IOT ASSET TRACKING SYSTEM

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Abstract – *Asset Management and Monitoring is a systematic method for any business entity or organization to track and preserve significant assets. Human assets such as human resources, moving assets such as cranes and vehicle fleets, and non-moving assets such as industrial equipment, raw materials, and completed commodities are all examples. An asset could be as simple as a single device or as complicated as a multi-sensor building. These assets require electrical, mechanical, and hydraulic maintenance in order to remain operational within a regulated framework. Asset management entails keeping track of every physical device in a company, no matter how big or tiny it is. It provides real-time information about the device's status, location, condition, and performance. It aids in the balancing and improvement of output at a minimal cost.. Asset management and monitoring, in its most basic form, is a systematic procedure for detecting, categorizing, supervising, maintaining, operating, upgrading, and replacing assets in a cost-effective manner. It takes into account the asset's entire lifecycle, from acquisition to disposal. Maintaining a careful watch on the entire asset lifetime lowers operational costs, boosts productivity, extends asset durability, and improves the bottom line.*

Key Words **: Decoder, Encoder, GPS, Arduino, ESP8266, Rectifier and IOT** are some of the terms used in this paper.

1.INTRODUCTION

Nowadays, one of the most pressing concerns is safety. The tracking of assets in hospitals is the focus of an IoT-based asset tracking system. Asset tracking is a way of locating an asset by following an RF signal. The suggested Internet of Things Asset Tracking System was created to safeguard the safety and security of assets such as medical equipment and people. The employment of sensors that sense and alert, such as sound and vibration sensors, is a big benefit. The transmitter and receiver make up the Radio Frequency Identifier. The transmitter is attached to the tracked object and sends radio waves to the receiver. If the tracked object moves outside of the frequency band, a message or a phone call will be made to the designated guardians via the Global System for Mobile communication. The medical equipment can be viewed and tracked using this web application. Hospital management consists of groups of people who serve as the command center for hospitals. These individuals could be former or current clinicians, as well as people affiliated with other hospitals. Indeed, an IoT-based asset tracking system for hospital administration improves operational capacities and increases reporting transparency. There are components to strengthen the protection of women, children, persons with mental disorders, and any precious things using Radio Frequency and IoT technology, which includes various asset tracking systems for hospital administration. Asset tracking is a means of locating an asset by using an RFID tag and reader, scanning a barcode, and so on.

2.EXISTING SYSTEM

One of the first technologies used to track assets was the barcode. It's fairly efficient and dependable. A barcode is a series of black lines that run parallel to each other. They are highly cost effective. It aids in the encoding of data in barcode format, which may be read using a bar code scanner or, more recently, a mobile phone. Typical identifying numbers are complex and must be one-of-a-kind. Manually entering them is inconvenient and time-consuming, but more importantly, it is an error-prone task. Scanning makes it so much easier and more accurate to extract information..

3. PROPOSED SYSTEM

The Importance of Asset Tracking Using Radio Frequency (RF) technology to automatically track assets is one method to improve asset management quickly. Electromagnetic fields are used to transfer data from an RF tag to a reader in a Radio Frequency Identification (RF) asset tracking system. And the patient id is a one-of-a-kind identifier issued to each doctor, which they use to enter data into the application and control the operation of the IoT Asset Tracking System using an RF reader. The transmitter and receiver make up the Radio Frequency module. The transmitter is attached to the tracked object and transmits radio waves to the receiver. If the object being monitored moves out of the tracking frequency range, a message and a phone call will be issued to the designated guardians via the Global System for Mobile communication. Furthermore, the object's location can be tracked at any time via the Global Positioning System.

