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Stock Management Using IOT

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ABSTRACT

In this fast-developing business generation, it is important to keep the track of everything in small- scale industriesit is difficult to keep the track of material although we can check it manually it is not so 100% sure that it is correctso here, we introduce Stock management system using IoT. With the use of this system, we can check the inventory from anywhere this system is accurate it will give the correct number of quantities of material left in the Inventory. Also, this system will give a message through email. If the material goes below user-defined criteria.

Keywords: IoT (Internet of things), Criteria, Stock Management

INTRODUCTION

Smart systems and the Internet of Things (IoT) are becoming increasingly important in business and industry. This generation and the upcoming generations are IoT and AI-based so that all the businesses or industries are heading towards IoT or AI-based Projects, in products nowadays where time is everything, it is important to keep the track of material or products to avoid losses. Finding a specific product in a short period of time is a difficult endeavor. The demand for stock management system using IoT is increasing day by day because of its automatic working. The place or section where westored the material is known as the Warehouse themain aim of the Warehouse is to control the flow of material otherwise it will affect things liketime and cost. Because of the profit, stock management systems employing IoT are important in today's commercial section. Stock management using IoT provides Less effort, it is more efficient and it has got stable result the demand for automatic warehouses is increasing because in human-based Warehouses it is very difficult to avoid errors. In this era of IoT, advanced sensors can manage your stocks very easily.

LITERATURE REVIEW

S. Jayanth, M.B. Poorvi and M.P. Sunil "Inventory Management System Using IOT has proposed Efficient System for Managing the Inventory For various Application In general ,warehouses are used to store goods or products. If a user wishes to locate a product in a warehouse, it is quite difficult because the user must do a detailed search manually in all of the available stockrooms. This requires a lot of effort. container.

So, to avoid this problem the warehouse stock management system is very helpful because it maintains the detailed product information and tells us in which stockroom the product is present. The warehouse stock management system is playing a significant aspect in many productions and goods-based methodology. Though there are many wireless communication technologies the RFID suits the best for the warehouse stock management system. The tag data is sent from the transmitter part to the open- source hardware over a wireless link that uses the internet. The warehouse stock management system built on the architecture of the Internet of Things is developed to track the products attached to the tags with product information and their respective time stamps for further verification. flow. The web page which is built in accordance to provide convenient and the developed system results a very low-cost system and works dynamically compared with the existing present warehouse inventory management systems.[1]

In their paper "Smart Shelf for Smart Kitchen," Apoorva Verma et al. propose that the Smart Shelf can measure supermarket items. The SmartShelf canweigh and measure groceries. The Smart Shelf is divided into two parts: weight sensing and level sensing. The level sensing component comprises of a fixed-size container with an RFID tag defining container size and product description, as well as an RFID tag reader and an ultrasonic sensor for measuring the level of the container. the content of the container. Weight sensing consists of the RFID tag with similar container specification and content identification, RFID tag reader and weight sensor measuring all contents on the shelf [2].

In "Research and Design of the Intelligent Inventory Management System Based on RFID,"Xiaojun Jingand Peng Tang proposed a "Research and Design of the Intelligent Inventory Management System Based on RFID" Design of the Intelligent Inventory Management System Based on RFID," Xiaojun Jing and PengTang proposed a "Research and Design of the Intelligent Inventory Management System Based on RFID" RFID and ZIGBEE are both integrated into this system. RFID can identify the nature and location of some sensing nodes, and ZIGBEE focuses on sensing indicators in a confined region. The fundamental disadvantage of RFID is that its detection range is limited. It's also difficult for the RFID reader to read the signal precisely if numerous loads are on the same palette [3].

METHODOLOGY

The switch is used to turn off or on the energy in a specific region manually. The ESP8266 Node MCU is a programmable IoT kit. Unlike the ESP- 01 ESP8266, which only has the IOT functionality, it has both the IOT and programming features

Figure Node MCU ESP8266 Obviously, wire will be used to connect the components.

Figure Jumper Wire

We are using a breadboard to connect the components because it does not require soldering and is also reusable.

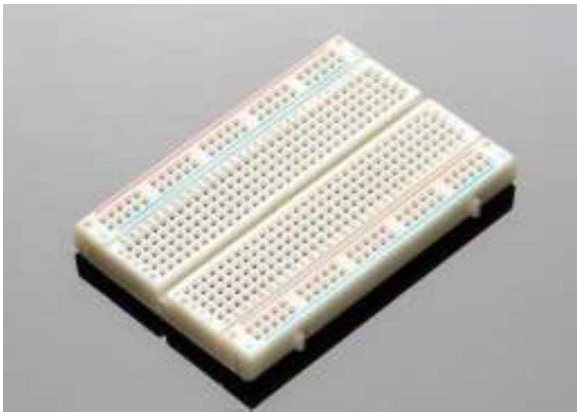


Figure Breadboad

Fig Ultrasonic Sensor

The ultrasonic transducer utilized is the HC-SR04, which has a transmitter and a receiver and runs on 5 V. There are three input pins and one output pin on the sensor. The echo is the output, and it's connected to the Raspberry Pi through a logic shifter. Two of the remaining three inputs are 5 V and GND. The trigger is the other input, which does not require a level shifter to connect to the Raspberry Pi. The voltage at the output pin drops to zero when a trigger pulse of adequate width (about 10us) is applied to the transducer's trigger pin.

The ultrasonic sensor is a multi-use sensor with four pins. It can be used to avoid obstacles and Ultrasonic sensors use ultrasonic waves to measure distance. It makes a noise.

It sends out an ultrasonic pulse and receives the reflected wave from the target. The following formula can be used to calculate the distance:

Distance D = 1/2 × T × C Where T= Time and C= Speed

Where T denotes time and C denotes speed. The concept is to utilize an ultrasonic sensor to measure the distance between it and the stacked boxes. If we know the width of one box, we can guess how many boxes are currentlystacked in a row based on this distance value.

