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ASTUTE ABLUTIONS AND PLANATE IN TRAIN USING IOT

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Abstract— In the cutting edge world, the advances are definitely grown, yet at the same time the cleanliness in our nation is under risk. The abstract of this paper is to deliver clean and hygiene environment to the persons who are all having their journey. This paper can be helpful to encourage the clean India project in railways also. This paper elaborately explains that how the water tanks, septic tanks and flushing system in all the coaches are operating and cleaning. It is also monitored and maintained continuously through IoT. This system also provides the remedy to stop the smoking and consuming alcohol inside the train compartments. And immediate punishments also offend on the victim..

Keywords—*railways;arduino; smoking;automatic flushing;IOT*

I.INTRODUCTION

Now using manual flushing is done; sometimes the toilets will not be a hygienic condition. Because, it does not have any automatic flushing method. They are not focused on providing a clean and hygienic toilet. In the railways smoking has been carried out by the passengers, but there are no other systems to prevent those the smoking .when the detection is not done, penalty for smoking cannot be carried out. In the existing system, there is no presence of automatic door .There is no tube connection between the auxiliary and main tank. so, if there is need of water for
The proposed system in the flushing in the toilets automatically carried out. So, by this system the toilets will be cleaned properly and it will be hygienic condition. Because it have automatic flushing method and also they are focused on providing a clean and hygienic toilet. Smoking is detected using the smoke sensor Once if it indicates that the water level is below the needed level it supply the water to main tank through the auxiliary tank.
Detection of smoking is the main objective of this system. The level of the septic tank is also monitored using IOT. This entire system is monitored from the engine. the advantages of system is Smoking in the railways is detected,Smart flushing system is implemented,Water level is sensed and main tank is filled using auxiliary for emergency purpose.

An **embedded system** is a computer system designed to perform one or a few dedicated functions often with real-time computing constraints. It is embedded as part of a complete device often including hardware and mechanical parts. By contrast, a general-purpose computer, such as a personal computer (PC), is designed to be flexible and to meet a wide range of end-user needs. Embedded systems control many devices in common use today. The embedded c language used to write a program in arduino.

The major work deals with Smoke detection used to Identifying the culprit and fine them and automatic flushing used to without the human interference.

Existing system:

In the existing system, manual flushing is done, sometimes the toilets will not be a hygienic condition. Because, It does not have any automatic flushing method. They are not focused on providing a clean and hygienic toilet. In the railways smoking has been carried out by the passengers, but there are no other systems to prevent those the smoking .when the detection is not done, penalty for smoking cannot be carried out. In the existing system, there is no presence of automatic door .There is no tube connection between the auxiliary and main tank. So, if there is need of water for auxiliary tank in railway compartment, it should be filled only at the station, where they refill the tanks. Sometimes the passengers may suffer, if there is no presence of water in the auxiliary tank, if needed for emergency. In the railways, there is no sensor or device for detecting the levels of septic tank.

