

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Tracking System for Tranquil Environment in Hospitals

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ABSTRACT

We had found out about various sorts of following system to follow out the required item from right around an unknown place. In this mission we are going to outline a system that has basic application in clinics. The specialist and medical caretakers in the clinics are backing to help the out patients and in patients. Every specialist needs to check up his patients as of now conceded in the healing center. In emergency, cases the powers will confront an issue to follow out the specialist or some other staff of the doctor's facility, particularly in greater foundations. The expense of this issue might bring about loss of one life. Here we are attempting to take out this issue. In this framework every last individual including specialist, medical caretaker, other staff, understanding, bi-stander and the guest will give an electronic card. Keeping in mind the end goal to enter in a room, the individual must embed this card in the attachment fitted on the entryway. The framework will confirm the card and open the entryway if this card is a substantial one.

Keywords: 8051 Micro Controller, Relay Driver, DC Motor, Serial Communication Interface, RS232 Line Driver.

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INTRODUCTION

In this mission we are going to device a system that has vital application hospitals. The doctor and nurses in the hospitals are support to assist the out patients and in patients. Each doctor has to check up his patients already admitted in the hospital. In emergency, cases the authorities will face a to trace out the doctor or any other staff of the hospital, especially in bigger establishments. The cost of this problem may result in loss of one life. So to overcome this problem we are going to install a system at each, door which has its own control circuit that is connected to a server. The door control circuit will send the details of the card including the name of the person to the server. The server will upload this information along with the room number to a computer provided to the security officer. The computer will preserve these information for future use. In order to trace out a person, the security officer can either check the entry details on the screen or he can search with the name of the required person. With this system we can eliminate trespassing in to a room and can monitor the persons who avail entry to the room. [1] explains the system, developed using commodity hardware, comprised a Bluetooth-enabled home BP monitor, a mobile phone to receive and transmit data, a central server for data processing, a fax-back system to send physicians' reports, and a BP alerting system. [2] addresses the available wireless body area network prototypes and the issues related to hardware implementations, software and wireless protocols and how smart phones can be used as full featured portable computer in providing healthcare services. [3] addresses implementation strategies for large-scale information infrastructures in healthcare. [4] describes the deployment of a prototype demonstration tool aimed at facilitating users' engagement with the design, development and implementation of EHRs. [5] The approach is to develop an Electronic Inventory that can keep track of surgical item used during surgery. [6] proposes an approach about neurological disorder in patients & [7] investigates the use of animation tools to aid visualisation of problems for discussion within focus groups, in the context of healthcare workers discussing electronic health records (EHRs).

