Smart Container using IOT

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Abstract: As looking into today's world everyone is trying to change their complex life into simple one. So, looking into their needs there is an urgent requirement to develop a system which can provide them ease in their day to day life activities. This project title "Smart Container using IOT" is designed to monitor the status of the container used in our day to day activities. The system tells the status of our containers using IOT technology. As viewing it manually is time consuming and in-efficient so it helps to increase the efficiency and saves energy resources.

Keywords: Arduino, BLynk, IOT and Node

I. INTRODUCTION

Smart container is a reliable circuit that has a main task of monitoring the level or status of the containers used using the internet of things and the Blynk app. A special container to store objects, with sensors inside, IOT-ready. This container can keep the track of stocks stored inside it and react accordingly: sending notification to the cloud and turn an alarm led on when the stocks are low. So basically, through this prototype we can monitor the status of the containers using IOT sitting at any corner through the help of apps like Blynk. The node mcu is used as the Wi-Fi module for connecting our prototype to the cloud. And helps us monitor our containers. It receives the signal from the cloud serially and signal is operated with the software called Arduino (IDE). As mentioned real time it does the work on instantaneous mode where no data base is created in background and shows you the live count of the people present in the room without any delay making the system very user friendly.

The first-generation technology used in this field is Ultrasonic sensors which provides the distance/level on basis of the bounce back of the signal from the body and is detected by the diode .so the two pair of IR sensors were used to get the level of the container filled or empty and monitor it.

II. IMPLEMENTATION

We are using IR sensors and node mcu, both hardware and software parts are used to implement the circuit. So, in hardware part Arduino and node mcu have been used and for software part Blynk is used. An ultrasonic sensor is used to detect the distance i.e. the distance between the rim of container and the level of the item inside it. The status of the distance is displayed on the Blynk app using IOT. Also, we can manually see it with the LED used to monitor the status of container.
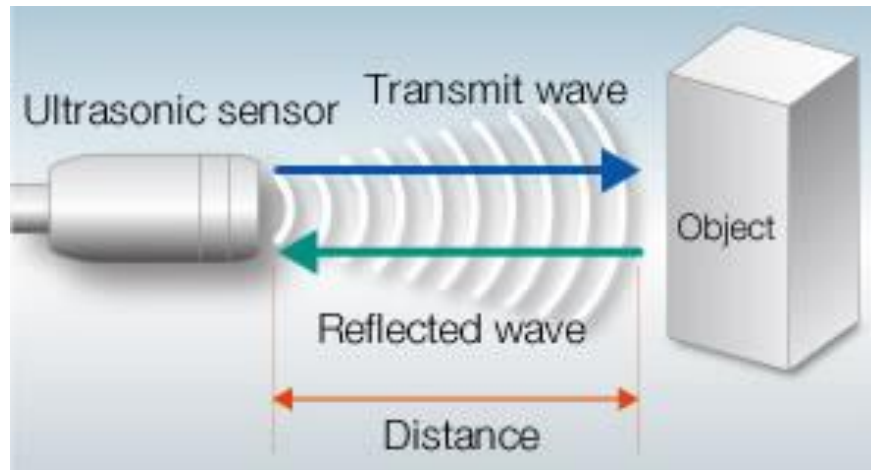
Figure1. IR sensor counter

The hardware part mainly consists of Arduino, LED, node MCU.

A. Arduino

Arduino is a ATmega328 based microcontroller with 14 input and output pins, 6 analog inputs, a 16 MHz crystal oscillator, a USB connection, a reset button and a power jack. It let user to connect interchangeable add on modules termed a shield. These shields have their independent functions which can be interfaced with Arduino by connecting pins as required.

B. LED (Light Emitting Diode)

Light emitting diodes (LEDs) are semiconductor light-weight sources. The light emitted from LEDs varies from visible to infrared and ultraviolet regions. They treat low voltage and power. LEDs are one amongst the foremost common electronic parts and are principally used as indicators in circuits. They are additionally used for physical property and optoelectronic applications

C. NODE MCU

Node MCU is an open source IOT platform. It includes firmware which runs on the ESP8266 Wi-Fi SOC from Espress if Systems, and hardware which is based on the ESP-12 module. The term "NodeMCU" by default refers to the firmware rather than the dev kits. The firmware uses the Lua scripting language. It is based on the eLua project and built on the Espress if Non-OS SDK for ESP8266. It uses many open source projects, such as lua-cjson, and spiffs. In software part we have utilized the Blynk App and the cloud server basis to monitor the status of the smart container.

