

# **Don Bosco Institute of Technology**

## **Department of Information Technology**

### **IOE Mini Project Report**

**Group no: 24.**

**Group members:**

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#### **INTRODUCTION**

The main objective of this project is to make **IoT Based RFID Inventory Management System using Arduino Node MCU ESP8266 Arduino & Adafruit.io Platform using MQTT broker.** So we will use **RFID MFRC522, Arduino Nano and Node MCU ESP-12E Board.** Arduino and RFID scanner scans the RFID cards and then log the data to Adafruit IO cloud platform with the help of ESP8266 Wi-Fi module. This information can be displayed in the **Adafruit IO dashboard** and can be accessed by the required authorities to view and analyze the **inventory over the internet** from anywhere at any time.

#### **PROBLEM STATEMENT**

To develop an Inventory Management system using rfid sensor and arduino nano.Using Node MCU to Sent Data to cloud(Adafruit).

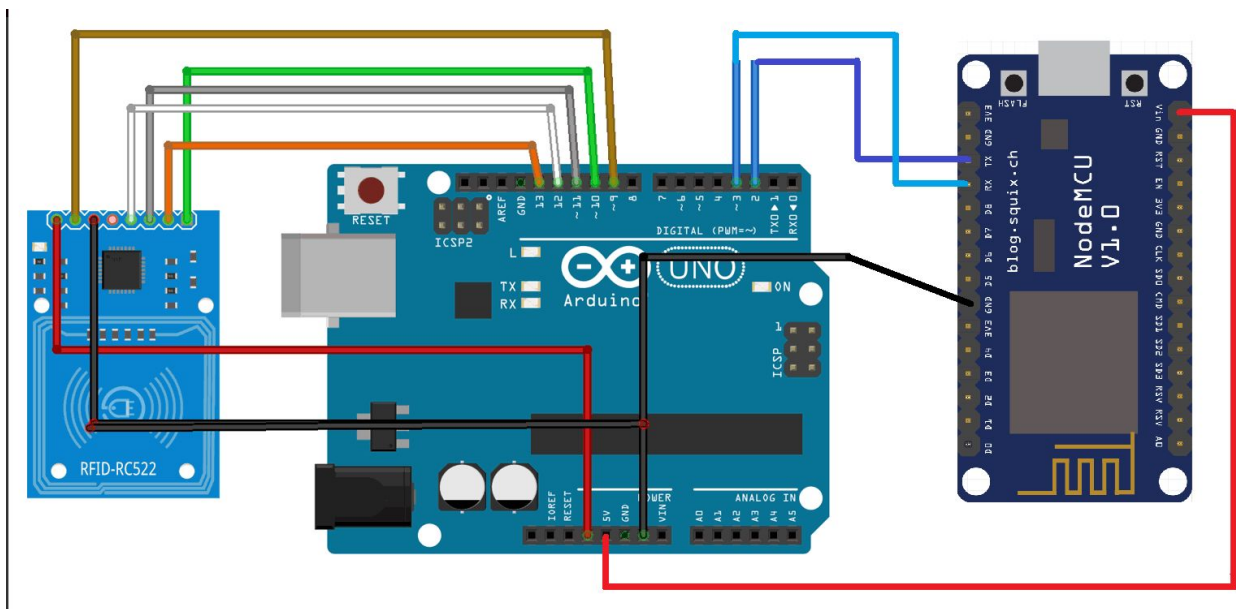
#### **HARDWARE REQUIRED**

1. Arduino Nano
2. MFRC522 RFID Scanner Module
3. 13.56 Mhz RFID Cards
4. NodeMCU ESP-12E Board
5. Breadboard
6. Jumper Wires

