Business Logistics System by Using Robust Barcode Scanner

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Abstract: One of the latest types of technology that one can use to improve logistics is the barcode which is extremely beneficial for a business. The successful implementation of barcode technology in the field of business logistics, greatly improve the accuracy and reduce the operational time. To apply the benefits of barcode technology in logistics system we have introduced wireless wifi based system. This is a much better solution because it extends the coverage area up to 32m (105 ft ). The results of tests allow stating that from the point of view of efficiency, accuracy and saving cost, the new system is fast and economical, making it highly competitive with existing warehouse management system.

Keywords: Barcode Logistics, Handheld Device, Security, wifi.

1. Introduction

Barcode technology plays an important role in automating the functions of the logistics system of the organization. Data obtained through barcodes is available rapidly. Since the information is scanned directly into the central computer, it is ready almost instantaneously. And it can read from anywhere in the organization by using wifi technology. This system increases the speed and accuracy in operations. Barcode technology provides a simple and inexpensive method of encoding text information that is easily read by inexpensive electronic readers. Bar coding technique also allows data to be collected rapidly and with extreme accuracy. A Barcode is a machine-readable optical label that contains information about the item to which it is attached. The code is searched using barcode and if it is found, the data in the database is marked as bought and a reply is sent to the central web server that the code is original.

A barcode uses four standardized encoding modes as follows:
1. Numeric
2. Alphanumeric
3. Byte/binary
4. Kanji

To efficiently store data, extensions may also be used. A barcode reader decodes a barcode by scanning a light source (i.e. laser beam) across the barcode and measuring the intensity of light reflected back by the white spaces [2]. Applications include product tracking, document management, item identification, time tracking, and general marketing.

For the entry of 12 characters of data, keyboard takes 12 sec, while scanning of 12 character data takes only 3 sec. The error rate for typing is one substitution error for every 300 characters types. Error rate for barcode range from 1 substitution for every 15000 to 36 trillion characters scanned.

2. Literature Survey

In this section, we have cite some relevant work previously done in the field of barcode technology. In this paper, Attendance in colleges is generally paper based which may sometimes cause errors. Taking attendance manually consumes more time. So the proposed attendance system uses Barcode reader to take attendance. In this system, each student is issued a barcode tag. B.B.S.A.S use Barcode reader, Barcode tags and a computer with the software which stores the database about the entire details of the student’s [2].

In this paper, the proposed system was implemented in the test hardware architecture. To confirm the system prototype, we examined several QR codes of various medical equipment and items. To avoid affecting the operation of the existing system, the development and experimental testing of the new system was conducted in a simulated environment and all test data were virtual or simulated data. The data provided by the QR and included the basic medical equipment information and the supplier’s contact information. A trustworthy system must be able to limit who can access the data in the database. Therefore, only after typing in a password and passing the validation process can authorized engineers use applications on mobile hand-held devices to scan encrypted QR codes, decode them, and obtain required information. In other words, the equipment engineers do not need to leave the repair site to search for required information [3].
This paper presents that the most of actual production is the pull, and the variety of product changes as soon as the change of client's requirement, the barcode must be directly made and printed in the field. Before generates barcode, the information such as drawing information of product, date for barcode, batch number, flow line number, production schedule, barcode type, production number, packing number, checker information and other remarks, Some information that the product name, product code, barcode type and so on are generated automatically by the system. the information of generation for barcode involves drawing information of product, production date, flow line information, batch information, coded type information, production number, checker information and so on. The barcode can be directly made and printed according to the client's requirement number, and pasted at the specified position of each of product before releasing [6].

In this paper the authors presents that when using the WMS (Warehouse Management System) in the course of outgoing warehouse, one should inspect and pickup goods according to the invoice of withdrawals or the distribution bills, when we select the products to pickup, we need to check the number and the item code of the goods. In order to facilitate to prepare goods for outgoing warehouse, we can have a constituted enquiries according to the characteristics of a product, and print the results or generate the data files who will be used to mobile terminals next, when picking up the goods, we scan the bar codes on the goods to confirm the information, at the same time, update the data of background inventory. At last we will print out a packing list and the shipping label when the goods outing warehouse [7].

In this paper, use case scenario a company X orders four 2 kg boxes of 8mm bolts and two 4 kg boxes of 16mm bolts from company Y. The order is inserted into the database. pallet is linked to the order and a barcode is printed and placed on it. Now the order goes to state “ordered”. An employee processing the order reads the barcode with a mobile phone and checks what the order includes. He places the ordered items on the pallet and changes the state to “assembled”. The barcode is read again when the pallet is placed in a truck and the state is changed to “in transit”. The ordered items arrive to company X and the driver reads the barcode and changes the state to “delivered”. Every time when something is changed, the ID of person who made the change and the time when the change was made are stored to the database [8].

3. Existing System

The existing system is not much effective. It is due to the manual intervention of a employee to enter product details in system. These interventions are causing errors and are time consuming, which is resulting in poor performance of that organization unit and it induce errors in database. The product arrives in the company, the employee enters the detail of each product manually so here it tends to delay for the processing of that products. Then the database is need to be managed manually. This increases occurrence of error, lack of efficiency and inconsistency in the data. It also causing the product theft in the transportation time.

4. Proposed System

In the new system we are introducing automated, error free, cost efficient, and time saving system with the help of barcode reader and wifi module. The Barcode Reader data must be captured and decoded into a data format that the computer can process. The device that reads or captures the barcode information and sends it to the decoder is known as the barcode reader, generally called bar code scanner. These scanners are photo sensors that read the barcodes and eventually convert them into readable text that is then displayed and kept on a computer [4]. Here we are using barcode scanners to detect and decode the barcode placed on products by using the light source, then the wifi (USR-232) or any transmission media like ZigBee, Bluetooth, USB transmits the data to workstation. Then it updates the database as required like stock up, stock down.

5. Improved Mathematical Modeling

Inputs:
I=I1, I2
Where, I1=Barcode, and I2=Product Information

Functions:
F=f1, f2, f3
Where, f1=Hardware input, f2=Transmit Data, and f3=Update product information
Output:
O=O1,O2,O3
Where, O1= Inventory Management, O2=Barcode generator, O3=Print report

6. Conclusion and Future Scope

Thus we have developed the system in which we will scan the barcode on product by using barcode scanner and the barcode is decoded into textual form by using wifi USR-232 the data will be transmitted to workstation and the database is updated. Here, the wifi greatly extends the coverage area, which can help the employee to properly maintain the database without introducing any kind of typo errors, or any delay, with high rate of efficiency and with the use of wifi mobility is also achieved. It also reduces the human efforts and easy to operate, no technical skilled person is required to handle the system.
This system can be extended by adding battery which can increase mobility and with the use of cloud computing system it can be handled from anywhere at any time. This proves that the future of barcode is quite safe and this will become more popular among people.

8. References