II BLOCK DIAGRAM

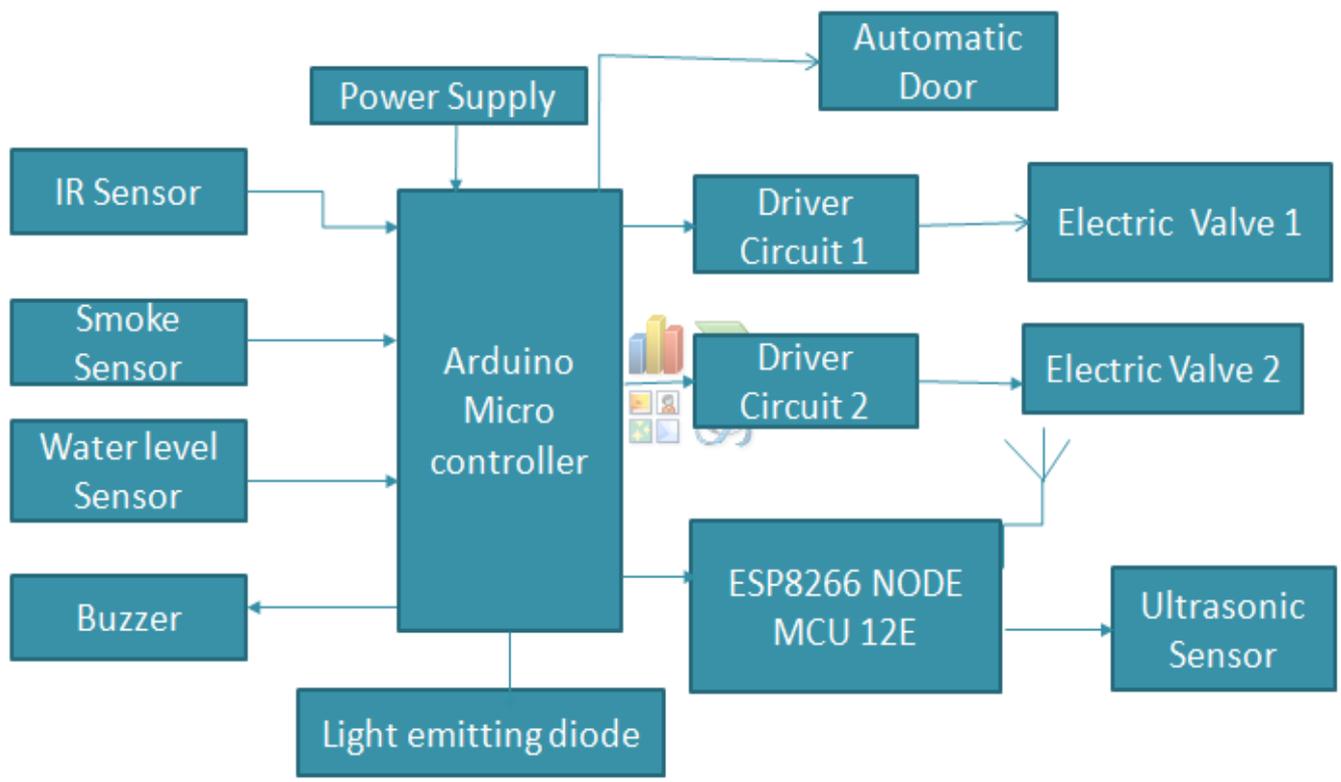


FIG. 1 block diagram of proposed system

The proposed system shown in fig1. The IR sensor used to detect the person is enter the toilet. The water level sensor is used to detect the water level. The change in water level, signal is given to the arduino and the LED will blow.

TheSmokedetector is used to sense the smoking and given into the arduino. The arduino gives the information to the driver and door was closed and also buzzer will be turn on.

III HARDWARE COMPONENTS

Using hardware components are discussed below

IR SENSOR:

An infrared sensor is an electronic device that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of an object as well as detects the motion. These types of sensors measures only infrared radiation, rather than emitting it that is called as a passive IR sensor. Usually in the infrared spectrum, all the objects radiate some form of thermal radiations.

SMOKE SENSOR:

The Grove - Gas Sensor (MQ3) module is useful for gas leakage detection (in home and industry). It is suitable for detecting Alcohol, Benzene, CH₄, Hexane, LPG, CO. Due to its high sensitivity and fast response time, measurements can be taken as soon as possible. The sensitivity of the sensor can be adjusted by using the potentiometer.

ULTRASONIC SENSOR:

An Ultrasonic sensor is a device that can measure the distance to an object by using sound waves. It measures distance by sending out a sound wave at a specific frequency and listening for that sound wave to bounce back. By recording the elapsed time between the sound wave being generated and the sound wave bouncing back, it is possible to calculate the distance between the sonar sensor and the object.

SOLENOID VALVE:

A **solenoid valve** is an electromechanical device in which the solenoid uses an electric current to generate a magnetic field and thereby operate a mechanism which regulates the opening of fluid flow in a valve.

DC MOTOR:

A **DC motor** is any of a class of rotary electrical machines that converts direct current electrical energy into mechanical energy. The most common types rely on the forces produced by magnetic fields. Nearly all types of DC motors have some internal mechanism, either electromechanical or electronic, to periodically change the direction of current flow in part of the motor.

