

## Intelligent Smart Shopping and Stock Notification Using IoT

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### Abstract.

This paper is focused on characteristics and basic application of RFID technology. It examines the information stream of smart stock framework from the viewpoint of business and capacity, at that point advances the particular structure projects and capacity modules of keen stock administration framework dependent on IOT RFID technology. This paper focuses on the problem of planning and execution interaction of the smart stock notification system. The proposed methodology, focuses on notifying the administrator about the stock reorder level and also the sale of the stock instantly through the smart messaging system. This procedure will help the store keeper to monitor the stocks remotely and smartly.

**Keywords:** Smart Shopping, Stock Notification, RFID Technology;

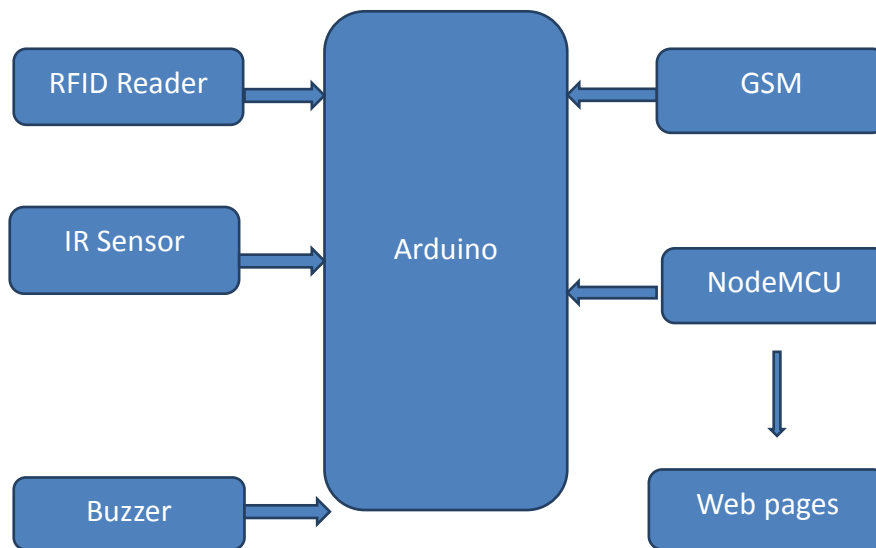
### 1. Introduction

Intelligence smart shopping and stock notification is especially useful for providing stock details. Radio Frequency Identification (RFID) technology has been solving problems of economic transactions inside the businesses ,allowing to facilitate and to enhance of agile way the complex processes in less time .RFID labels play a crucial role as a listing tracking technology.Since it provide easier way to manage stock of a company. RFID has been the wellspring of phenomenal mechanical plans, empowering and empowering the customer in their day to day livesfor instance, we can mention Amazon Go, which has implemented a supermarket service where you set aside large rows of payments because of its detection sensors, thus minimizing time in product sales. The motivation behind this content is to illustrate, through a contextual investigation, that RFID innovation can improve the stock control cycles of organizations utilizing RFID labels, consequently improving their expenses and reaction times to their clients. The model is made up of RFID reader and tags, IR Sensor, GSM, nodeMCU, Arduino UNO.

### 2. Literature Review

‘Intelligent smart shopping and stock notification ’ idea was proposed by Raju Kumar et al. He proposed to develop an intelligent stock maintenance which can be used in warehouse for identification of stock. A paper named, 'RFID Based Smart Shopping and Billing' proposed about planning a shrewd truck framework with route. The plan proposed incorporated the execution of savvy racks. At the point when brilliant trucks enter a walkway, item data is conveyed to the trucks utilizing infrared innovation. Proposed framework depends on four significant innovations: Infrared sensors which are utilized in a shrewd way for dynamic area discovery and following, RFID labels for item ID and stock maintenance.