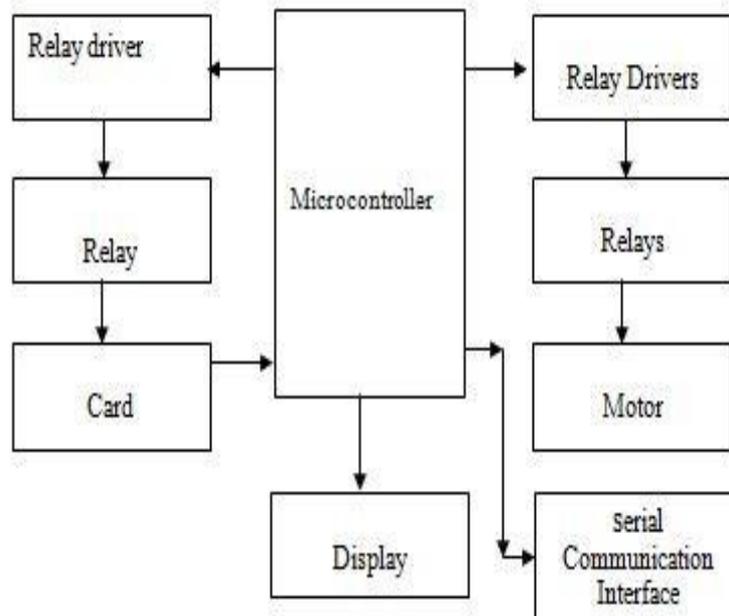


Fig 1: Door control system

BLOCK DIAGRAM

Door control system

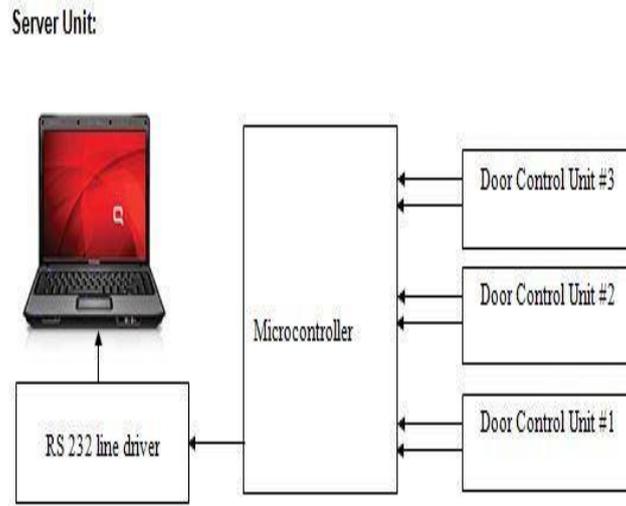


Fig 2: Server Unit

BLOCK DIAGRAM EXPLANATIONS:

This system has three units:

1. The foremost unit is door control unit that takes the ultimate decision to close or open the door.
2. The second unit is server unit that acts as an interface with the door control unit
3. The third unit, a personal computer.

The door control unit is equipped with a card reader unit, a display unit, a serial communication interface and a door opening circuit. The card reader unit holds an electromagnetic switch (relay) that can be switched on or with the help of voltage. This switch is used to apply or withdraw power to the electronic card before inserting or pulling out the card.

RELAY DRIVER CIRCUIT:

The relay is used to isolate both the controlling and controlled equipments. Here it is utilized to drive the door by driving a motor. Also the power to the card is switched through another relay. The relay is an electromagnetic device, which consumes comparatively large amount of power. Hence it is impossible for the microcontroller to drive the relay satisfactorily. Therefore, a relay driver circuit is must between the microcontroller and the relay. The Driver circuitry senses the presence of a "high" level at the input and drives the relay from another Voltage source.

DC MOTOR DRIVER:

The door control unit is equipped with a dc motor so that we can open or close the motor by simply reversing the direction of the motor. The direction of an ac motor cannot be reversed, but the direction of the dc motor can be reversed by reversing the polarity of the supply across the motor. The details of the

personals are stored in an electronic memory that acts as the card. We are planning to use a serial non volatile memory to store these data since the serial memories requires only two lines to transfer data along with the supply lines. The display units are incorporated to perform the machine man interface through which the machine interacts with the user. The user is first advised to enter his / her card in the socket and remove it once the system read the data. Also other commands to the user and conveyed to the user through this unit. We are planning to use 16x2 line alphanumeric intelligent Liquid Crystal Display Unit in these blocks since we want to display both alphabets and numerals.

SERVER UNIT:

The second segment of this framework is a server unit. The server unit, sit tight for the transmission demand from any one the hubs connected to the server unit. The server recognizes the transmission demand on the off chance that it is out of gear mode. The hub control units send the subtle elements of the persons who need to enter in a room and the server unit gets this information and showcases it on the 16x2 line alphanumeric savvy Liquid Crystal Display unit appended to the server unit. However this showcase unit is not appeared in the piece chart sue absence of space. After a successful gathering, the separate sends this information to the PC through the serial correspondence port of the PC. The PC's serial port takes a shot at the RS232 line driver convention in which rationale levels are transmitted with various polarities. i.e. a rationale one in TTL circuit is spoken to by 5V, while in RS232 it is spoken to by a negative voltage. In like manner a rationale low level in TTL framework is spoken to by a positive voltage in RS232.

This thus requires a TTI to RS232 line driver. The 8- bit microcontroller AT89C51 or AT89C52 from ATMEL is chosen to control the framework .We are wanting to compose a product in visual essential with a specific end goal to handle the occasions and to store the individual information and section points of interest.