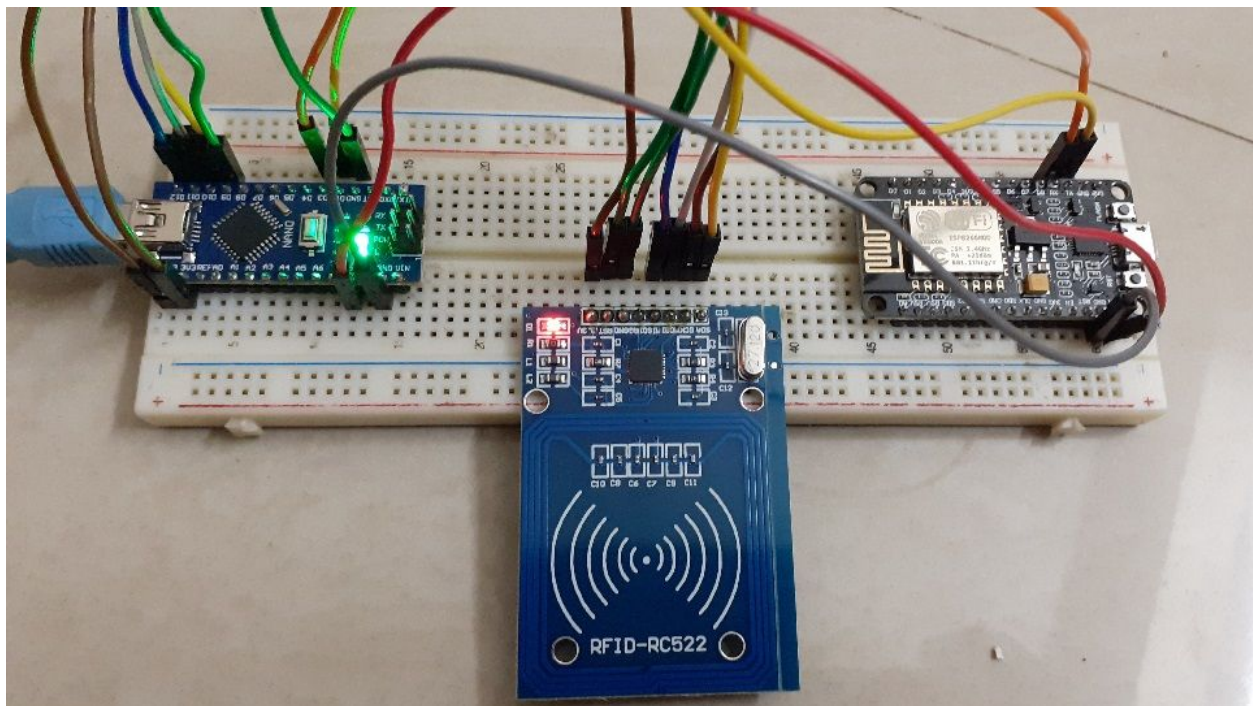
**Drive link for project videos,code,libraries:**

[Tinyurl.com/rfidinv](https://tinyurl.com/rfidinv)

