SMART COURIER BOX USING IOT

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ABSTRACT

As internet shopping has ingrained itself into everyday life, now is the ideal time to leverage already-developed technologies to streamline the process. The fundamental idea is to use technology to monitor things that need our personal involvement. By doing this, we hope to offer a dependable and approachable answer to issues that may arise during online purchase. The main controlling device is a PIC microcontroller that uses the ESP8266 WI-FI module to send an alarm mail when something goes awry and the Blynk software to monitor sensor data.

KEYWORDS:ESP8266 WiFi, PIC microcontroller, IoT and Blynk app.

INTRODUCTION

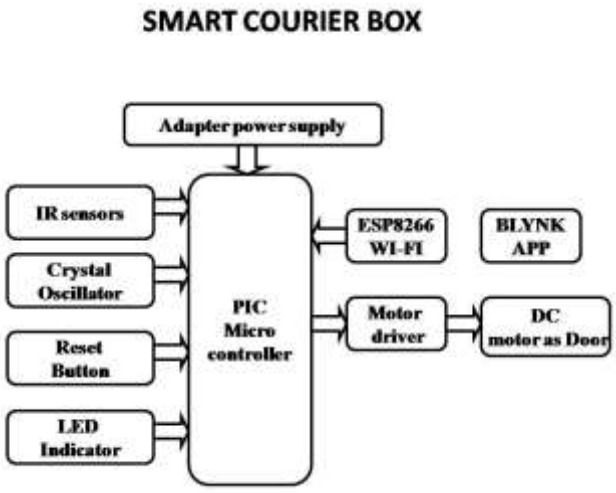
Numerous issues that are not present in what we can refer to as the traditional shopping experience have been brought on by the growth of online buying for the consumer. How to manage receiving a package while away from home is one of the major new issues. Couriers frequently leave a note stating that they were unable to deliver your product because of a door lock or leave it in the care of the nearby neighbours (or not so nearby) post of ice.

This therefore raises the issue of scheduling a time to pick up your product from a location that is only open during the hours that the majority of people work. What is required is a method of package delivery at home even when nobody is present. This would entail offering a safe spot where the gift might be kept until someone arrived home to pick it up.

We frequently don't have enough time in our hectic modern lives to do everyday tasks like answering the door or picking up a delivery at the door. We suggest automating the parcel collection unit as a way to address such circumstances. Through the use of wireless sensor networks, this system offers a Smart Box System implementation that is low cost, quicker, safer, and more effective.

This system makes use of an IR sensor at the smart box's front side to automatically open the door and send a message via Wi-Fi to the Blynk mobile application that a package has been inserted. The door then automatically closes once the package has been inserted and is detected by an IR sensor inside the smart box. The PIC Microcontroller serves as the project's primary controlling mechanism. This task was accomplished via a microcontroller loaded embedded C programme

BLOCK DIAGRAM



HARDWAREREQUIREMENT

1. Battery Power Supply
2. D.C Motor
3. IR Sensor
4. ESP8266 Wi-fi Module
5. LED

4.1 BATTERY POWER SUPPLY

The advantages of mobility, portability, and reliability that batteries provide over conventional line-operated power supplies make them a particular kind of linear power source.

The carbon-zinc dry cell battery is the most widely used type of dry cell battery.Dry-cell batteries are created by alternating stacking a zinc plate, a carbon plate, and an electrolyte paste layer until the appropriate overall voltage is reached. One of the following voltages describes the most typical dry-cell batteries: 1.5, 3, 6, 9, 22.5, 45, and 90. When a carbon-zinc battery discharges, magnesium dioxide is reduced at the carbon electrode and zinc metal is transformed into a zinc salt in the electrolyte. By taking these steps, a voltage of about 1.5 V is created.

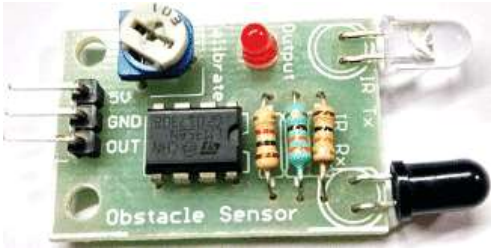
4.2 D.C. MOTOR

A dc motor converts electrical energy into mechanical energy by interacting magnetic fields with current-carrying conductors, which is normally how it works. An alternator, generator, or dynamo performs the opposite operation, creating electrical energy from mechanical energy. The use of electric motors as generators and vice versa is common. A DC motor receives current and voltage as inputs, and

produces torque (speed) as an output.