BUZZER:

A **buzzer** or **beeper** is an audio signalling device, which may be mechanical, electromechanical, or piezoelectric (piezo for short). Typical uses of buzzers and beepers include alarm devices, timers, and confirmation of user input such as a mouse click or keystroke.

RELAY:

A **relay** is an electrically operated switch. Many relays use an electromagnet to mechanically operate a switch, but other operating principles are also used, such as solid-state relays. Relays are used where it is necessary to control a circuit by a separate low-power signal, or where several circuits must be controlled by one signal. The first relays were used in long distance telegraph circuits as amplifiers: they repeated the signal coming in from one circuit and re-transmitted it on another circuit. Relays were used extensively in telephone exchanges and early computers to perform logical operations.

STEP DOWN TRANSFORMER:

A **transformer** that increases voltage from primary to secondary (more secondary winding turns than primary winding turns) is called a **step-up transformer**. Conversely, a **transformer** designed to do just the opposite is called a **step-down transformer**.

ARDUINO MICROCONTROLLER:

Arduino is an open-source hardware and software company, project and user community that designs and manufactures single-board **microcontrollers** and **microcontroller** kits for building digital devices and interactive objects that can sense and control both physically and digitally.

BRIDGE RECTIFIER:

A **Bridge rectifier** is an Alternating Current (AC) to Direct Current (DC) converter that rectifies mains AC input to DC output. **Bridge Rectifiers** are widely used in power supplies that provide necessary DC voltage for the electronic components or devices.

IV PROGRESS

The schematic diagram of proposed system shown in fig 3 thus the sensors are connected with arduino board

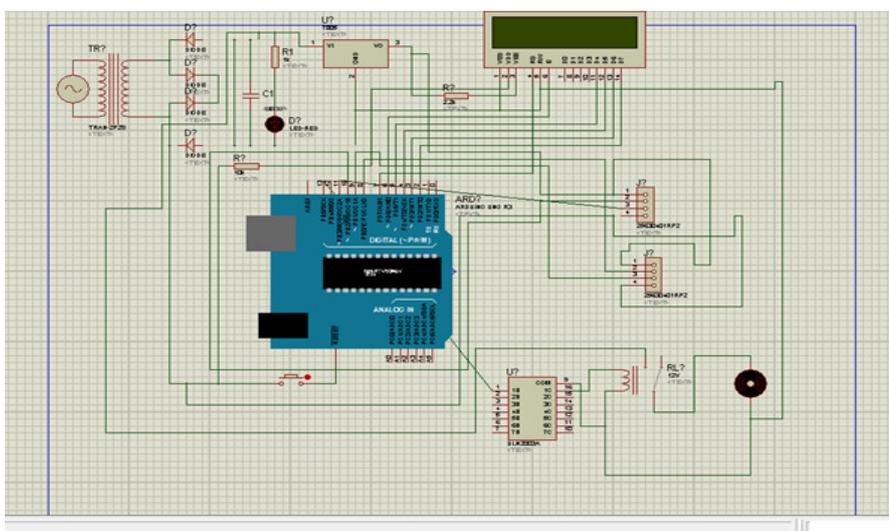


FIG. 2 schematic diagram of proposed system

The IR sensor discover the dirt persons in the toilet, the smoking sensor, particular range is extended then send a alert message to the TTR. If the dirt rised, then the alarm get's turn on. all the message threw by wifi module.