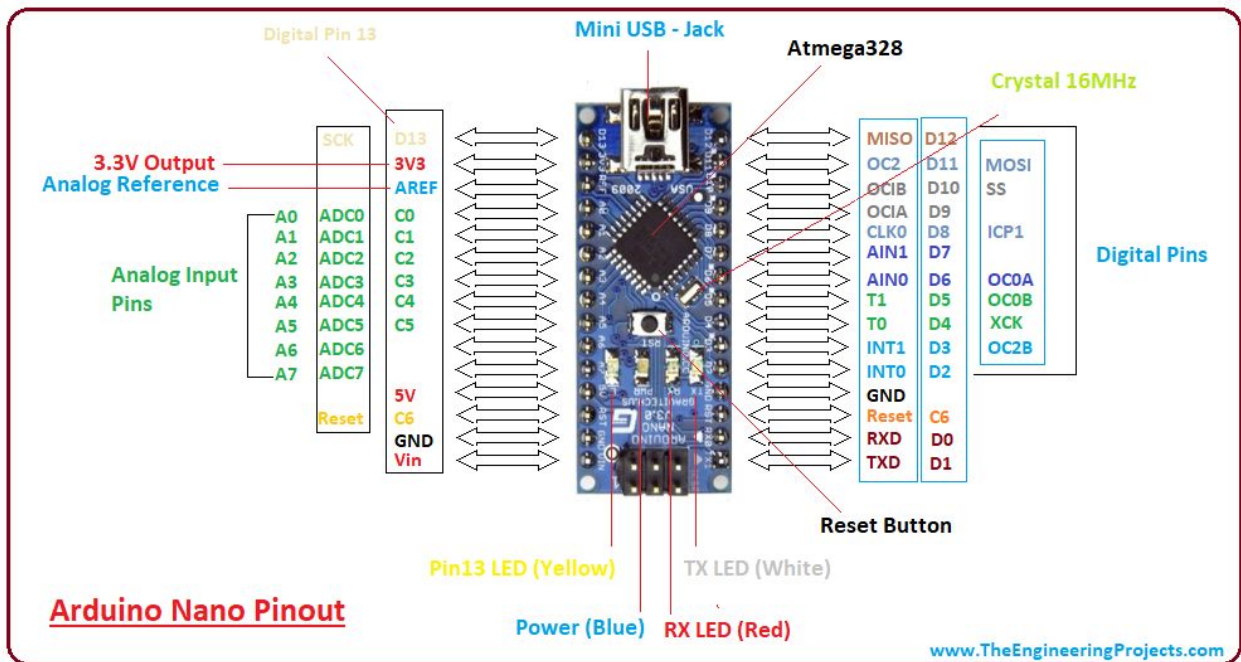
**Circuit diagram:**



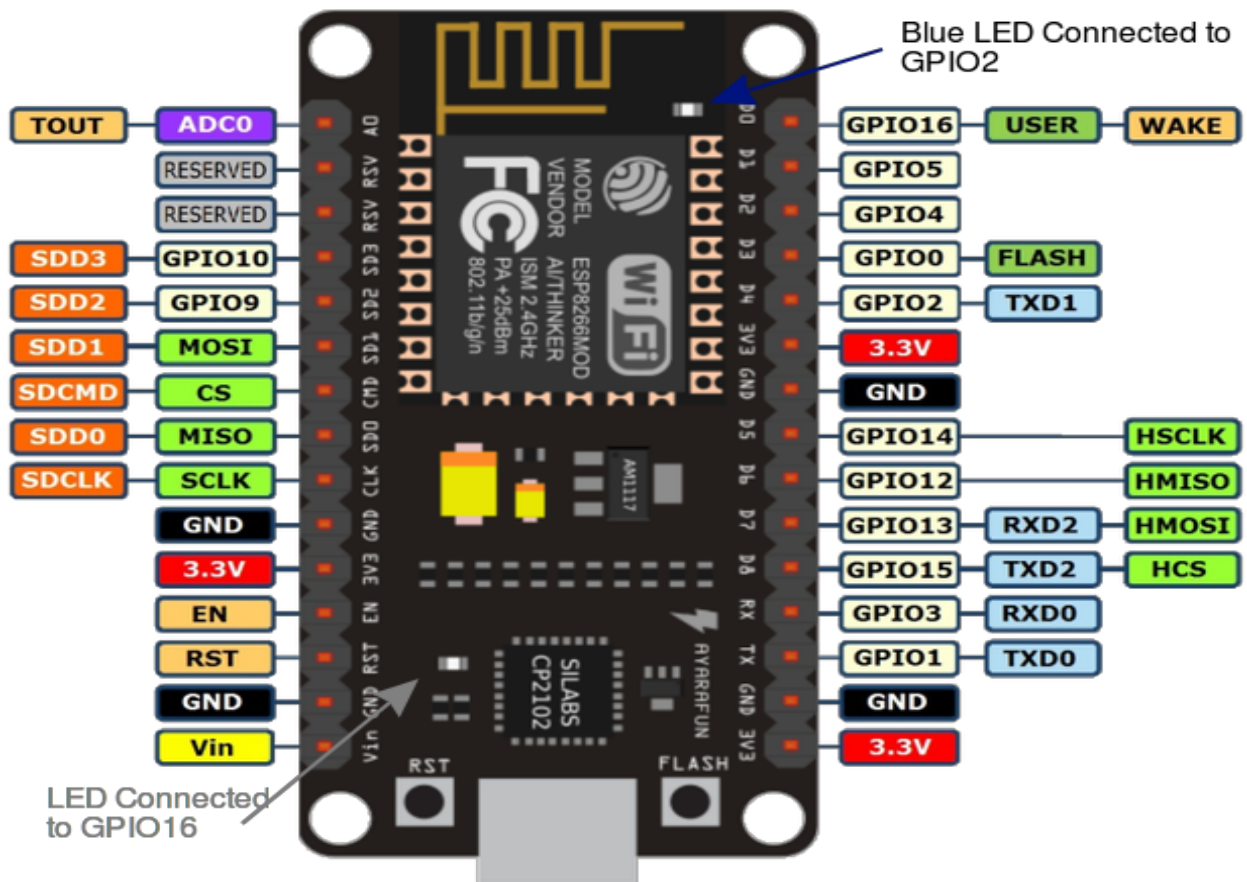
**RFID Pin Diagram:**



## Arduino Nano Pin Diagram:



## Node Mcu Pin Diagram:



## Communication Technology used :

**802.11ah:** The IEEE 802.11ah Task Group (TGah), created in 2010, addresses the need for an M2M wireless standard to cover the existing gap between traditional mobile networks and the growing demand for wireless sensor networks. TGah deals with the specification of an unlicensed sub-1GHz worldwide wireless local area network (WLAN) standard for future M2M communications supporting a wide set of scenarios based on a large number of devices, a long range and energy constraints. The communication technologies currently used for M2M applications can be classified in two categories: Wireless Sensor Networks (WSNs), for interconnecting multiple sensor nodes spread over a particular area; and regular mobile (cellular) networks, for isolated/scattered nodes or to allow the gateway of a particular WSN to reach the Internet.


**RFID:** Radio-frequency identification (RFID) uses [electromagnetic fields](#) to automatically identify and track tags attached to objects. An RFID tag consists of a tiny radio transponder; a radio receiver and transmitter.

The MFRC522 is a highly integrated reader/writer IC for contactless communication at 13.56 MHz. The MFRC522 reader supports ISO/IEC 14443 A/MIFARE and NTAG. The MFRC522's internal transmitter is able to drive a reader/writer antenna designed to communicate with ISO/IEC 14443 A/MIFARE cards and transponders without additional active circuitry. The receiver module provides a robust and efficient implementation for demodulating and decoding signals from ISO/IEC 14443 A/MIFARE compatible cards and transponders. The digital module manages the complete ISO/IEC 14443 A framing and error detection (parity and CRC) functionality. The MFRC522 supports MF1xxS20, MF1xxS70 and MF1xxS50 products. The MFRC522 supports contactless communication and uses MIFARE higher transfer speeds up to 848 kBd in both directions.

**Bevywise IoT Simulator:** In Bevywise IoT Simulator, you can create any number of virtual networks with multiple virtual devices in each network. However you will be able to run only one network with multiple virtual devices at a time. Based on the license you will be able to run the simulator to run in multiple machines for large simulations.


## USING BEVYWISE SIMULATOR:


### Creating Events Using bevywise simulator:


Rfid\_sensor 


Client id  
RF1


Description  
this is the rfid rc522.

