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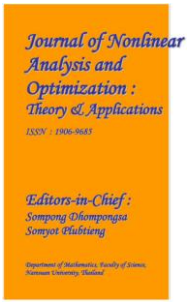

THE DESIGN OF INTELLIGENCE LOGISTICS SYSTEM BASED ON INTERNET OF THINGS

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ABSTRACT:
This paper proposes a system architecture for RFID-based shipment monitoring using an Arduino outfitted with an RFID module in the age of the Internet of Things and data analytics. A crucial component of supply chain management, logistics is essential to any kind of business. This study designs an Internet of Things (IoT) based smart logistic system for the food grain and pharmaceutical industries. The containers are outfitted with RFID technology to safeguard the security of the products being carried and to identify any potential theft activity. By modifying this intelligent logistics system, real-time tracking of items from shipment to customer location can be accomplished at a reduced investment cost. Since the sensor devices are connected to the internet, real-time data transfer will allow the organization to respond quickly in the event that the logistical process needs to change.

I.INTRODUCTION

At present, many logistics service enterprises are still in the traditional, simple service, consider the logistics management as transportation, warehousing, distribution and processing separate part, independently managed. Many logistics enterprise informatization level is low, could not provide information sharing for customers, so that companies have been slow to respond, inefficient [1]. The development of the Internet of things technology is driving the change of Chinese wisdom logistics. RFID technology, ZigBee technology gained popularity, so that the interconnection of things can be achieved, will give enterprise logistics systems, such as environment monitoring systems provide a platform [2,3]. On this basis, this paper introduces the design of intelligent logistics system based on Internet of things. The system can real-time monitoring goods information and environmental security, reduce the dependence on staff.

In IOT application services through sharing the same huge cloud computing resource pool to obtain large system throughput capacity to meet user needs in some cases of ultra high computation or storage resource request, and the cost is the total amount of use of resources costs [1]. Dynamic expansion and contraction process of the above system does not require user intervention, the system will automatically, developers on its platform but according to the standard and follow the procedure is easy to be extended principle, with not much difference between the development of local application, the system developers and users have brought a lot of benefits, and the operator can also be middleware services the core link control firmly. The work principle of RFID is: label into the field, if the received reader special RF signals, can with the induced current obtained by the energy sending out the product information stored in the chips (i.e. Passive Tag, passive tags or passive tags), or take the initiative to send signals to send a frequency (i.e. Active Tag, active tags or active tags), the reader reads information and decoded, sent to the central information system on the data processing. Intelligent logistics system is mainly to achieve the following two objectives: To carry on the business process reengineering of logistics enterprise itself (Business Process Re-Engineering, BPR), the traditional logistics enterprise management and business process has been changed fundamentally, so that it can survive in the information society. In the EC operating environment, providing value-added logistics

services have not provide for the customer, the value-added logistics services will enhance the convenience of logistics services, to accelerate the reaction speed and reduce the service cost, extended enterprises downstream in the supply chain of the business. Using the technology of RFID network in the world all items together, can be "communication between each other and articles". RFID tags are stored in the items of information, the reader information obtained through wireless data communication network automatic acquisition to the central information system, to realize the goods identification; through the computer network to realize the sharing and exchange of information. That is to say the world through RFID and other information sensing did not have connected to the Internet, and eventually realize intelligent identification and management. The Internet of things will become the sensor network based on RFID technology, the RFID technology of Internet of things based on system is composed of the physical world and the logic space composed of 2 levels. Transportation costs under the influence of economic globalization, the increasingly fierce competition. How to configure and use of resources and it is reduce manufacturing cost and enterprises to focus on the problem. To implement this strategy, not a highly advanced, reliable and efficient logistics system is unable to realize. With the development of economic globalization and the rise of network economy, the logistics function is no longer simple in order to reduce the cost, but rather becomes improve customer service quality to enhance the comprehensive competitiveness of enterprises. At present, the logistics industry is gradually formed seven development trends, they are respectively and the third party logistics cooperative information, intelligence, environmental protection, enterprise globalization and internationalization, service quality, industry. The paper presents build intelligent logistics system based on Internet of things RFID in the platform of cloud computing.

II.LITERATURE SURVEY

IoT based Smart Delivery Box secured delivery Box which generates OTP for every active session and notifies the customer about the systematic process flow till the session isterminated. The system performs as a secured Box with minimum operational delay. Time based One Time Password increases the authenticity of the delivery vault. Global system for mobile communication module is used to send text messages since GSM network has an advantage of covering wider area of operation even during mobility of the customer.

