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Prepaid Water Meter with Quality Checker and Auto Complaint Generation using IOT

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Abstract: *Water efficiency is crucial globally, leading to the development of smart water systems. Prepaid water meters track usage, while shared meters share overcharged homes' consumption. These systems provide financial benefits to both utilities and customers, addressing water usage issues and promoting water conservation. By utilizing advanced algorithms and patient-specific data, the healthcare advisor provides recommendations that are not only customized but also timely, aiming to improve the overall quality of life for individuals dealing with long-term health challenges. The project is intended to empower patients with actionable insights, supporting them in making informed decisions about their health and well-being. The study proposes a solution to the water usage problem by using a device to calculate flow rate and amount of water usage, sending data to the cloud, and addressing the lack of monitoring in the Municipal Corporation Water Distribution system, which requires additional staff. The "Prepaid water meter" is an IoT solution for monitoring and controlling water supply, addressing the issue of depletion due to urbanization, climate change, and wasteful use. It offers real-time internet based data collection, addressing the challenges of measuring flow rates and requiring research. The water quality in residences is monitored using turbidity sensors and solenoid valves, with a PH sensor determining safe drinking water. Web apps are developed using Java, and charges, usage, and client data are recorded in a MySQL database.*

Keywords: Turbidity sensors, gas sensors, PH sensors, microcontroller, cloud storage, sensors, Internet of Things (IOT),and solenoid valve , real time monitoring

I. INTRODUCTION

The Municipal Corporation is implementing an IoT system to control water use and waste, addressing the high cost of waste. The system monitors usage, regulates flow, and invoices users based on usage. However, controlling billing and water distribution is challenging for approved suppliers. A novel IoT-based water quality monitoring method is being developed, ensuring equal distribution and preventing waste during distribution. The system uses prepaid water meter software on a PC to monitor daily water usage, saving time and labor. This system aims to improve service and water conservation.

II. LITERATURE SURVEY

The Internet of Things (IoT) has emerged as a solution for real-time water quality monitoring, leveraging sensors, wireless communication, and data analytics. These systems can detect anomalies, predict contamination, and enable proactive measures for clean water supply. IoT devices, machine learning techniques, and integration with cloud computing and big data analytics are explored for scalability and effectiveness. The literature highlights the potential of IoT-based systems to revolutionize water quality monitoring and management.

The research highlights how crucial it is to use cutting-edge water sensors like the ROTEMUS Water Sensor to identify E. coli bacteria in rivers in real time. These sensors enable prompt action to reduce hazards by providing real-time data to help informed decision-making. It has been demonstrated that the ROTEMUS Water Sensor works well for tracking waterborne pathogens, determining point-of-source contamination, detecting E. Coli bacteria with high sensitivity and specificity, and guiding water treatment plans. The literature also emphasizes the necessity of placing sensors in urban drainage systems in the best possible locations to detect non-conservative toxins, which present serious dangers to the

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environment and public health. To maximize sensor placement, several approaches have been put forth, such as machine learning methods, sensor network optimization algorithms, and hydraulic modeling.

The research on IoT-based smart water quality monitoring systems highlights how crucial it is to have reasonably priced and effective monitoring systems in place to guarantee a clean and safe water supply. Conventional techniques are frequently costly, labor-intensive, and have a limited capacity to deliver data in real-time. IoT-based systems provide an affordable option by combining data analytics, wireless connectivity, and sensors to deliver precise and timely insights about water quality. IoT-based systems can anticipate contamination, identify abnormalities in water quality, and enable preventative actions to guarantee a clean and safe water supply while cutting expenses, according to research. The literature also emphasizes how crucial big data analytics, cloud computing, and data visualization tools are to improving these systems' efficacy and scalability. Internet of Things-based solutions have been used in a number of water management situations.

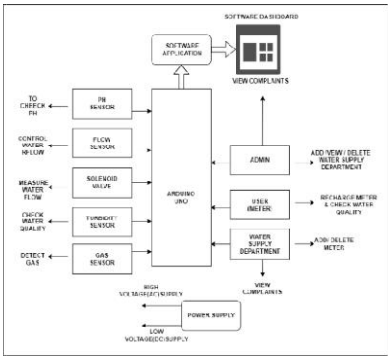
The need for economical, effective solutions is emphasized in the literature on Internet of Things-based low-cost devices for real-time water quality monitoring. These systems gather and send data in real-time using inexpensive sensors, microcontrollers, and communication protocols. Research demonstrates how successful they are in finding pollutants and stopping epidemics. Enhanced situational awareness, higher frequency, and better data accuracy are among the advantages. In order to anticipate the amounts of contaminants, machine learning algorithms and data analytics techniques are investigated.

III. EXISTING SYSTEM

Collecting bills from guests can be delicate for water serviceability in a postpaid system. Some guests may forgetto pay, or they may not have enough plutocrat to pay their bills on time. Administrative Costs When guests do not pay their bills, water serviceability have to spend further plutocrat and time trying to collect the plutocrat. This includes transferring monuments, making phone calls, and indeed taking legal action in some cases. These redundant costs are called executive costs. Revenue Losses If water serviceability cannot collect all the plutocrat that guests owe them, they lose that plutocrat. This is called profit loss. profit losses can make it harder for water serviceability to maintain their systems and give good service to their guests. In summary, postpaid systems can be challenging for water serviceability because they may have trouble getting guests to pay their bills on time, which can lead to advanced executive costs and profit losses for the mileage.

IV. PROPOSED SYSTEM

The goal of the IoT-powered Prepaid Water Meter and Water Quality Checking project is to develop a smart water management system that can precisely measure water usage, identify contamination, and give utilities and customers real-time information. The system's objectives are to stop human mistake in meter reading, cut down on unauthorized water use, and stop water waste. Customers can also access water quality data, monitor usage, and receive alerts about anomalous consumption patterns using an easy-to-use interface. Water utilities will be able to estimate demand, identify leaks, and optimize operations thanks to this system, which will save costs and increase customer happiness while fostering a more sustainable environment for water management. The project's scope covers system design, development, and deployment, with compatibility with current water infrastructure and scalability guaranteed.



IV. CONCLUSION

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This paper will show how a prepaid water meter system that uses the internet to measure water quality and usage in real time has been successfully implemented. a flow sensor that measures the amount provided, doing away with the shortcomings of conventional water metering systems. Prepaid billing and automatic water treatment depending on the type of contamination are possible future improvements. The disadvantages of conventional water metering systems will be eliminated by using an automated billing water metering system. This innovative concept can be expanded to other domains, such as natural gas and oil monitoring systems

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