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"Furniture Inventory Management System"

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Abstract: Manual handling of the inventory leads to the wastage of time, reduced efficiency and more over keeping track on the inventory. Also, accuracy of maintaining the inventory becomes impractical some times. This project works in intended to minimize the above mentioned drawbacks using automatic identification and tracking of the inventories with the help of RFID technology. The advantages of using automatic inventory management system are well organized and fast work done, increased efficiency including data security. This project will help to reduce human error and high labor intensive activity. Also it will be responsible for easy sharing of information through the office, maintaining shipping orders, stock out and accelerate processing such as quick packing, also reduce labor cost.

Keywords: Inventory, RFID, Data Security.

I. INTRODUCTION

In recent years, Radio Frequency Identification (RFID) technology is being frequently used in commercial transactions inside the companies, allowing to facilitate and to improve of agile way the complex processes in less time. It is form of identification system which makes use of radio waves in retrieving data from an appliance called a tag or transponder. [1]

This project is intended to develop a system for inventory management to identify and track objects using RFID. Graphical User Interface is developed for interfacing the RFID reader with computer. Also it uses RF that is radio frequency to track the items. Multiple items can be scanned at once. RFID tags can be read from distance allowing for even quicker scanning. There are many applications of RFID in various areas in our everyday life such as in bookstores, libraries, asset tracking, traffic management, supply chain etc. RFID offers a fast and effective way of collecting information, for instance, tracking stock in a warehouse, as well as tracking the whereabouts of items [4]. RFID based Furniture and inventory management system is efficient and real-time. In this project microcontroller PIC18F25K22 is used. It has 1.5 Kb of RAM 32 Kb of ROM. One RFID card requires 8 byte of memory, if the number of cards increases, simultaneously memory space required increases. PIC18F25K22 microcontroller overcomes this problem due to sufficient memory.

II. AIM AND OBJECTIVE

In this paper, the main aim is to design system for inventory management & object tracking using RFID & Wireless technology. To fulfill the aim, the project will focus on following objectives:

To reduce labor cost human error & high labor intensive activity. To Increase the efficiency of operation.To witness the fast & accurate operation.

III. PROPOSED WORK

In this paper the proposed work of this project is to minimize the wastage of time,reduced efficiency and morover keeping track on the inventory.

Selection keys are used to select the furniture. Ex: - chair, table. RF Module does transmission and reception both. It works at 2.4 GH frequency. It forms mesh i.e. same data can be transmitted to different PC. RFID works on select communication. On selection of any item, the IDof the selected card will be sent to the microcontroller.16*2 LCD module is being used here as display. It consists of 16 rows and 2 columns of 5*7 or 5*8 LCD dot matrices.PIC18F25K22 microcontroller is used. It consist of USART in which serial communication is done i.e. transmission and reception of datasimultaneously. Oscillator circuitprovides clock pulses. Power supply of 5V is provided.

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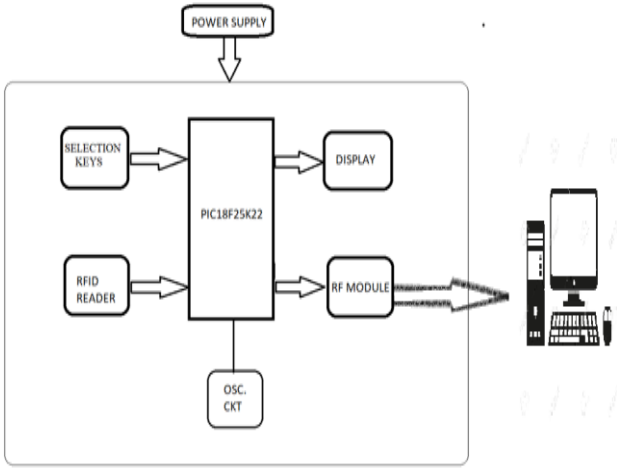

Fig1.Block Diagram

IV. CIRCUIT DIAGRAM AND WORKING

Every component will have own storage space. Through Selection key users will select the Furniture for ex: - chair, table. Through coding the Furniture parts are listed, if we select the furniture and there are suppose 10 parts available in the warehouse, the system will check if the part in the list belongs to the particular furniture or not just like a switch case. If the part belongs to the furniture the component will get added to the list simultaneously database component will automatically get decrement by one. Accordingly it develops a database for Asset Management System. Oscillator circuit proved the clock pulse.

