

# Automatic Intelligent Conveyor Belt Along With Embedded System On Library And Medical Pharmacy

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**I. ABSTRACT:** In the speed running world everyone are considering the time factor as important issue. To reduce this time or managing this time, a small implementation which is useful to industries is our project. Today in industries, same model or same object is manufactured with little variation like color, size...Etc. In medical and library this concept is being used when user request the book or medicine using GUI (Graphical User Interface). The command will be transferred to the microcontroller using zigbee Transceiver wireless device and the microcontroller receives and transmits the signal using zigbee and process the input and accordingly activate the conveyor the book will be come out and automatically retrieve itself when user take the book. Likewise in medical pharmacy the medicine data will be transferred to the microcontroller then medicine indicators indicates the tablet that user want whole systems are communicated with zigbee protocol wireless sensor network and the RFID is used to identify the book name and microcontroller says which book should be placed on which conveyor the proximity sensor is used to check whether the book is placed on place or not placed. If it is not placed it will make an alert to the librarian system and the book section also.

## II. INTRODUCTION

A library is used to a collection of information resources .It provides invaluable service to its members, to a wider local community .Typically we need a librarian to pick the book and handover it to the person to whom the books are being issued .This might be any easy task in case the library floor are is small.Also,to search for book by humans take a lot of timers many a times the books get overlooked human eye. To overcome this problem we introduce automation in library to fast diction of books and for picking we suggest a conveyor belt which will be able to find out the book with the required tag and then pick the corresponding book.RFID take is used to identify the book and to avoid the misplace the book along with proximity sensor .

## III. HARDWARE AND SOFTWARE

This automated library system becomes an important topic .These systems are very essential and useful to reduce human power and save the time. Various section of the system is:

- Conveyor Belt
- PIC 16F877A
- RFID Reader
- Proximity sensor

## A. CONVEYOR BELT SYSTEM

A conveyor belt uses a wide belt and pulleys and is supported by rollers. Belt conveyor system is many types are available. A belt conveyor system consists of two pulleys with an endless loop of carrying medium. The conveyor belt rotates around the system. If both of the pulleys are powered then automatically material on the belt are moving towards counter. The powered pulley is called the drive pulley while the unpowered pulley is called the idler pulley. As per its specification, Conveyors are durable and reliable components used in automated

system. Due to this conveyor belt used in automation we reduce the labour that allows less time to move rapidly through a process. DC motor DC geared motor 10RPM 12V are used for robotic application. It is Very easy to use and available in the market. Motor operation based on electro magnetism. DC motor offer excellent speed and position control, long life and high torque density. It gives higher efficiency and ability to withstand harsh environments.

## B. PIC16F877A

This powerful (200 nanosecond instruction execution) yet easy-to-program (only 35 single word instructions) CMOS FLASH-based 8-bit microcontroller packs Microchip's powerful PIC @ architecture into an 40-or 44-pin package and is upwards compatible with the PIC16C5X, PIC12CXXX and PIC16C7X devices . The PIC16F877A features 256 bytes of EEPROM data memory, self-programming an ICD, to comparators, 8 channels of 10 bit analog to digital (A/D) converter, 2 capture/compare/PWM functions, the synchronous serial port can be configured as either 3-wire serial peripheral Interface (SPI<sup>TM</sup>) or the 2-wire Inter-Integrated circuit (I<sup>2</sup>C<sup>TM</sup>) bus and Universal Asynchronous Receiver Transmitter (USART). All of these features make it ideal for more advanced level A/D applications in automotive, industrial, appliances and consumer applications.

## FEATURES:

- 2PWM 10-BIT
- 256bytes EEPROM data memory
- ICD

- 25m Asink/sourcper I/O
- Self-Programming
- Parallel slave port

### C. RFID READER

Radio Frequency Identification (RFID) reader. The ISC. It operates in wide range frequency. It is using RS232 protocol to directly connect the RFID reader to The PC. It gives serial and Triggered Time Logical output along with Two RFID cards. It may have their own processing power and internal storage, and it operates on different frequency and available in many forms.