### 3. System Architecture

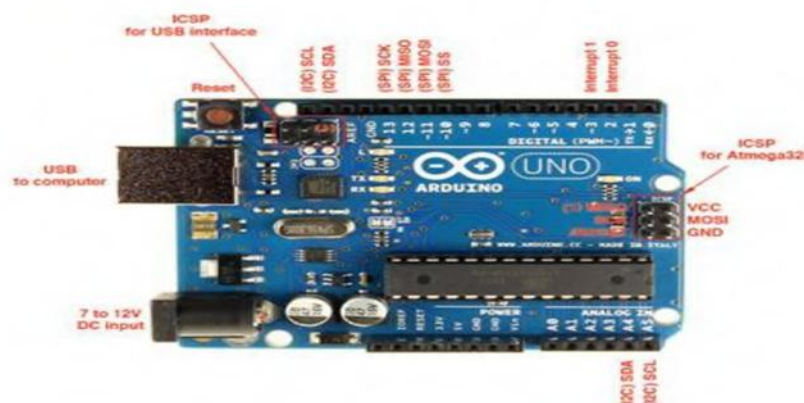


In this proposed work, the RFID peruses the information from tag and sends the card UID number to Arduino microcontroller for correlation, on the off chance that the card is substantial, Arduino microcontroller show access allowed else, access denied on the screen. The main advantage of using the NodeMCU with GSM module is that if you have the internet connection and the NodeMCU module is connected with the wifi then you can monitor the sensor data in real time from anywhere around the world also be able to receive the alert message via GSM network. The IR sensor with Arduino which connect to the negative wire IR Sensor to GND. The nodeMCU, which connected to the web pages where it shows the stock details in the web content.

### 4. Hardware Description

#### 4.1. Arduino UNO

A microcontroller is a little PC with a processor center, memory, and programmable info/ yield peripherals on a solitary coordinated circuit. The important part for us is that a microcontroller has a



**Fig.2.Arduino UNO**

processor (which all computers have) and memory, as well as some controllable input/output pins. This kit includes a microcontroller as well as all of the required extras to make building and debugging your projects a breeze. The ATmega328P is utilized in the Uno shown in fig.2 which is a microcontroller board. There are 14 progressed data/yield pins (six of which can be used as PWM yields), six straightforward information sources, a 16 MHz quartz valuable stone, a USB interface, a force jack, an ICSP header, and a reset button

on the board. It incorporates all you'll require to begin with the microcontroller, including a USB link to associate it to a gadget and an AC-to-DC connector or battery to control it.

#### 4.2 RFID Reader and Tag

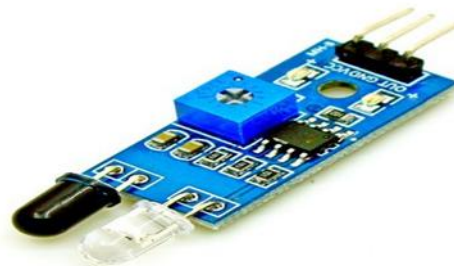
RFID is a shortened form for "radio-recurrence ID" and alludes to a development whereby Digital data encoded in RFID labels or splendid names (described underneath) are gotten by a peruser through radio waves. Accordingly, a sharp shopping structure can be molded, in which, each and every thing is furnished with a RFID tag while RFID per clients are associated with every item, to such an extent that it will give information about the openness of the thing.



**Fig.3 RFID Reader and Tag**

#### 4.3. IR Sensor

It will have an infrared transmitter and receiver built directly in. The transmitter seems to be a lead that generates infrared radiation that hits the object as well as returns to the receiver in part. The sensor's output was specified due to the strength of its receiver's reception.



**Fig.4 IR Sensor**

#### 4.4. Node MCU

It was an open - sourced firmware for such prototyping board that's open source. The ESP-12 module of a ESP8266, which would be a Wi-Fi SoC and uses the Lua scripting language. It's a dual in-line package (DIP) that mixes a USB controller with such a smaller surface-mounted board that contains the MCU and antenna. The DIP format allows for the quick prototyping onto breadboards. It was commonly used in internet of things (IoT) systems.



**Fig.5.Node MCU**

#### 4.5 GSM Module

Global System for Mobile Communications (GSMC) is the acronym for the Global System for Mobile Communications. It is just a circuit that are being used to link a mobile device nor computer machine with a GSM network. It would be almost similar to normal phones, down and the need for a SIM card to recognize themselves to its network.