This system presents a low cost, less time consuming, safe and effective implementation of Smart Letter Box System through the wireless sensor networks which makes the use of obstacle sensors. A special device, called a hardware kit is realized and designed for this purpose. Obstacle sensors have IR transmitter and IR receiver.IR transmitter transmits the rays. When the rays fall on to the object then it gets reflected to the IR receiver, it results that the object is detected. In the existing system users are notified by sending a text message through a SIM card, but here we introduce Android Application which gives the notification through the internet. The paper illustrates the description of this device the android application which receives the notification .This system reduces the Human efforts.

III.DESIGN OF HARDWARE

This chapter briefly explains about the Hardware. It discuss the circuit diagram of each module in detail.

ARDUINO UNO

The Arduino Uno is a microcontroller board based on the ATmega328 (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.

The Uno differs from all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega16U2 (Atmega8U2 up to version R2) programmed as a USB-to-

serial converter. Uno board has a resistor pulling the 8U2 HWB line to ground, making it easier to put into DFU mode. Arduino board has the following new features:

- 1.0 pin out: added SDA and SCL pins that are near to the AREF pin and two other new pins placed near to the RESET pin, the IOREF that allow the shields to adapt to the voltage provided from the board. In future, shields will be compatible both with the board that use the AVR, which operate with 5V and with the Arduino Due that operate with 3.3V. The second one is a not connected pin, that is reserved for future purposes.
- Stronger RESET circuit.
- Atmega 16U2 replace the 8U2.

"Uno" means one in Italian and is named to mark the upcoming release of Arduino 1.0. The Uno and version 1.0 will be the reference versions of Arduino, moving forward. The Uno is the latest in a series of USB Arduino boards, and the reference model for the Arduino platform; for a comparison with previous versions, see the index of Arduino boards.

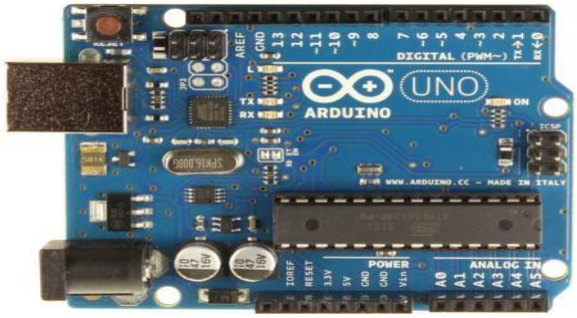


Fig: ARDUINO UNO

POWER SUPPLY:

The power supplies are designed to convert high voltage AC mains electricity to a suitable low voltage supply for electronic circuits and other devices. A power supply can by broken down into a series of blocks, each of which performs a particular function. A d.c power supply which maintains the output voltage constant irrespective of a.c mains fluctuations or load variations is known as “Regulated D.C Power Supply”.

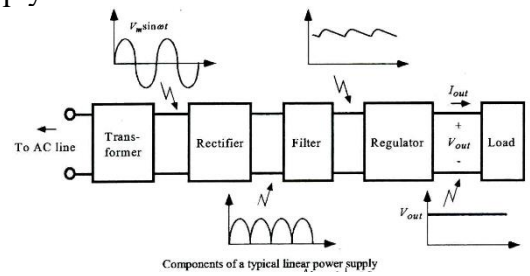


Fig: Block Diagram of Power Supply

LCD DISPLAY

A model described here is for its low price and great possibilities most frequently used in practice. It is based on the HD44780 microcontroller (Hitachi) and can display messages in two lines with 16 characters each. It displays all the alphabets, Greek letters, punctuation marks, mathematical symbols etc. In addition, it is possible to display symbols that user makes up on its own. Automatic shifting message on display (shift left and right), appearance of the pointer, backlight etc. are considered as useful characteristics.