### D. RFID TAG

To identify the radio frequency by using RFID tag when it placed in object. RFID tag has a small battery on board and it is activated when RFID reader present in the system. It transmits ID signals periodically. A passive tag is cheaper and smaller because it has no battery. The tag stored in nonvolatile memory.

### E. PROXIMITY SENSOR

Infrared proximity sensor made by sharp. Part # GP2Y0A21YK has an analogy output that various from 3.1V at 10cm to 0.4V AT 80cm. The sensor has a Japanese Solder less Terminals (JST) connector. We recommend purchasing the related pigtail below or soldering wires directly to the back of the module.

### F. GUI

Graphical User Interface which is used to enable the user to select the book and transfer the book details to microcontroller and controller drives the corresponding relay to control the conveyer open and close.

### G. ZIGBEE

Zigbee is an IEEE802.15.4-based specification for a suite of high –level communication protocols used to create personal area networks (PAN) with small , low- power digital radios.

The technology is similar to wireless communication such Bluetooth, WI-FI. Applications include wireless light

switches, electrical meters with in-home-displays, space traffic management system and other consumer and industrial equipment that require short-range low-rate wireless data transfer. Modulation technique for zigbee depends on (DSSS) Direct Sequence Spread Spectrum.

Zigbee having not rechargeable battery (one reason batteries will last for upto 10 years). It having 250 kb/sec network speed.

## I. SOFTWARE REQUIREMENTS :

### 1. EMBEDDED C

Embedded C is a set of language extensions for the C programming language by the C standards committee to address commonality issues that exist between C extensions for different embedded systems. Historically, embedded C programming requires nonstandard extensions to the C language in order to support exotic features such as fixed-point arithmetic, multiple distinct memory banks and basic I/O operations.

### 2. SDCC

The Small Device C Compiler (SDCC) is a free-software, partially retarget able[1] C compiler for microcontrollers. It is distributed under the GNU General Public License. The package also contains a linker, assembler, simulator and debugger. As of March 2007, SDCC is the only open-source C compiler for Intel 8051-compatible microcontrollers.

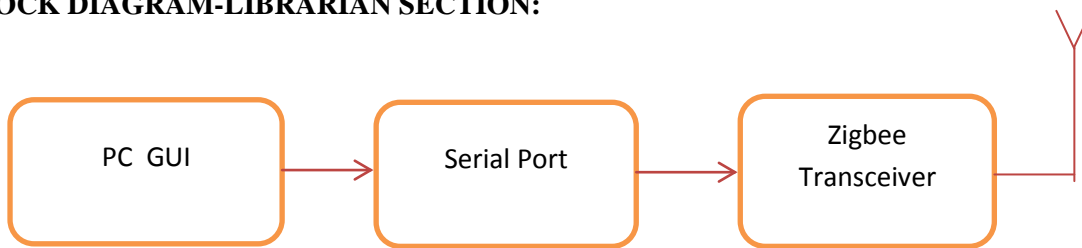
### 3. PROTEUS SIMULATION SOFTWARE

The Advanced Simulation Option can be added to all Proteus PCB Design and Proteus VSM products including the Starter Kit. It extends the functionality of the basic simulator to provide a full range of graph-based analyses. Graph based simulation is akin to conventional SPICE simulation where you first draw the circuit, set-up source generators, select points to be monitored and then run the simulator. When the simulation is complete the results are displayed and you analyze these at your leisure. The Proteus Design Suite with the Advanced Simulation Features module makes this as effortless as possible.

### 4. JAVA WINDOWS APPLICATION

In computer science, a graphical user interface or GUI is a type of interface that allows users to interact with electronic devices through graphical icons and visual indicators such as secondary notation, as opposed to text-based interfaces, typed command labels or text navigation. GUIs were introduced in reaction to the perceived steep learning curve of command-line interfaces (CLIs),[2][3][4] which require commands to be typed on the keyboard.

