(6115)MAHENDRA INSTITUTE OF ENGINEERING AND TECHNOLOGY

SMART PUBLIC RESTROOM

TEAM CODE : Proj_223280_Team_1

TEAM MEMBERS:

AJIN PIYATO JEN.P

AJAY.K

ABINESH.N

AJAY.R

AKILAN.J

Faculty Mentor Name:

SANTHANARAJ

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

toilets. All the public toilets

should be clean and hygiene. In our country, our government has introduced the scheme called "Swachh

Bharat" (Clean India). Keeping the toilets uncontaminated is the one of the objective of Clean India scheme.

Thispaper can be helpful to encourage the clean India project. In future, it can show the major part in clean

India scheme. In an Existing system, they are focused only on identifying the dirt in the toilets. In our proposed

system, we have determined on keeping clean toilets, observing the
sweeper's working activities. It can dodge
many syndromes. It may create the consciousnessamongst people about
the toilet management. Therefore, our
development is to use safe and hygienic toilets. This paper is based on IOT
and image-processing concepts
using different sensors like smell sensor, IR sensor, sonic sensor, RFID

reader.
By using these sensors, we can
create the smart toilets.

INTRODUCTION:

In our country, people do not have enough knowledge of using toilets. This leads to
several diseases, such as Malaria, Hepatitis, Flu, Cholera, Streptococcus,
Typhoid,
etc. Hence we introduce the concept in the IOT called "Swachh Shithouse"
The term
Swachh means 'Clean'. Then the term Shithouse means 'Toilet'. It is
introduce to use
and maintain the toilets in the clean and hygienic way. The project is based
on IOT
concepts using different sensors like smell sensor, dirt sensor, sonic sensor,
RFID

reader,Database. Using these materials we are trying to provide the clean toilets

and create the awareness among the people.

SCOPE OF THE PROJECT:

In this paper we are going to provide the clean toilet. This paper can create the

awareness among the people about the clean and hygienic toilets. This paper

can ensure the responsibilities of the sweeper. Finally, this concept is the one of the

stepping stone to the"Clean and disease free India".

LITERATURE REVIEW:

KitisakOsathanunkul, KittikornHantrakul, Part Pramokcho(2017) has proposed

"Configurable Automatic Smart Urinal Flusher based on MQTT Protocol", This paper

examines one probable way to cut the wastage of clean water used in a public toilet.
[1].

The system uses MQTT as an underlying communication protocol. The protocol is used

in gathering, governing, powerful and correcting the system. The results in the testing

environment show that using a flushing duration for 2.5 seconds is enough to satisfy

most users while wasting clean water as less as possible.

There are two part are involved here. They are,

1. Automatic Flusher Part (AFP)

2. Server part

The AFP detects if there is an object in front of its infrared sensor. When a user stands
in front of the urinal, an infrared sensor can detect the user. If the user keeps staying in
front of the sensor for 3 seconds continuously, it is considered that a user

is
currently
using a urinal. After the urinal has been flushed AFPunit also sends a MQTT message
about it usage data to the server part. In server part, it receives the usage data from AFP
unit. The usage data will be stored into a database for a future use. A. D. Kadge, A. K.
Varute, P. G. Patil, P. R. Belukhi(2016) has proposed "Automatic Sewage Disposal
System for Train", Indian railways have 114,500 km of total track over a route of 65000
km and 7500 stations. While travelling by the train everyone expect

healthy
and hygienic

surrounding. Feel uncomfortable due to the waste on the platform and the allied

foulsmell.[2]Creates bad impression on foreign tourist .sanitation problem cause due to

system in which train toilets dispose human waste openly on to tracks. In this system,

they are using two mechanisms. They are sewage disposal mechanisms trackchanging

mechanisms.

In the sewage disposal mechanisms, the ultrasonic sensor and position sensor is used.

The ultrasonic sensor can detects the depth of the sewage tank and the position sensor

detects the proper place to dispose the sewage. After the proper

detection
of particular
place, the solenoid valve on. Then the sewage is
done.PandyaChintan,YadavJatin,
KareliyaSanket 2015 has proposed "Automatic working bio-toilet tank for railway

coaches", Bio toilet tank is human waste disposal mechanism in area with noi

nfrastructure facilities. That is easy to operate alternative to the tradition waste

disposal system. In that project are two doors in tank, the one input door and second

exit door.[3] The input door is on top of the tank and exit door is assembling inside the

tank. The doors are open and close by using pneumatic cylinder. RPM controller is used

to measure the speed of the train and transfer those details to proximity sensor,which

can send scontrol over the train, Pneumatic cylinder is control by using

RPM

controller,

Proximity sensor, and Compressed air tank. So, whole system is controlled with train