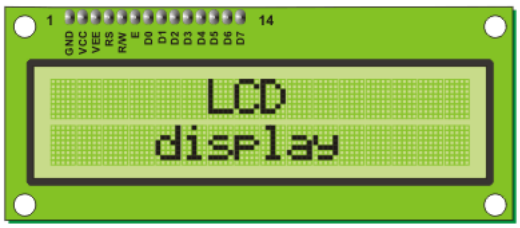
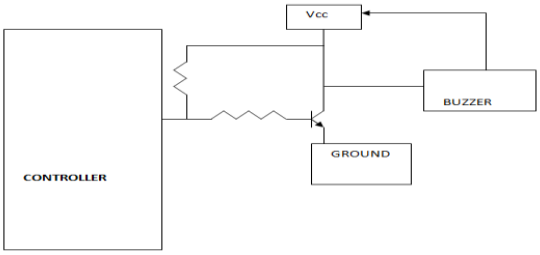


Fig: LCD

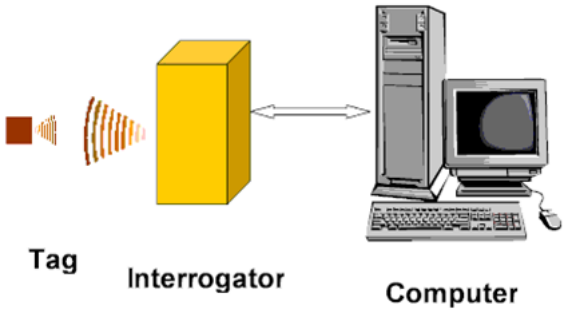
BUZZER

Digital systems and microcontroller pins lack sufficient current to drive the circuits like relays, buzzer circuits etc. While these circuits require around 10milli amps to be operated, the microcontroller's pin can provide a maximum of 1-2milli amps current. For this reason, a driver such as a power transistor is placed in between the microcontroller and the buzzer circuit.



RFID (RADIO FREQUENCY IDENTIFIER)

Radio-frequency identification (RFID) is an automatic identification method, relying on storing and remotely retrieving data using devices called RFID tags or transponders. An RFID tag is an object that can be applied to or incorporated into a product, animal, or person for the purpose of identification using radio waves. Some tags can be read from several meters away and beyond the line of sight of the reader. Most RFID tags contain at least two parts. One is an integrated circuit for storing and processing information, modulating and demodulating a (RF) signal, and other specialized functions. The second is an antenna for receiving and transmitting the signal. Chip less RFID allows for discrete identification of tags without an integrated circuit, thereby allowing tags to be printed directly onto assets at a lower cost than traditional tags.



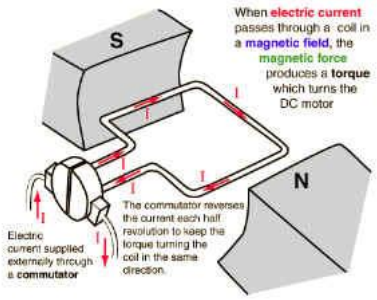
L293D:

The L293 and L293D are quadruple high-current half-H drivers. The L293 is designed to provide bidirectional drive currents of up to 1 A at voltages from 4.5 V to 36 V. The L293D is designed to provide bidirectional drive currents of up to 600-mA at voltages from 4.5 V to 36 V. Both devices are designed to drive inductive loads such as relays, solenoids, dc and bipolar stepping motors, as well as other high-current/high-voltage loads in positive-supply applications. All inputs are TTL compatible. Each output is a complete totem-pole drive circuit, with a Darlington transistor sink and a pseudo-Darlington source. Drivers are enabled in pairs, with drivers 1 and 2 enabled by 1,2EN and drivers 3 and 4 enabled by 3,4EN. When an enable input is high, the associated drivers are enabled, and their

outputs are active and in phase with their inputs. When the enable input is low, those drivers are disabled, and their outputs are off and in the high-impedance state. With the proper data inputs, each pair of drivers forms a full-H (or bridge) reversible drive suitable for solenoid or motor applications.

DC MOTOR

A DC motor is designed to run on DC electric power. Two examples of pure DC designs are Michael Faraday's homopolar motor (which is uncommon), and the ball bearin motor, which is (so far) a novelty. By far the most common DC motor types are the brushed and brushless types, which use internal and external commutation respectively to create an oscillating AC current from the DC source -- so they are not purely DC machines in a strict sense.