Authentication 

Access key  
iliHA3TcQNEajJMM4J 

Access Token  
UDMK7af3QYBVWbOx6 


Will 


Event from Device RF1   
Mon May 11 18:59:12 2020

Topic  
Invent

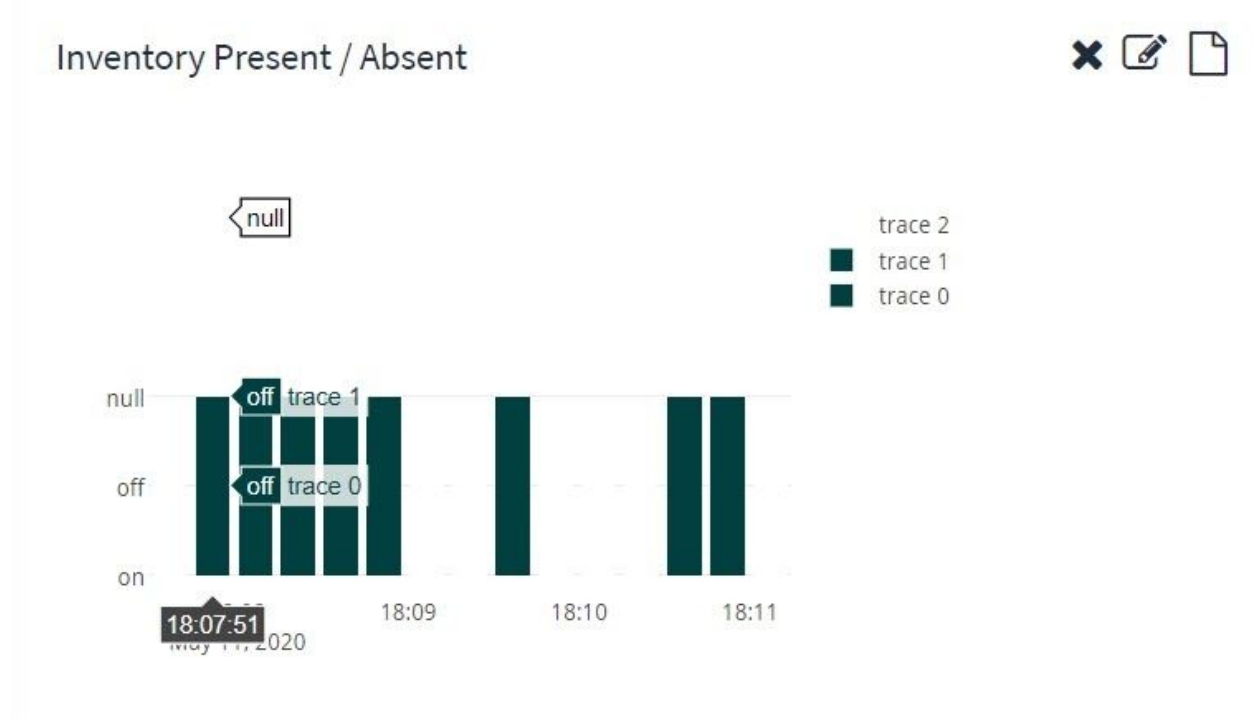
Qos  
0

Message  
"on"

