

Design Of Smart Washroom System For Clean And Green Environment

¹Shaik A Johny Begam, ²A.Siva Prabhu, ³S.Vijay Simha, ⁴T.Siva Prasad, ⁵Y.Gnana Teja

¹Assistant Professor, Dept Of EEE, Tirumala Engineering College, Jonnalagadda, A.P, India

^{2, 3, 4, 5}B.Tech Scholar, Dept Of EEE, Tirumala Engineering College, Jonnalagadda, A.P, India

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 main intent of this paper is to deliver clean and hygiene washrooms. 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. This paper 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 consciousness amongst people about the toilet management. Therefore, our development is to use safe and hygienic toilets.

Key words: smell sensor, 8051, flush motor, buzzer.

1. INTRODUCTON

The improvement of health of a country’s population is the outcome of its improved economy and vice versa. This is true because improvement of the citizen’s health can be directly related to positive economic growth as more number of healthy people will be engaged to conduct effective activities in the workforce. At the same time superior healthcare also affect quality of life more than any other service sector. In today’s scenario, people around the world are healthier, wealthier and live longer than three decades ago. Noticeable improvements have taken place in access to clean water, proper sanitation and healthcare facilities. The quickly developing white collar class, with its expanding obtaining power, has made a very well documented growth in the demand for healthcare services in emerging markets especially like India [1].

In India, changes in statistic and socio-social condition, enhanced wellbeing mindfulness and data innovation have extensively changed the standpoint of medicinal services area. As customers are more aware and educated, quality of healthcare has become a vital feature in Indian healthcare industry of late. The call of the hour is to continuously improve and manage the service quality but cost cutting continues to be a significant issue that majority of healthcare providers face in India. While both public and private human services segment has need of expanding access while limiting costs, they make a decent attempt to accomplish objectives without giving the quality a chance to endure. As the Indian human

services part gets wildly focused, social insurance professionals and scholastic scientists are progressively keen on investigating how clients see the quality before working up their fulfillment levels and producing conduct expectations [2-3]. Predominant administration quality is progressively acknowledged by the human services experts as an apparatus to reinforce their aggressive position. Client based determinants and view of administration quality, in this way, assume a critical job while picking an emergency clinic.

In India, the public healthcare sector is owned by the government and is highly subsidized, but the quality of care, personnel and facilities is far from satisfactory. The Govt of India has initiated number of measures and programs to

bring back the sector into the growth track by enhancing the budgetary allocation of the Gross Domestic Product but those are found to be too little and too late. Clients with rising extra cash are never again having confidence out in the open medicinal services framework and are eager to relocate to private human services division which is increasingly proficient, innovation savy and dependable. Anyway there are sufficient provisos in the private medicinal services division that is yet to be stopped. The most important parameter being managing customer perceived service quality which lead to loyalty and ultimately favorablebehavioral intentions. Quality of healthcare services has become a primary concern for customers particularly in private healthcare as customers pay significant amount of money to avail

services. So it is imperative for service providers to empathize the importance of superior service quality that will satisfy and retain more customers [4].

Despite acknowledgment from global researchers, limited studies have appraised customer's perception of healthcare quality in the Indian private healthcare context. The number of studies that have been carried out on the subject of perceived service quality; customer perceived value and satisfaction in healthcare is indicative of the importance associated to the subject. However, empirical investigations affirming the relationship between all these variables are still underexplored. Certain degree of uncertainty exists regarding validity and reliability of the research instrument employed in earlier studies. The paucity in the understanding of customers' service quality perceptions of private healthcare in India stimulates new research avenues. Critical evaluation of customers' perceived service quality can assist the private hospitals for delivering meliorated overall service experience which will lead to customer satisfaction and behavioral intention to build long-term relationships with their customers

Quality has been much talked about by researchers from the different arena. The ecumenical definition of quality according to the American Society of Quality is "a subjective term for which each person has his/her definition. In specialized use, quality can have two implications, a) the attributes of an item or administration that bear on its capacity to fulfill expressed or suggested requirements and b) an item or administration free of lacks." with regards to human services administrations, quality alludes "how much wellbeing administrations for people and populaces upgrade the probability of wanted wellbeing results and are predictable with current expert information" [5]. Specialized quality alludes to the accuracy of the analytic medications and techniques or the conformance to medicinal details. Useful quality identifies with the methods and manners by which the human services administration is conveyed to the clients for example patients.

2. BACKGROUND

Public washrooms ought to be viewed as a center segment of natural structure, adding to a city's quality and suitability. Arrangement of open toilets isn't just a matter of land use, yet additionally a basic structure and arranging worry to make urban communities increasingly available, comprehensive, and advantageous for all individuals from society. Open latrine arrangement regularly disregards the requirements (and even the presence) of ladies, kids, crippled individuals, and the old. Guaranteeing open

latrine arrangement is accessible to everybody can be viewed as fundamental to expelling a genuine boundary to more extensive support in broad daylight life.