speed. If the train speeds exceed 30 km/h then exit door will open and

total

waste

depositor drop in tracks and input door is close. Input door is openwhen train is under 30

km/h speed.ImanMorsia, Mohamed Mansour, MohamedMostafa 2013 has proposed

"Wireless Gas Detector System Using Microcontrollers, PLC and SCADA System for

Monitoring Environmental Pollution",

identification represents a big challenge for improving detection and pattern recognition

of each gas by using inexpensive gas sensor. This paper presents a gas detector system

which is built to monitor, and measure gas pollutant emissions in the air and also used

to detect different gases. The pollutants are ethane (C2H6) and methane (CH4) which

are located beside the fertilizer factories in Alexandria Egypt and someother gases as

hydrogen (H2), propane (C3H8) and iso-butane (C4H10).The gas sensors [4].

The system is controlled and monitored by using programmable logic controller PLC Step

7-200 from Siemens and Supervisory Control and Data Acquisition SCADA systems

respectively. The principal component analysis PCA method is applied for clustering and

distinguishing among different gases.Thomas Schlebusch, Steffen Leonhardt 2011 has

proposed "Intelligent Toilet System for Health Screening", Home monitoring isa

promising technology to deal with the increasing amount of chronically ill patients while

ensuring quality of medical care. [5]Most systems available today depend on a high

degree of interaction between the user and the device.Especially for people relying on

advanced levels of care, this scheme is impracticable. In this paper we are presenting an

"intelligent toilet" performing an extensive health check while being as simple to use as

a conventional toilet. Main focus of the system is to support the treatment of diabetes

and chronic heart failure, but additional applications are possible.Here

the
sensors like
PT1000sensor,Pressuresensor,andRFIDreaderareusedhere.PT1000
sensor used to
measure the thigh temperature. Pressure sensor is used measure the
pressure of the
base portion of the toilet. Using RFID reader is used to sense the

particular
person
result. It needs designing of the base portion of the toilet. It can sense all
test results
patients through the toilet usage.

EXISTING SYSTEM:

In an existing system, they concentrate more on organizing sewages from
the railway
system. They are trying to taking all the medical tests through the usage of
toilets. They
are concentrated on reducing water wastage on toilets, by the
implementation of
automatic flusher.

Disadvantages:

1. They are not focussed on providing clean and hygienic toilets.

2. The medical test can have chance to produce fault results.

WORKING PRINCIPLE:

⬚ In the first phase, IR sensor is used to discover the dirt present in the toilet.

⬚ Here the set of sample images are given as input.

⬚ After using the toilet, the sensor senses the basin of the toilet.

⬚ Then it relates the sensed image with the input image.

⬚ If the dirt present, it increases the alarm.

⬚ Then the user wants to be clean the waste. Through this activity, people can get the
awareness about the toilet management.

⬚ In the second phase, Figaro sensor is used to perceive the unwanted gases present in the toilet.

⬚ In the Figaro sensor, a particular range is to be stableearlier manner. If the range gets
extended, it can send the alert message to the sweeper. Then they cleaned it by using proper fragrant.

⬚ In the third phase, RFID reader (Radio Frequency Identification) is used to observe the
sweeper's activities (absence and presence in the toilet cleaning).

⬚ Initially, the sweeper wants to show his/her individuality tag in front of RFIDreader.Itcanbeshownbeforeandaftercleaningthetoilet.

▢ Then the first phase gets initiated and senses for the dirt presence in the toilet.

▢ If the dirt gets noticed, it raises the alarm.

▢ Through this monitoring activity, the sweeper can realize their roles and responsibilities. Then they protect the people by disposing all the unwanted materials (dirt, unwanted gases) present in the toilet.

▢ In the final phase, the sonic sensor is used to detect the depth of the septic tank.
▢ Here, the range of septic tank is fixed prior manner.

▢ If the sewage reached with the range, then it directs message to an organization.

▢ All the message transfer can be done by the GSM (Global System for Communication).

DESCRIPTION   OF

ARCHITECTURE   HARDWARE

REQUIREMENTS:

1. Microcontroller

2. Powersupply

3. LCDdisplay

4. Buzzer

5. Infraredsensor

6. Sonicsensor

7. Gassensor

8. RFID

9. GSMmodem

SOFTWARE

REQUIREMENTS: Embedded

C

CONCLUSION:

Our proposed project will create awareness among the people about the proper sanitation. It makes use of Internet of things, which is a rapidly growing technology. Our proposed system will make everyone to strictly follow the cleanliness and proper sanitation in the toilets. It prevents the many new contagious diseases that spread due to improper sanitation of the toilets. Thus by using technologies in the smarter way, we can maintain the cleanliness which is next to the -godliness. Keep Clean, Be Safe.