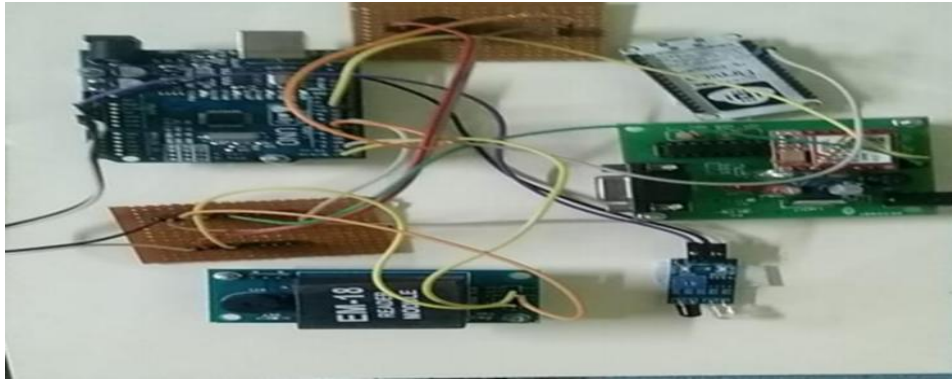
**Fig.6.GSM Module**

#### 5. Proposed System

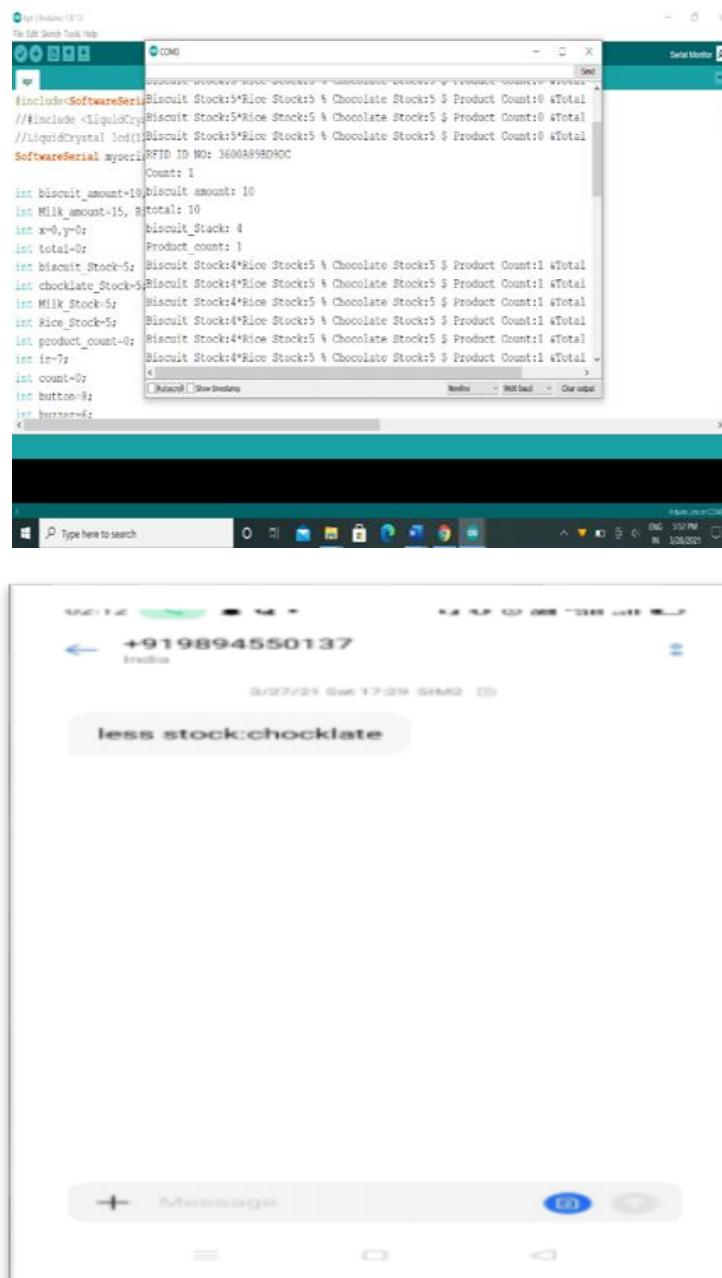
The proposed system reduces the manual work by using of RFID technology we can easily identify the stock details, products counts are update in webpages and get message alert when the count of product becomes less. Antitheft system are also involve in proposed system so that is anyone read the RFID without reading IR, then the buzzer will give an alert sound. Here wifi module is used for checking the stock if we are somewhere outside the store.

#### 6. Result

The product information from the hardware setup arranged at warehouse is collected in the arduino, if customers buy the product it will read by RFID reader and tag and IR Sensor. It stores the information of the quantity of the product using that RFID tag. Using GSM, the message will send when the product attains the minimum level. The web page is used to see all the product details including the stock level and prices.



### Fig.7. Hardware Connections



**Fig.8. Stock Notified as Message**

## 7. Future Scope

Advancement of venture should be possible from numerous points of view, where RFID labels can be supplanted by RFID stickers which are little in size, ease. Security can be improved by checking the quantity of things or setting weight sensors inside the truck for counting the weight and getting a wide range of thing names when truck is gone through a specific passageway utilizing camera module. Different RFID labels can be perused utilizing a solitary RFID per user for more number of items which are included the truck. The smart carts are proposed with an RFID reader and a display. In future the framework can be altered so that it additionally cautions when an item is lost on some unacceptable self.

## 8. Conclusion

This application consequently deals with the stock which is productive to storekeeper in financial way. It will offer notice to storekeeper of item when item is less in amount so they can top off that item in rack. This can save labour and time also as everything activity should be possible by android application so it is easy to understand. If the availability of the stock is less than the minimum level, then the alert message will be send to mobile using GSM. With this application customer can easily see the availability of product and information of product like price, quantity. Also see the where is really product is using the MAP function within the system which can help customer to guide the trail of product and save time of customer.

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