In addition, proof shows that comprehensively and very much planned neighborhood open air spaces decidedly add to individuals' wellbeing and personal satisfaction. Along these lines, in this investigation, it is contended that planning open toilets influences how individuals use land and take part in public activity. Numerous individuals, for example, the older and crippled, travel only sometimes, infrequently head outside and stay away from long voyages in view of the absence of as well as out of reach plan of open toilets Thus, this illustrative investigation inspects the accompanying three inquiries. (I) What issues do open toilets present (ie, what really exists) (ii) What can offices do individuals require most as well as most underscore would influence the manner in which they use land and take an interest in public activity (iii) How do requests, needs, and desires around open toilets change contingent upon sex, age, and capacity We finish up the paper by proposing rules for fashioners, designers, organizers, and approach producers about how the 21st century open latrine can permit correspondence of access, use, and opportunity, paying little mind to sexual orientation, capacity, or age. This examination adds to the writing by investigating the arrangement of open toilets hypothetically and explores client needs tentatively in the Turkish setting, just as by proposing new methods through which towns and urban areas can advance social inclusivity, ecological responsiveness, manageability, and comprehensive urban plan.

Later mechanical accomplishments for the restroom, such computerized lifting components, and versatile applications can be abused to give customized help to clients in the washroom. For instance, a past can assistive framework was intended to lift the client all over without help for forward pushing while at the same time standing or being situated. Be that as it may, our proposed system is intended to help the client by tilting and pushing forward similarly as an electric lift easy chair. In addition, a portable application was intended to physically alter the latrine level and tilting, as in patent. We recommend a computerized machine and an induction controller so as to help the client without manual connection with a product application.

The appraisal of the hazard related with a fall in the restroom including the latrine requires the investigation of a few elements. These components might be extraneous, including natural impediment, openness, and accessibility of assistive gadgets, and

characteristic, including the capacity of an individual to react satisfactorily to a lopsidedness. In addition, uninvolved and dynamic specialized guides have been proposed in a few works, including the FRR (Friendly Rest Room) global task. Our exploration program investigates distinctive roads so as to help an individual with lost independence or with decreased versatility in the satisfaction of every day exercises in a savvy home.

The brilliant home is made out of a few innovative apparatuses (individual help) so as to diminish the heap to restorative work force and casual parental figures. This environment additionally contains a large number of sensors ready to evaluate human exercises and recognize arrangements of risky exercises that can prompt a fall. The venture fits appropriately in the program, which plans to enhance the personal satisfaction of individuals with lost independence while expanding the maintenance of these individuals in their living condition. The proposed methodology comprises of incrementing the latrine with the target of estimating human exercises and giving programmed seating/standing help for lessening or adjusting the exertion.

The objective is to help the individual not to totally supplant the subject's endeavors, yet to adjust it so as to prepare the subject. The favored method lives in the utilization of human-robot physical connection calculations known in community oriented apply autonomy to control the help. An induction controller is executed as the primary commitment of this paper, which incorporates a state machine for help. This framework is programmed and does not require any direction from the client. In this way, it could be utilized as a preparation framework for restoration by adjusting the estimation of the induction display.

3. LITERATURE SURVEY

A. D. Kadge, A. K. Varute, P. G. Patil, P. R. Belukhi has proposed "Programmed Sewage Disposal System for Train", Indian railroads have 114,500 km of all out track over a course of 65000 km and 7500 stations. While going by the train everybody expect solid and clean encompassing. Feel awkward because of the loss on the stage and the associated foul smell. Makes awful impact on outside traveler .sanitation issue cause because of framework in which train washrooms arrange human waste straightforwardly on to tracks. In this framework, they are utilizing two instruments. They are sewage transfer components and track evolving instruments. In the sewage transfer instruments, the ultrasonic sensor and position sensor is utilized.

The ultrasonic sensor can recognizes the profundity of the sewage tank and the position sensor identifies the best possible spot to arrange the sewage. After the best possible discovery of specific spot, the solenoid valve on. At that point the sewage transfer is finished. PandyaChintan, YadavJatin, has proposed "Programmed working bio-can tank for railroad mentors", Bio latrine tank is human waste transfer component in region with no foundation offices. That is anything but difficult to work option in contrast to the convention squander transfer framework. In that venture are two entryways in tank, the one information entryway and second leave entryway. The info entryway is over the tank and leave entryway is amassing inside the tank. The entryways are open and near to utilizing pneumatic barrel.