**BLOCK DIAGRAM-LIBRARIAN SECTION:**



**BLOCK DIAGRAM- CONVEYOR SECTION:**

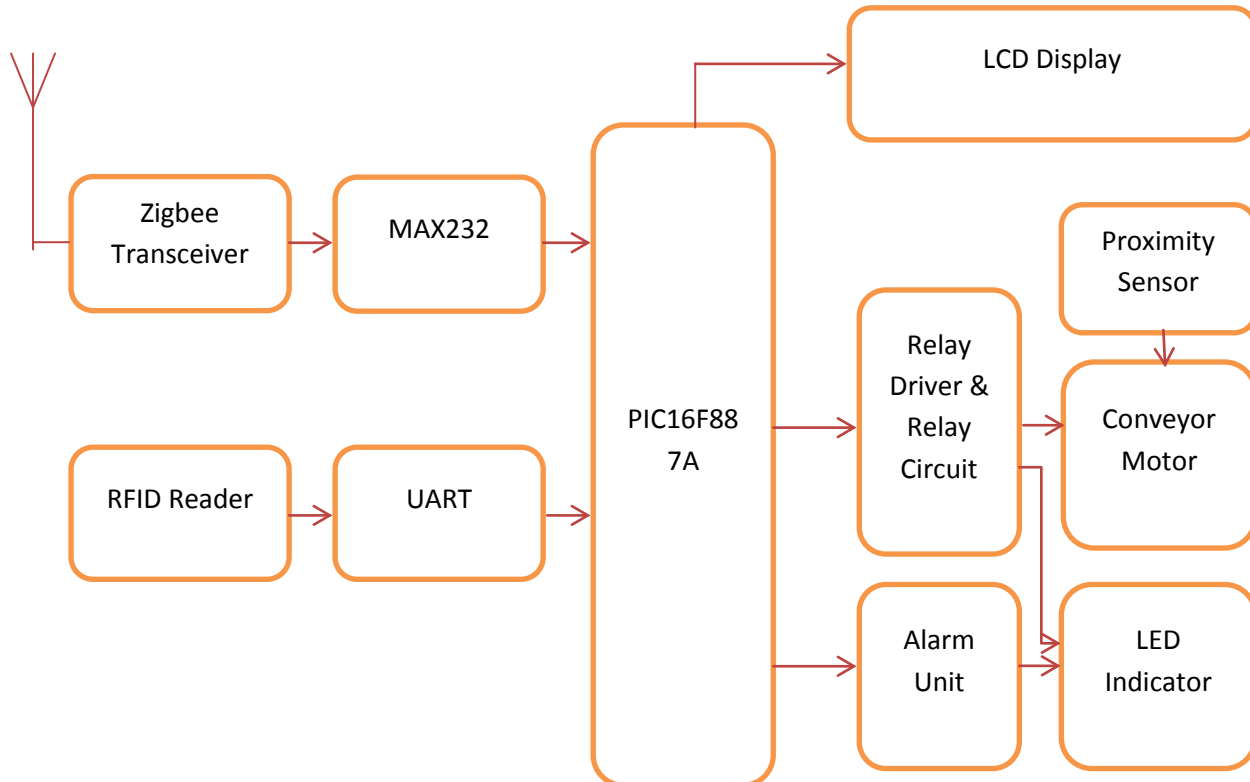


Fig 1: Block Diagram of system

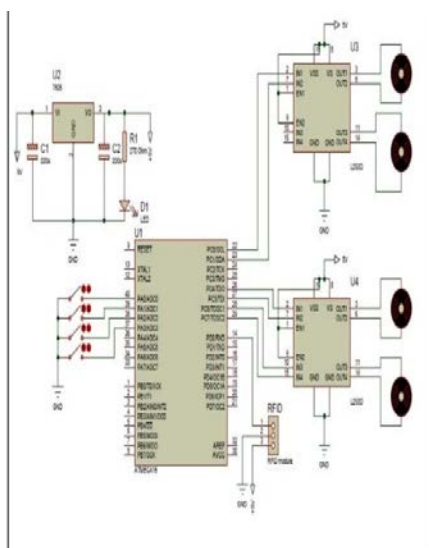


Fig2: Model Proteous Simulation

**CONCLUSION**

To pick the specific book and place it on the conveyor this was the first objective of our project which we have achieved . This project implements the concept of embedded system, Automatic Conveyor and GUI RFID communication. The idea of library automation can be achieved with the help of this project.

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