Power supply section is 9V battery powered,470 uF Filter Capacitor to avoid the fluctuation,7805 regulator IC which provide constant 5V output. Power supply is provided to RF Module, RFID Reader, Display, PIC18F25K22. PIC18F25K22 microcontroller has 1.5 Kb of RAM 32 Kb of ROM. consist of USART in which serial communication is done i.e. transmission and reception of data at the same time.

When RFID will read the RFID card the card number is send to the UC.UC will check the product on the card number, for example screw, nut, clamp ,switch etc. It will be displayed on LCD. Keypad consisting of 4 keys YES, NO, CONFIRM, EXIT. If we press yes, the data will be sent to PC side RF transreciever by UC, it will check in inventory if the item available. If available then "added to cart", message will be displayed simultaneously moving on to the next item and so on. After collection of all the items, there is exit switch to exit. Exit will give command to the system and it will deduct collected items from data, updated data will display on software.

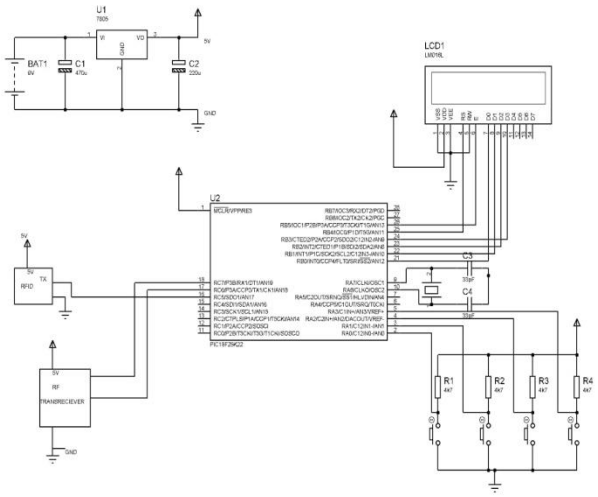

Fig 2. Circuit Diagram

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V. USE CASE MODEL

In the development of the system, the scope of the project was taken into account and the main roles and functions of the actors interacting with the system were established. In this process, three actors were identified and the activities that they carry out in the system. In the following figures, the main models are shown.

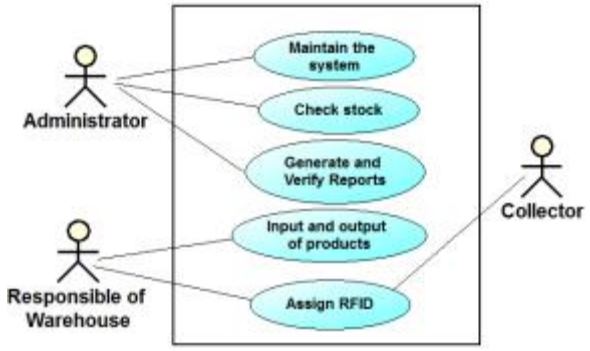

Fig 3. General Use Case Model

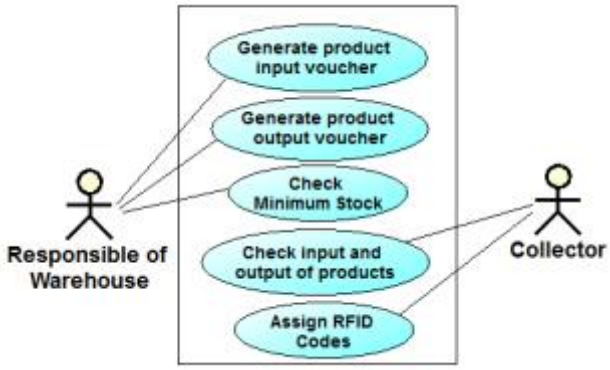

Fig 4. Control of Inventory Use Case Model

VI. CONCLUSION

The RFID Based inventory management system is basically developed for sites for better management of stores particularly for storage sites where the components are stacked for years from starting of the site to the commissioning of the site. On implementation of this RFID system, it is observed that the performance of semi active and passive RFID tags in a highly metallic environment is satisfactory and it can very well be implemented to the green field projects coming up in near future for better utilization of in-house developed RFID inventory management system.

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