Miccontroller is utilized to gauge the speed of the train and exchange those subtleties to vicinity sensor, which can sends command over the train, Pneumatic barrel is control by utilizing miccontroller, Proximity sensor, and Compressed air tank. In this way, entire framework is controlled with train speed. On the off chance that the train speeds surpass 30 km/h at that point leave entryway will open and add up to waste investor drop in tracks and information entryway is close. Info entryway is open when train is under 30 km/h speed. ImanMorsia, Mohamed Mansour, Mohamed Mostafa has proposed "Remote Gas Detector System Using Microcontrollers, for Monitoring Environmental Pollution", Gas distinguishing proof speaks to a major test for enhancing location and example acknowledgment of every by utilizing modest gas sensor.

The framework is controlled and observed by utilizing programmable rationale controller PLC Step 7-200 from Siemens and Supervisory Control and Data Acquisition SCADA frameworks separately. The main segment examination PCA strategy is connected for bunching and recognizing among various gases. Thomas Schlebusch, Steffen Leonhardt has proposed "Clever Toilet System for Health Screening", Home observing is a promising innovation to manage the expanding measure of constantly sick patients while guaranteeing nature of restorative consideration. Most frameworks accessible today rely upon a high level of connection between the client and the gadget. Particularly for individuals depending on cutting edge dimensions of consideration, this plan is impracticable. In this paper we are introducing an "insightful can" playing out a broad wellbeing check while being as easy to use as a customary washroom. Primary focal point of the framework is to help the treatment of diabetes and perpetual heart disappointment, however extra

applications are conceivable. It needs planning of the base part of the washroom. It can detect all test consequences of patients through the washroom use.

4. PROPOSED SYSTEM

Smart washroom system means that as if for flushing we need to press the flushing button, but in government or public toilets we found that; lot number of peoples use toilets for their use, but only one percent out of them flushed in that toilets. The mindset of people is that, if we touch the flush button or tap our hands will get infected or will become dirty or most of the peoples ignore to flush. Due to this mind set, lot of dirty waste material is kept itself in that toilets and slowly from these toilets various viruses and bacteria gets released in the nearby area

which generates various types of diseases. This takes place only because of improper sanitation. People living in the area surrounding the toilets start suffering from various diseases. As a solution of this problem we have developed an idea of smart washroom system. This device helps to control the amount of clean water running in urinals in the toilets while ensuring that the urinals are always flushed after it has been used. It also prevents the chances of any infection from pushing flushing button. And if there is a no water the system will send message to the caretaker and with the help of message the caretaker can refill the water to the storage tank for time to time. In this paper, a smart urinal automatic washroom system is proposed.

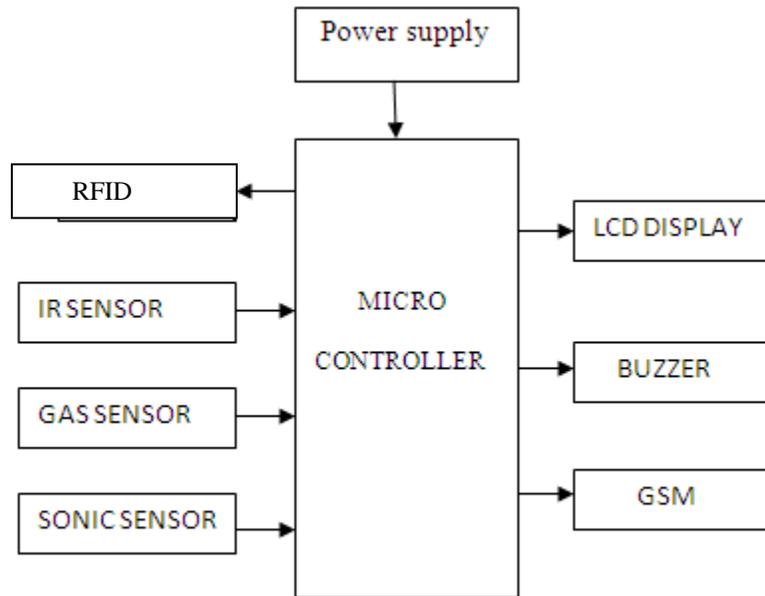


Fig. 1: proposed system

The above figure (1) shows the architecture of proposed system. The devices used in this system are 8051, crystal oscillator, bad smell sensor, LCD Display, buzzer, flush motor. Our proposed system consists of a power supply unit which gives the required voltage to microcontroller. Buzzer is an audio signaling device. User sends the command for switching 8051. 8051 received data to extract user commands. As we know that 8051 is one of the family of CPU. 8051 can operate at a higher speed, performing more millions of instructions per second.

From LCD display we can observe the output. Expecting, that the control unit is fueled and working appropriately, the way toward exchanging/controlling a gadget associated with the interface will continue through the accompanying advances. The client sends the directions to the beneficiary. 8051 issues directions to the machines and the gadgets associated will be exchanged on/off. In the wake of getting directions it shows it on LCD. At that point, it switches the heap on/off dependent on got directions to accomplish client wanted yield.