WORKING

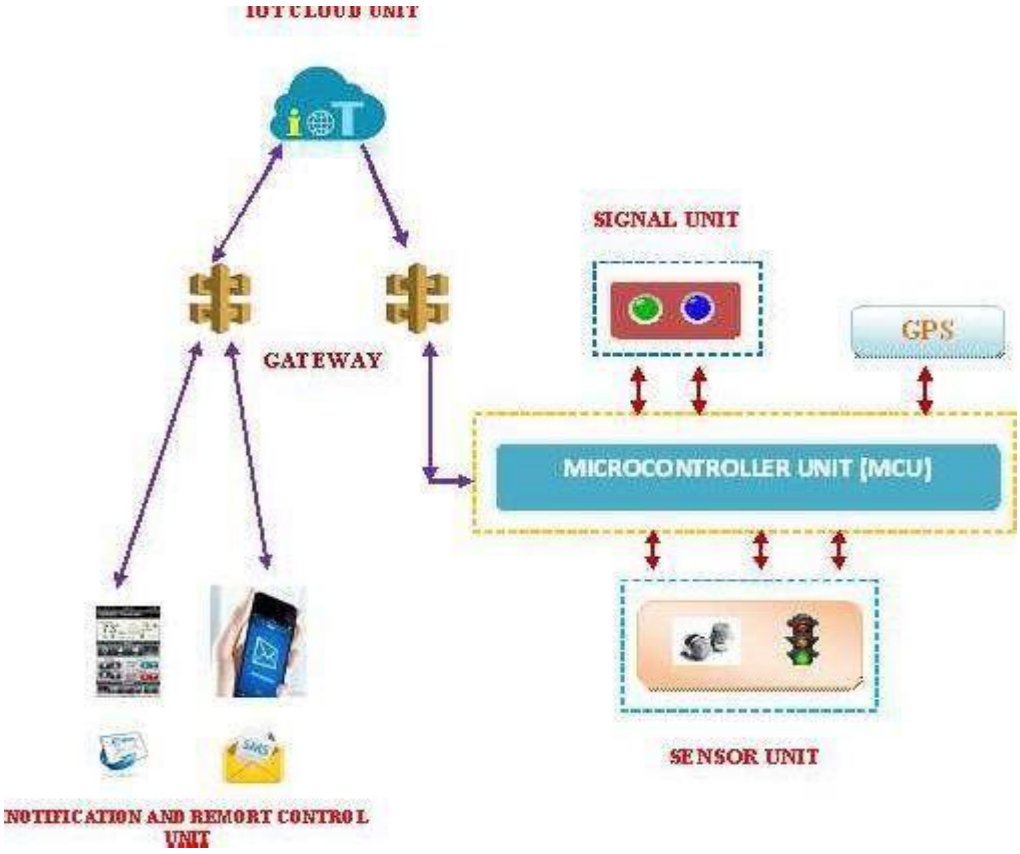


Fig Architectural Diagram

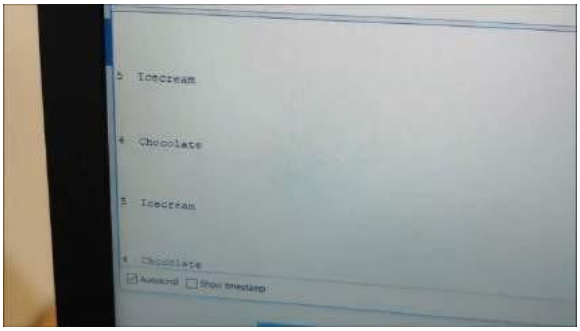
Result:

1. Number of boxes can be seen through sensors to be accessed.

2.

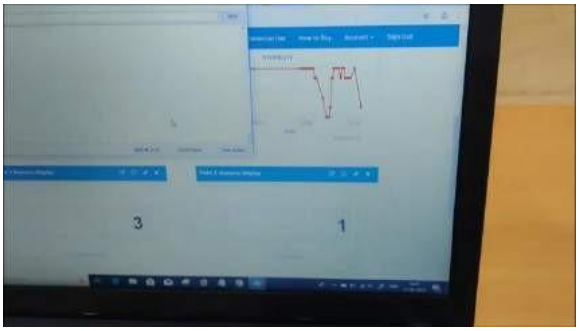
Removing the boxes and checking value is being rewritten.

1. Results shows that 5/5 4 chocolates boxes are remain.



2. Removing some of boxes to check the other output.

3. Check value once again.



4. Getting e-mail through IFTT.

CONCLUSION

The cost-effectiveness of this system is obvious. We simplified the system by using other ultrasonic sensors' Vcc and GND pins are linked to the Vin and GND pins of the NodeMCU. The first ultrasonic sensor's trig and echo pins are linked to D1 and D2, respectively.

The second ultrasonic sensor's D2 and trig and echo pins are connected to D6 and D7 pins. Respectively. The entire setup will be fueled via Node-micro-USB MCU's connector. Through the use of a USB cable Calculate for distance. Ultrasonic sensors to measure the stocks, which can be utilized for both solid and liquid stocks. It is simpler and easier to mount the ultrasonic sensor because it must be positioned on the top of the container. As can be seen, the system sends a mail to the provider directly, reducing the need for human intervention. Errors. Because the threshold amount was established in such a way, the stockpiles are sufficient for operation till the New Year. Stocks arrives, the system is self-sufficient and there are no supply shortages. Inventory Because of its low cost, ease of installation, and efficient design, it can be advantageous. It has been deployed in hospitals, small-scale companies, and large-scale industries.

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