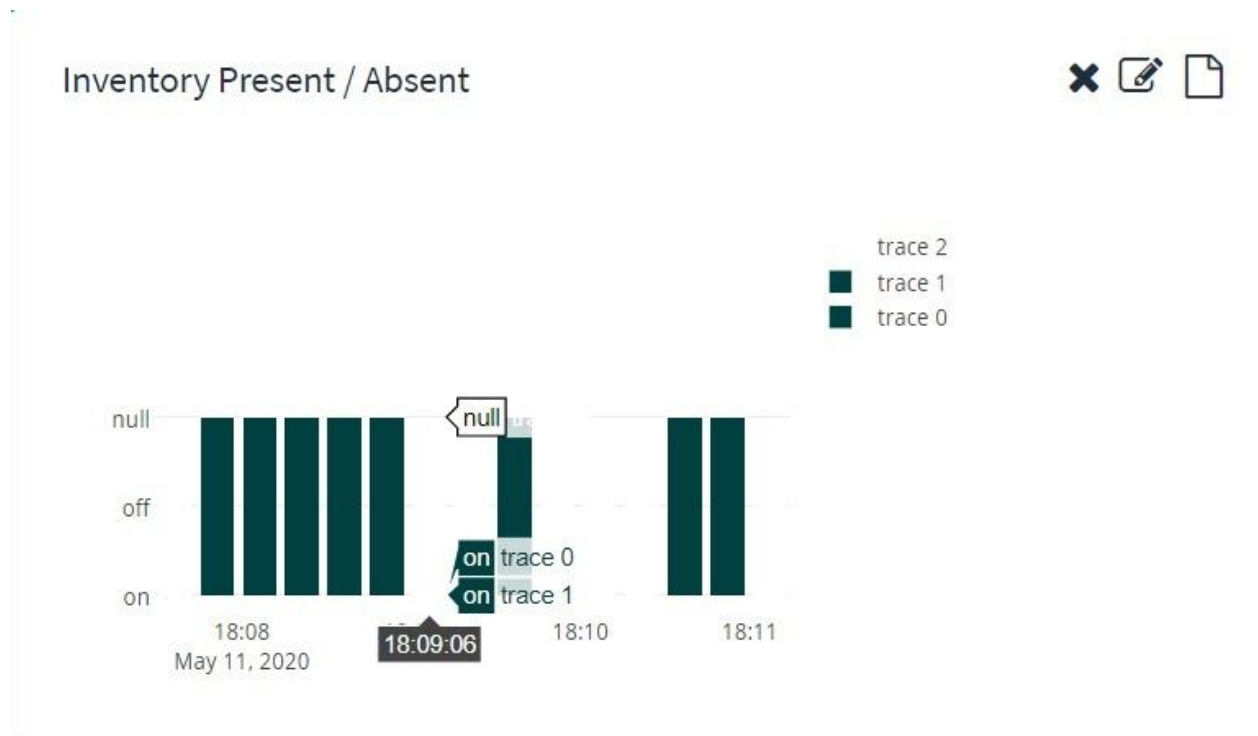
Event from Device RF1   
Mon May 11 18:59:02 2020

Event from Device RF1   
Mon May 11 18:58:57 2020

### Output:







## Data Published on Adafruit.io:

io.adafruit.com/TECHNOWEIRDS/feeds/rfid
☆

oto - Google Ph...
Photo - Google Ph...
Edit photo - Googl...
IoT Based RFID Atte...
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+ Add Data
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◀ Prev First
page 1 of 0
Next ▶

Created at	Value	Location
2020/05/12 11:51:58am	1	✕
2020/05/12 11:49:45am	1	✕
2020/05/12 11:49:42am	1	✕
2020/05/12 11:49:30am	0	✕
2020/05/12 11:49:26am	1	✕
2020/05/12 11:49:22am	1	✕
2020/05/12 11:49:19am	1	✕
2020/05/12 11:49:15am	0	✕

Record 1 through 8 of 0 (0% loaded)

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This feed is Online.

You have no notifications active for this feed.

**Webhooks**

Webhooks let you connect your feed to the rest of the web.

**Disable Feed**

Disabling a feed will remove it from your feed count and prevent you from adding new data to it.

**License**

No Default License

## **REFERENCES**

[https://youtu.be/YhpZGkw0g\\_4?t=58](https://youtu.be/YhpZGkw0g_4?t=58)

[https://en.wikipedia.org/wiki/Radio-frequency\\_identification](https://en.wikipedia.org/wiki/Radio-frequency_identification)

<https://www.atlasrfidstore.com/rfid-beginners-guide/>

<https://io.adafruit.com/TECHNOWEIRDS/feeds/rfid>