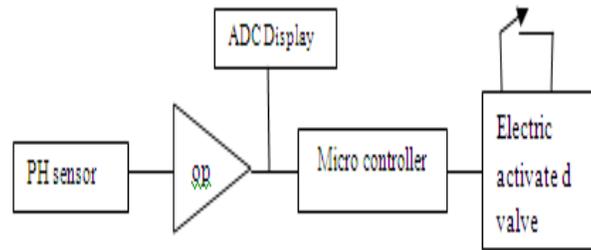


Fig.2 block diagram of proposed flushing system

8051 is a little PC on a solitary consolidated circuit holding a processor center, memory and programmable info/yield peripherals. Program memory as Ferroelectric RAM, NOR blaze or OTP ROM is additionally regularly included on chip, just as a normally little measure of RAM. Microcontrollers are intended for installed applications, as opposed to the chip utilized in PCs or other universally useful applications. LCD represents Liquid Crystal Display. By utilizing the LCD, every one of the yields are shown. LCD doesn't think about the substance (information or directions) provided to its information transport. The client needs to determine whether the substances at its information pins are information or directions. Buzzer is also

called as Beeper. It is a sound signaling mechanical device.

The Smell Sensor is used to detect the unwanted smell and gases in the toilet. For this purpose, we are going to use the sensor called Figaro sensor. It cans intellect the dry gases present in the toilets such as NH₃, CO₂, CH₄, H₂S, etc. By taking those gases leads to Nausea, Drowsiness, instant loss of awareness, etc. After sensing the unwanted gases, it can blink the red light. Then the sweeper can clean it by using particular Cleaning Agents. Flush motor is also known as AC motor or DC motor. A motor converts its mechanism from electrical energy to mechanical energy.

5. CIRCUIT DIAGRAM BY USING 8051 MICRO CONTROLLER

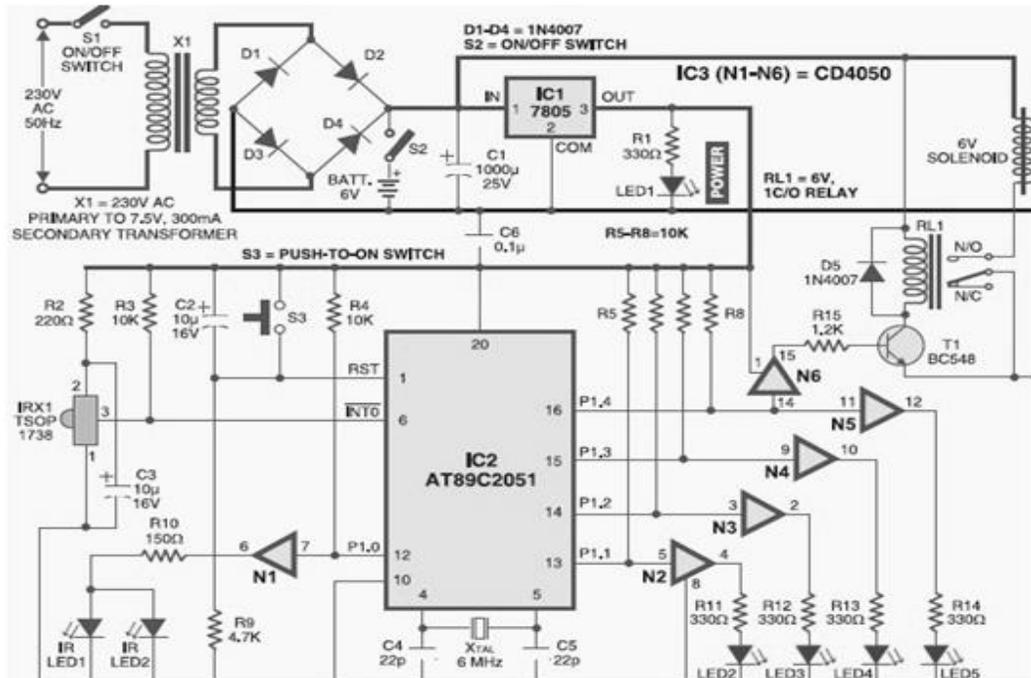


Fig.3 circuit diagram of micro controller based flushing system



Fig.4 Installation of automatic flush system

6. 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. From this we can conclude that smart toilet will be beneficial for Indian Railway. It will reduce human efforts by automatic cleaning. Different sensors will be used. Automatic door locking system will be very helpful for further process. The Robotic Arm will be used for cleaning the toilet and liquid pipe will be provided with it which will maintain hygienic and clean environment in train toilet. Hazardous and contagious diseases can be prevented.

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