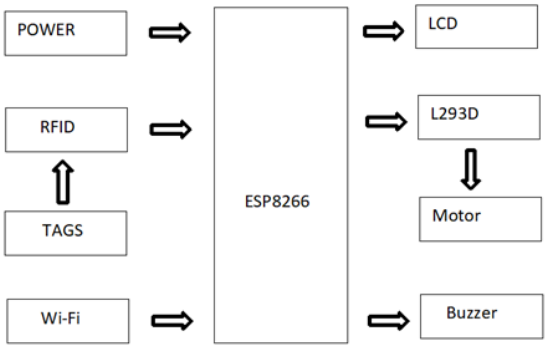


ESP 8266:

The **ESP8266** is a low-cost Wi-Fi microchip, with a full TCP/IP stack and microcontroller capability, produced by Espressif Systems[1] in Shanghai, China. The chip first came to the attention of Western makers in August 2014 with the **ESP-01** module, made by a third-party manufacturer Ai-Thinker. This small module allows microcontrollers to connect to a Wi-Fi network and make simple TCP/IP connections using Hayes-style commands. However, at first, there was almost no English-language documentation on the chip and the commands it accepted.[2] The very low price and the fact that there were very few external components on the module, which suggested that it could eventually be very inexpensive in volume, attracted many hackers to explore the module, the chip, and the software on it, as well as to translate the Chinese documentation.[3] The **ESP8285** is an ESP8266 with 1 MiB of built-in flash, allowing the building of single-chip devices capable of connecting to Wi-Fi These microcontroller chips have been succeeded by the ESP32 family of devices, including the pin-compatible ESP32-C3

IV.BLOCK DIAGRAM AND HARDWARE DISCRIPTION

BLOCK DIAGRAM:



ADVANTAGES

1. Enhanced security and safety.
2. Less human errors.
3. Providing a contactless identification and tracking.
4. Real-time delivery status.
5. Less money and time spent on tracking and handling of the package

V.CONCLUSION

The goal of engineering education is to improve living standards via ongoing innovation and investigation. Using technological improvements to improve the lives of ordinary people, an attempt has been made to streamline the delivery process, which often requires a lot of human labour and time. For delivery and logistics organisations, managing parcels, tracking, and delivery are now top priorities. Recognising the gap in the market, an automatic receiver system has been designed and will be put in client facilities as an effort.

The project work has been effectively conceived and developed. A prototype module is built for demonstration purposes, and the outcomes are deemed acceptable. Since this prototype module is still in its early stages of development, hardly much money was spent on its design or development. The whole system is built using locally accessible parts, yet significant design changes need to be made in order for it to function as a functional system.

FUTURE SCOPE

1. Package tracking has been simpler as the Internet of Things has grown. Reducing the cost of communication also means using the internet rather than GSM services.
2. To provide an additional layer of protection to the item and the box itself, the box might be constructed within the wall so that only the receiving compartment lid is visible to the outside world.
3. Artificial intelligence such as Alexia or Google Assistant may be connected to the box.
4. By using biometric verification at the customer's location, more creativity might be produced.

REFERENCES:

[1] http://postscapes.com/internet-of-things award/connected-home-products
[2] http://www.cisco.com/web/strategy/docs/gov/everything-for-cities.pdf
[3] http://en.wikipedia.org/wiki/Internet_of_Things.
[4] http://whatis.techtarget.com/definition/Internet-of-Things.
[5] http://www.wired.com/2013/05/internet-of-things-2/.
[6] Zhiyong Shi, “Design and implementation of the mobile internet of things based on tdscdmanetwork" published on 17-19th December 2010 in Information Theory andInformation Security (ICITIS), 2010 IEEE International Conference.
[7] K. Nirosha, B. Durga Sri, Ch. Mamatha and B. Dhanal axmi, Automatic Street Lights On/Off Application using IO T, International Journal of Mechanical EngineeringandTechnology, 8(8), 2017, pp. 38–47.
[8] B. Durga Sri, K. Nirosha, P. Priyanka and B. Dhanal axmi, GSM Based Fish Monitoring System Using IOT, International Journal of Mechanical Engineering and Technology 8(7), 2017, pp. 1094–110 1.
[9] Hariharr C Punjabi, Sanket Agarwal, Vivek Khithani, Venkatesh Muddaliar and Mrugendra Vasmatkar , Smart Farming Using IoT , International Journal of Electronics and Communication Engineering and Technology , 8(1), 2017 , pp. 58–66.
[10] S. Nithya, Lalitha Shree, Kiruthika and Krishnaveni, Solar Based Smart Garbage Monitoring System Using IOT, International Journal of Electronics and Communication Engineering and Technology, 8(2), 2017, pp. 75–80