**IBM NAAN MUDHALVAN**

**SKILL UP**

**PROJECT TITLE: SMART PUBLIC RSTROOM**

**COLLEGE: PERI INSTITUTE OF TECHNOLOGY**

**DEPT: ELECTRONICS AND COMMUNICATION ENGINEERING**

**DOMAIN: INTERNET OF THINGS (IOT)**

**Submitted By**

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**PHASE-1**

* 1. **Abstract:**
* :In today's world with the ever increasing growth in the population of India, the hygiene of our country is endangered. Our project will definitely be a help to improve hygiene condition in India. It will create awareness among people in terms of "Toilet Management". The proposed system "Smart Toilet" is based on IoT, smell sensor, IR sensor, sonic sensor, RFID sensor. The smart toilet will take care of opening and closing of the toilet seat, the IR sensor tracks the dirt present on the toilet seat and raise an alarm, The cleanliness of the toilet will be improved by monitoring the sweeper's activity to maintain the hygiene of the toilet, it also will deal with water conservation.
  1. **Introduction:**

IOT is the technology of the future. It is getting very popular due to its vast application possibilities. A general idea behind IOT is a network of various devices being electronic or mechanical connected together to perform a certain task in unison. These tasks can be repetitive and can be effectively handled by IOT. Based on the functionality of the IOT system, they are divided into tiers, and each tier

* 1. **Project Definition**

Some automatic flushing systems do exist in the market, but they are too

expensive due to their complex construction. They generally use some optical or electrical sensors to detect the presence of a person using the toilet and accordingly they operate. They are found to be used in airports, shopping malls, multiplex etc. But their use in the public toilets is not possible due to the excessive cost and frequent maintenance.

* 1. **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.[14].

* 1. **IoT Sensor Design:**

Hardware requirement:

1. Microcontroller

 2.Power supply

 3. LCD display

 4.Buzzer

 5.Infrared sensor

 6. Sonicsensor

 7.Gassensor

 8.RFID

 9.GSMmodem

Software Requirement:

1.Embedded C

* 1. **Working Principle:**

In the first phase, IR sensor is used to discoverthe 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 secondphase, 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 infront of RFID reader. It can be shown before and after cleaning the toilet.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

**PHASE-2**

**2.1 Innovation:**

Use of solar power for generation of electricity Solar power for generation of electricity is increasing its importance as it is a renewable energy and is available in abundance. In [19], the proposed system deals with the generation of electricity using solar power by properly orienting the panel in accordance with the position of the sun. The working is based on stepper motor moving intelligently the panel according to the intensity of light using light sensor. Since non-renewable energy is limited, the upcoming generation might have to face energy crisis if alternate sources of energy is not developed. In [20], authors have proposed a substitute of 10-watt conventional night lamp of the same intensity. The paper gives the importance of replacing a conventional night lamp in every house by solar night lamp. Umer et al. in the paper [21] designed and optimized Solar Carport Canopies for maximum power efficiency.

**2.2 How to work GSM ?**

GSM stands for Global System for Mobile communication. It establishes the mobile communication from one place to another place.GSM Module.It transfers the information from main circuit to operator. It uses Time Division Multiple Access (TDMA).GSM is mainly used for communicating and transferring message from one person to concerned organisation. GSM module is used to establish communication between a computer and a GSM .

**2.3 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.