Blynk may be a Platform with iOS and golem apps to regulate Arduino, Raspberry Pi and therefore the likes over the net. It's a digital dashboard wherever you'll be able to build a graphic interface for your project by merely dragging and dropping widgets. It's extremely easy to line everything up and you may begin tinkering in but five minutes. Blynk isn't tied to some specific board or protect. Instead, it's supporting hardware of your alternative. Whether or not Arduino or Raspberry Pi is joined to the net over Wi-Fi, local area network or this new ESP8266 chip, Blynk can get you on-line and prepared for the net Of Your Things.

III. METHODOLOGY

As we can see from the above block diagram the Node Mcu is used to connect our appliances to the cloud. Basically, in this prototype also Node Mcu is used for the same purpose. Also, the Blynk app is used to get the status of the smart container if and when desired. A virtual pin is connected to this app and when it is set high then only we get to see the results on our mobile phones.
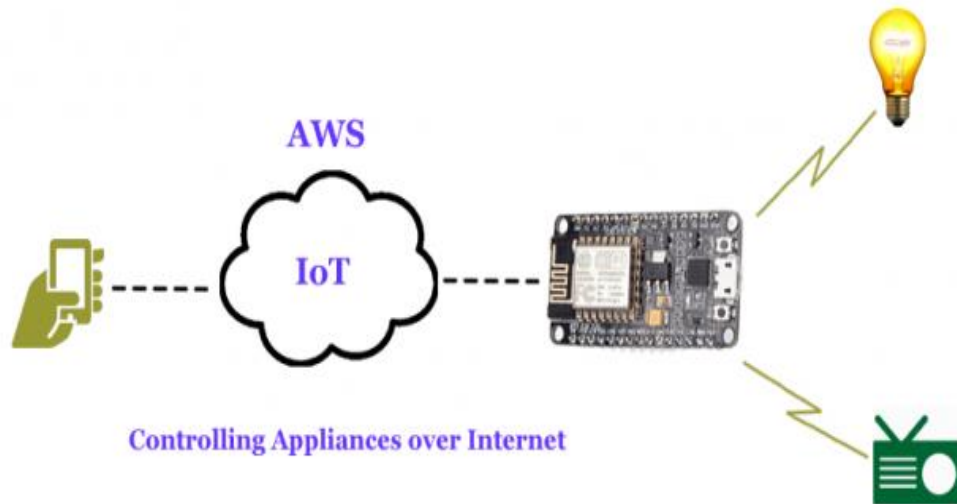

Figure 2. Block diagram representing working of IOT using Node MCU

IV. CONCLUSION AND FUTURE SCOPE

A normal architecture is proposed and implemented in this paper for virtual smart container using IOT. It gives the basic idea of how to autonomously monitor the status of the containers which will additionally help us in managing our daily chores better. The cost of this technology is very economical as it uses Blynk and Arduino which is also free open source software. This low-cost system improves the living standard and saves the manual labor. This technology has wide number of applications which are going to be used in the future like smart dustbin system, storage houses and godowns, water level indicators and further changing the sensors we can use it to check the level of manure given into the plants.

Conflict of interest: The authors declare that they have no conflict of interest.

Ethical statement: The authors declare that they have followed ethical responsibilities.

REFERENCES

[1]. Available at: *https://en.wikipedia.org/wiki/NodeMCU*
[2]. Available at: *https://www.blynk.cc/*
[3]. Available at: *http://www.nodemcu.com/index_en.html*
[4]. Available at:
     https://www304.ibm.com/events/tools/wow/2016ems/REST/presentations/PDF/WOW2016_3267.pdf
[5]. Available at: *https://www.arduino.cc/en/Tutorial/ArduinoISP*
[6]. Apoorv Surana , Vinit Kumar , Vishal Gupta & Arvind Rehalia," Smart Dustbin", International Journal of Advanced Engineering Research and Applications (IJA-ERA), Volume – 3, Issue – 1, May – 2017

This volume is dedicated to Late Sh. Ram Singh Phanden, father of Dr. Rakesh Kumar Phanden.