ABSTRACT

A trash bin is a temporary container for waste. Waste remains a major environmental issue, primarily due to the lack of awareness among individuals to dispose of trash properly. Even when trash is disposed of in a designated bin, the bin can sometimes be left unattended when it becomes full or neglected due to a lack of monitoring. When a trash bin is full, it needs to be emptied immediately to prevent unpleasant odors, which can disrupt the surrounding environment and make it uncomfortable.

The hardware design involves the use of the HC-SR04 ultrasonic sensor, MQ-2 gas sensor, flame sensor, and NodeMCU. The HC-SR04 ultrasonic sensor, MQ-2 gas sensor, and flame sensor are connected to the NodeMCU as the microcontroller. The ultrasonic sensor measures the waste level, the MQ-2 gas sensor serves as a preventive device against potential fires, and the flame sensor detects the presence of fire. The NodeMCU is also responsible for sending waste capacity data to a database.

By designing a waste bin volume monitoring system with an IoT concept, the data obtained by the microcontroller is sent to Firebase to display the condition of the trash bin. Users can easily monitor the trash bin, and they will receive notifications when the bin is full or when smoke, gas, or fire is detected..

Kata Kunci: *IoT, Monitoring, Trash bin, microcontroller, Android.*