ABSTRACT

DESIGN AND DEVELOPMENT OF AN AUTOMATED WATER DISPENSER BOTTLE FILLING AND REVENUE CALCULATION SYSTEM

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This study presents the design and development of an automated water dispenser bottle filling and revenue calculation system aimed at improving operational efficiency and reducing human error commonly found in manual processes. The system utilized a NodeMCU ESP8266 microcontroller as the main control unit, an infrared sensor to detect the presence of a water dispenser bottle container, and a water flow sensor to measure water volume and automatically stop the filling process once it reaches one liter. A relay module controlled the water pump during operation, while a 20×4 LCD displayed real-time information such as the number of gallons filled, water volume dispensed, and total revenue generated. Experimental results indicated that the water flow sensor had an average error rate of 0.42%, which remained within acceptable accuracy limits. Overall, the system successfully enhanced operational workflow, reduced manual labor requirements, and provided more accurate and automated revenue tracking for water dispenser bottle refill businesses.

Keywords: Automatic water filling, infrared sensor, water flow sensor, Internet of Things (IoT)