V HARDWARE ELEMENTATION

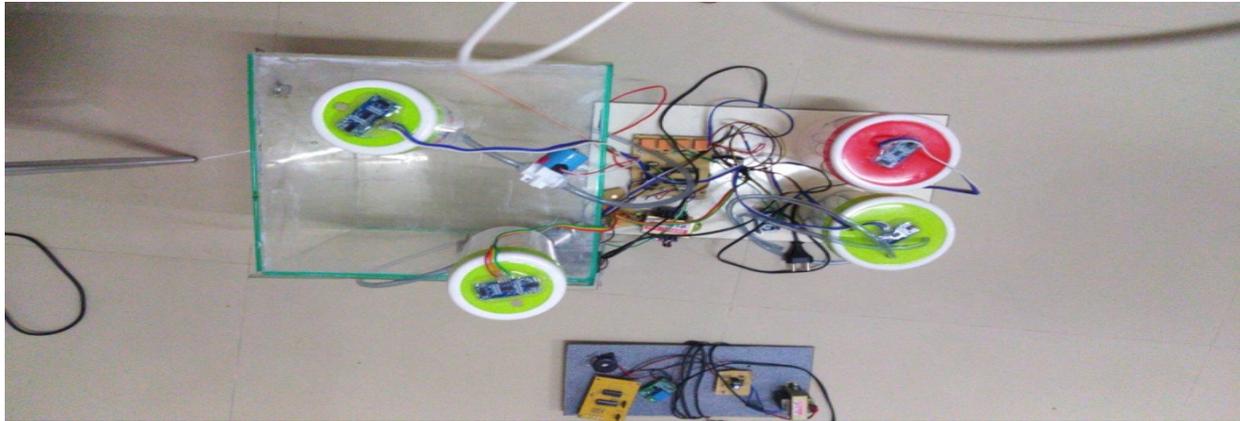


FIG. 3 hardware implementation

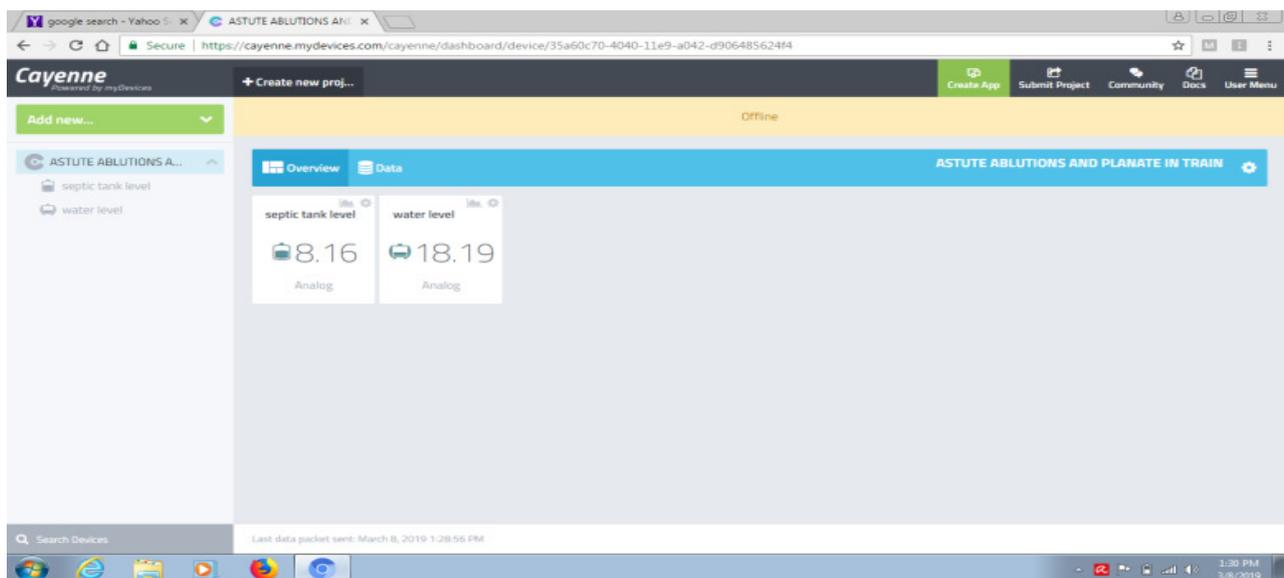


FIG. 4 output of statics

VI.CONCLUSIONS

In this paper presents the feature of this project work was to design on our project. In our proposed model we have implemented automatic smoking detection, flushing system and also control the water flow from main tank to the auxiliary tank. Automatic flushing system disposes human waste by using water through the drain pipe with specified quantity to conserve the water at the same time it is cheap and simple. Today we are all getting aware of automation than manual system. Thus the problem of arising accidents, wastages can be completely reduced by using automation system.

VII. REFERENCES

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