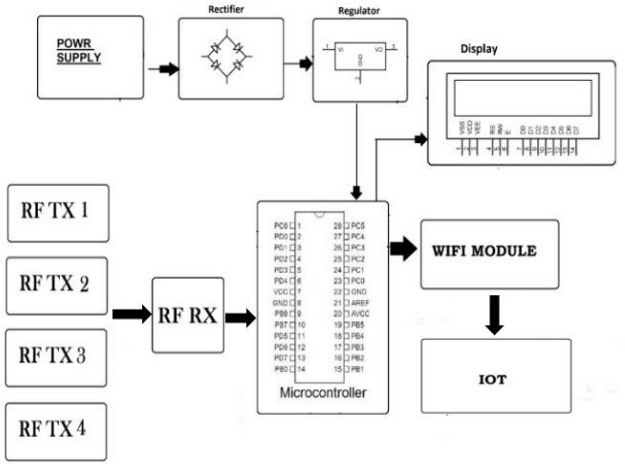


Fig: Block diagram

3.1 GPS

The Global Positioning System (GPS) is a navigation system for air, sea, and land transport that uses satellites, a receiver, and algorithms to synchronize location, velocity, and time data. The satellite system consists of 24 satellites in six Earth-centered orbital planes, each with four satellites, orbiting about 13,000 miles (20,000 kilometers) above Earth and travelling at 8,700 miles per hour (14,000 kilometers per hour). While just three satellites are required to establish a location on the earth's surface, a fourth satellite is frequently utilized to confirm the data from the other three. The fourth satellite takes us into the third dimension, allowing us to calculate a device's altitude.

3.2 ESP8266

The ESP8266 is a low-cost Wi-Fi module that belongs to the ESP family and is used to control any electronic projects created by humans anywhere on the planet. The ESP 8266 features a built-in microprocessor and 1MB flash memory, allowing it to connect to a WiFi network. This module can communicate with Wi-Fi signals using the TCP/IP protocol. The module's maximum working voltage is 3.3 volts, as supplying 5 volts or higher will damage the module's bands of interest and remove those frequencies of no relevance.

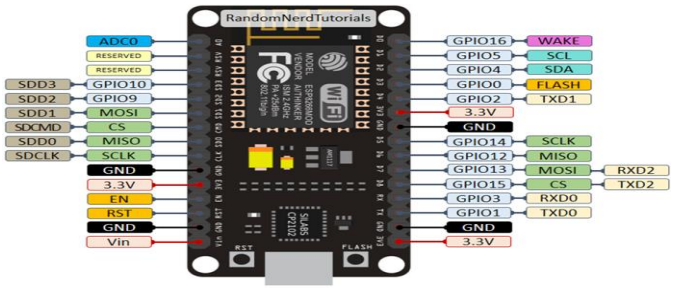


Fig: ESP8266

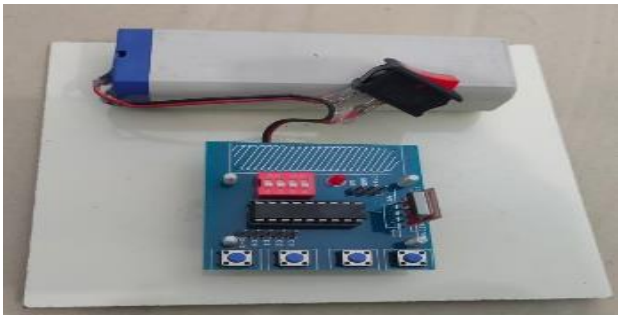
3.3 ENCODER

An encoder is a combinational circuit that translates binary data in the form of 2N input lines into N output lines that represent the input's N bit code. It is expected that only one input line is active at a time in simple encoders. Consider the Octal to Binary encoder as an example. An octal-to-binary encoder accepts 8 input lines and outputs 3 output lines, as illustrated in the diagram.

3.4 DECODER

The duty of a decoder is the inverse of that of an encoder. It's a combinational circuit that converts n input lines to 2n output lines.

4. EXPERIMENTAL SETUP



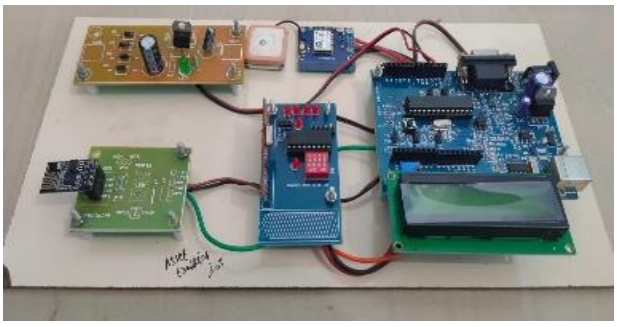


Fig: External Structure Model

The proposed methodology made up of the following sections:

1. **ARDUINO UNO:** The duty of a decoder is the inverse of that of an encoder. It's a combinational circuit that turns n input lines into 2n output lines. The ATmega328 Arduino Uno microcontroller board has 14 pins for feeding influx and outflux (six pins can be used as PWM signal outputs), six continuous signals with time commute group, a 16 megahertz electronic oscillator, USB port connection, ICSP header, and a reset button. The Arduino Atmega328 features 32 KB of flash memory, 2 KB of static random access memory, and 1 KB of programmable read-only memory that may be erased electronically. Arduino is a programmable open–source

microcontroller board that may be integrated into a variety of electronic projects. etc. It is used to bridge software and hardware modules of the device.

2. **RECTIFIER:** There are a few different ways to link diodes to construct an AC to DC rectifier. The most significant is the bridge rectifier, which generates full-wave fluctuating DC. If a center-tap transformer is employed, a full-wave rectifier can be produced with just two diodes, but this method is rarely utilized now that diodes are cheaper. A single diode can be used as a rectifier, however it can only produce half-wave changing DC by using the positive (+) sections of the AC wave.

3. **BLYNK:** Blynk was created with the Internet of Things in mind. It can control hardware remotely, display sensor data, save and visualize data, and perform a variety of other tasks.

5. RESULTS AND DISCUSSION

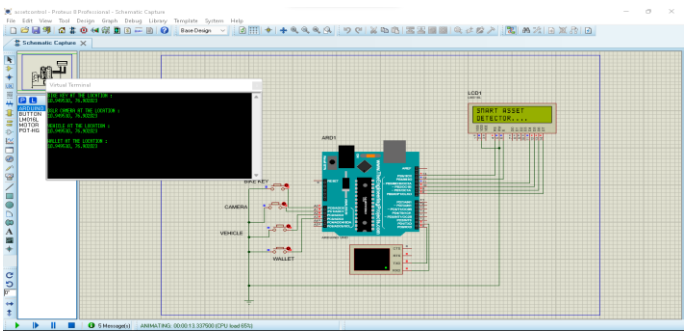


Fig: Simulation Output

The goal of this project is to determine the location of items. This is the outcome of the IOT module's simulation, which was done with the PROTEUS design tool. In the simulation output screen sampled at each transmission signal, the coordinates of the tagged object are displayed.

6. CONCLUSION

For tracking equipment, a web application for an IoT-based asset tracking system is being created. It is simple to keep track of the equipment. By operating this online application, you may save a lot of time. Future development will include integrating patient data into the online application so that the system can be used in hospitals. This web application will undoubtedly aid in the improvement of hospitals. A suitable mobile application for tracking hospital assets will be developed.

REFERENCES

[1]S.Brindha.,Ms.D.Priya,Mr,T.ManojKumar,Mr.G.Gowtham ,Mr,N.Karthc; IoT based Asset Tracking System; International Research Journal of Engineering and Technology (IRJET),Mar 2020

[2] Indira R , Bhavya G, Dheva Dharshini , Devaraj R; Internet of things in Asset Tracking System; SSRG Int. journal of computer science and engineering.

[3] Steven Chan, Adam Connell, Eribel Madrid, Dongkuk Park, Ridha Kamoua, “RFID for personal asset tracking”.

[4] Patel Krishna Harshadbhai, "Design of GPS and GSM Based Vehicle Location and Tracking System".

[5] Sabah Al-Fedaghi; Enhancing Web Applications; Int. Journal of Software Engineering and Its properties; 2011.

[6] Gunther Eysenbach; Web-Based Medical Appointment Systems; Journal of Medical Network Research2017

[7] S. Aswini , Divya Jain; Hospital Management System based on RFID; Int. Journal of Advance Research in C.Sc and Management Studies

[8]Arumugam, Shankar; Annadurai, Kannammal; An Efficient Machine Learning Based Image Encryption Scheme for Medical Image Security; Journal of Medical Imaging and Health Informatics, Volume 11, Number 6, June 2021, pp. 1533-1540(8)

[9]A Shankar; A Kannammal ;A Hybrid Of Watermark Scheme With Encryption To Improve Security Of Medical Images