The DC motor is composed of two fundamental components: the revolving armature and the stationary field coils, which are composed of wire coils.The stator is another name for the stationary component. Figure depicts an image of an average DC motor, a photo of an average DC armature, and a picture of an average stator. As seen in the image, the armature is constructed of wire coils that are wound around a rotating core that has an expanded shaft.

4.4 IR SENSOR



Module Features:

- 5VDC Operating voltage
- I/O pins are 5V and 3.3V compliant
- Range: Up to 20cm
- Adjustable Sensing range
- Built-in Ambient Light Sensor
- 20mA supply current
- Mounting hole

4.1 ESP8266 WI-FI MODULE:

A self-contained SOC with an integrated TCP/IP protocol stack, the ESP8266 Wi-Fi Module allows any microcontroller to connect to your Wi-Fi network. The ESP8266 is capable of offloading all Wi-Fi networking tasks from another application processor or hosting an application. Each ESP8266 module is pre-programmed with an AT command set firmware, so all you have to do is connect it to your Arduino project to receive nearly the same amount of Wi-Fi functionality as a Wi-Fi Shield (and that's just out of the box)! The ESP8266 module is a very affordable board with a sizable and expanding community.

Through its GPIOs, this module may be coupled with sensors and other application-specific devices with a minimum of upfront programming and runtime loading thanks to its robust on-board processing and storage capabilities. Because of its high level of on-chip integration, it only requires a small amount of external circuitry, and even the front-end module is made to take up little space on the PCB. The ESP8266 includes a self-calibrated RF that enables it to function in all operational situations and doesn't require any additional RF components. It also supports APSD for VoIP applications and Bluetooth co-existence interfaces.

The ESP8266 has access to a nearly endless supply of knowledge, all of which has been made possible by the great community support. You can discover several tools to help you use the ESP8266 in the Documents area below, including instructions on how to turn this module into an IoT (Internet of Things) solution!

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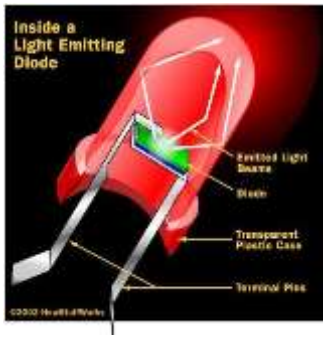
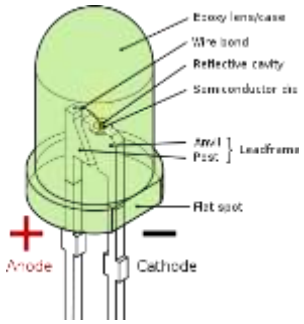
4.5 LED

Semiconductor devices include LEDs. LEDs are constructed of silicon, just like transistors and other type so diodes. Small amounts of chemical impurities, such as gallium, arsenide, indium, and nitride, added to silicon are what cause an LED to emit light[13]. The LED produces photons as a by product of current flow. A metal filament is heated to a white hot state inordertoproducelightinstandardlightbulbs.Comparedtoincandescent bulbs, LEDs are significantly more efficient since they generate photons directly rather than using heat. LED glows to show that an electric vehicle is charging.

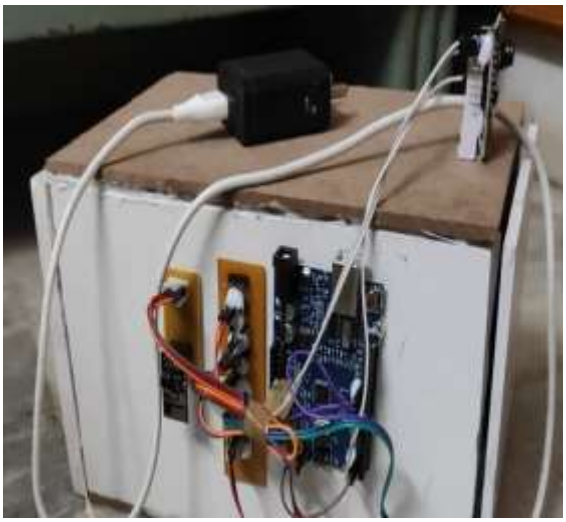




HARDWAREOUTPUTS

The "SMART COURIER BOX" project was created to create a smart courier box that can autonomously open and close the door and detect the delivery of a package. Deliveries are made using the Blynkapp over IOT after receiving the package and sending the alert notification to the user.

It has been created with integrating features for all the hardware parts utilised. Every module's presence has been thoughtfully considered and placed, which helps the unit function as best it can. Second, employing cutting-edge ICs, the project has been effectively carried out with the aid of developing technology. As a result, the project's design and testing were successful.



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