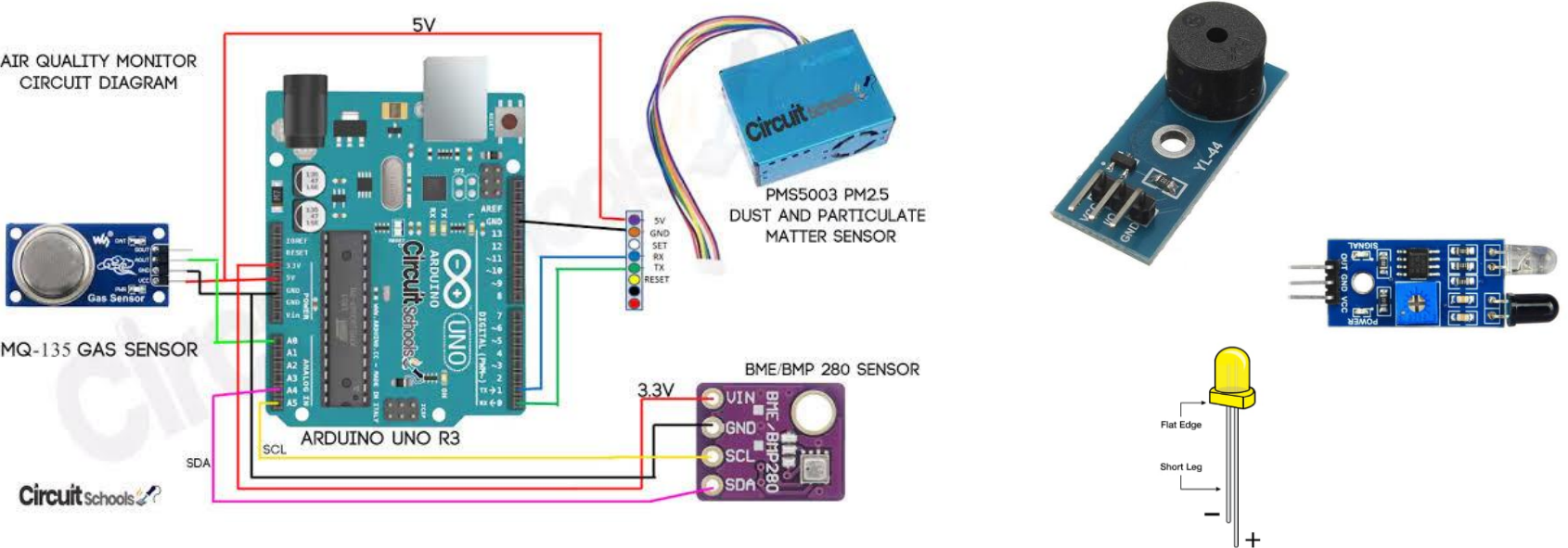
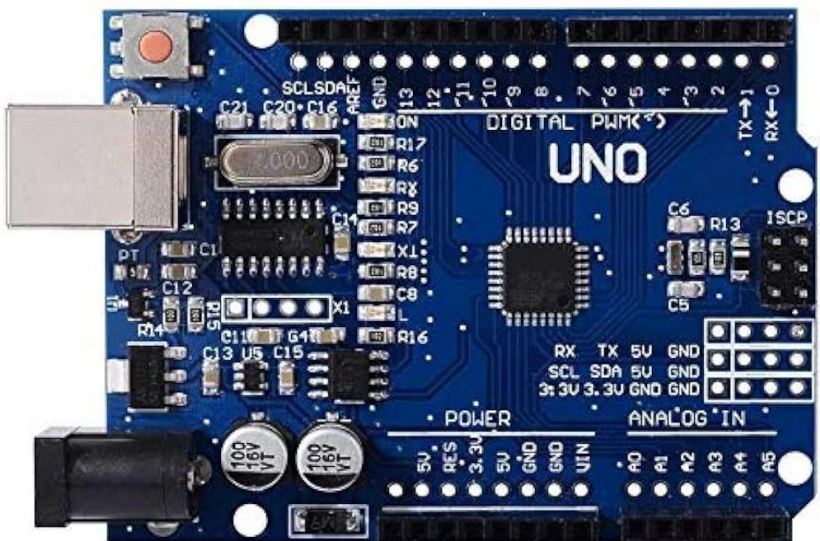
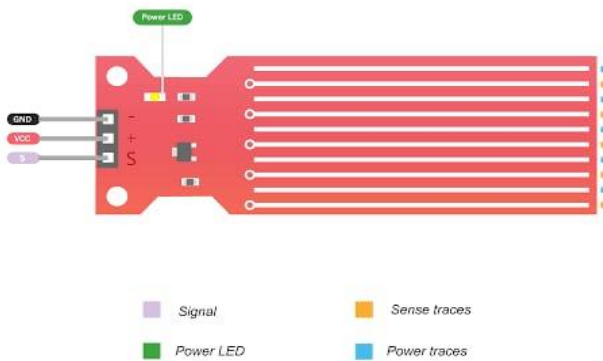
Gas sensor

Buzzer

LED Light

Breadboard

ADIY Water Level Sensor



Working Explanation

Operation

The system operates as follows:

- a) When someone enters the restroom, the IR sensor detects them and sends a signal to the Arduino Uno. The Arduino Uno then turns on the light.
- b) The occupancy sensor continuously monitors the restroom for occupancy. If someone is inside the restroom, the occupancy sensor will detect them and the system will display a message on the digital display indicating that the restroom is occupied.
- c) The water level sensor continuously monitors the water level in the toilet tank. If the water level drops to a certain level, the water level sensor will send a signal to the Arduino Uno. The Arduino Uno will then display a message on the digital display indicating that the water level in the toilet tank is low.
- d) The air quality sensor continuously monitors the air quality in the restroom. If the air quality becomes poor or the CO2 level increases to a certain level, the air quality sensor will send a signal to the Arduino Uno. The Arduino Uno will then activate the HXT fan to ventilate the restroom.
- e) The system tracks weekly data on which days and times have the most users. This data can be analyzed to determine when to schedule more maintenance staff.

Benefits of Smart Public restroom

- ✓ The smart public restroom system offers a number of benefits, including:
- ✓ **Improved efficiency:** The system can automate tasks, such as turning on and off lights and ventilation systems. This can help to save time and money for maintenance staff.
- ✓ **Reduced costs:** The system can help to reduce costs by saving energy and water, and by reducing the need for maintenance staff.
- ✓ **Enhanced safety:** The system can detect potential safety hazards, such as low water levels and poor air quality. This can help to prevent accidents and injuries.
- ✓ **Better user experience:** The system can provide users with information, such as the status of the restroom, and can also be used to control the environment in the restroom.
- ✓ **Improved hygiene:** Smart public restrooms can help to improve hygiene by providing touchless fixtures and by monitoring air quality.
- ✓ **Enhanced accessibility:** Smart public restrooms can be equipped with features that make them more accessible for people with disabilities, such as voice-activated

Team Members Details

Role In Team	Name	Branch BE	Year
Team Leader	Akash	CSE	3 rd
Team Member 1	Ahmed abrarul hag	CSE	3 rd
Team Member 2	Gokula Kannan	CSE	3 rd
Team Member 3	Dhamodhar	CSE	3 rd