CIRCUIT DIAGRAM:

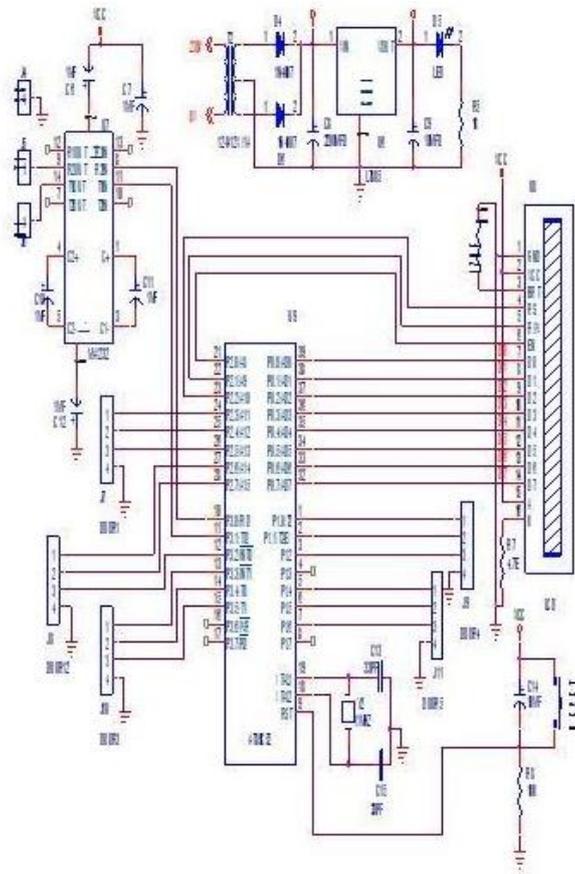


Fig 3: Circuit diagram for server unit

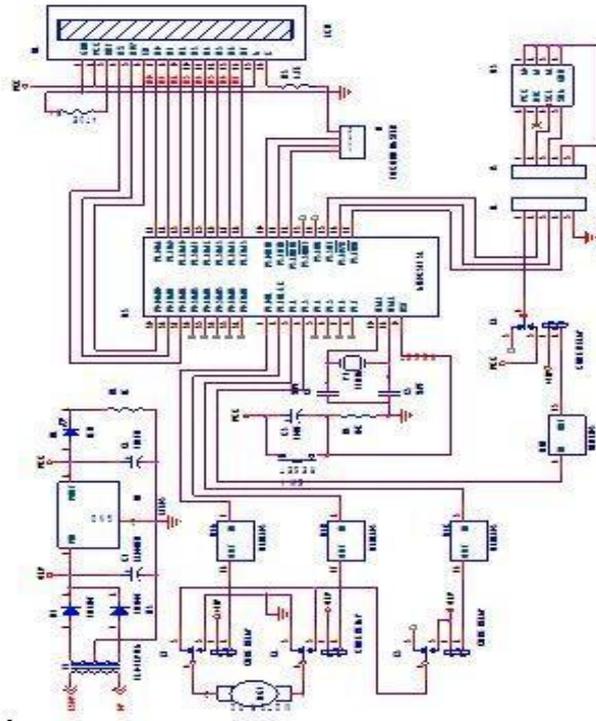


Fig 4: Circuit diagram for door control

PCB DESIGN AND FABRICATION:

The initial step of collecting is to secure a printed circuit board. The manufacture of the system counter assumes a vital part in the electronic field. The accomplishment of a circuit is likewise relies on upon the PCB. Similarly as the expense is concerned the more than 25% of the aggregate expense is away for the PCB outline and creation. We are utilizing a small scale controller-based framework that handles high frequencies. In the high recurrence circuit the information might effectively be damaged in the PCB because of the physical parameters. That is the track capacitance and inductance can bring about the cross talk in the transports. Additionally undesirable clamor can be prompted to supply rails and from that point it can influence the aggregate reaction. Henceforth the PCB plan has a noteworthy part in the framework execution. Outline of a PCB is Consider as the last stride in hardware circuit plan and the initial phase in the creation of the PCBs. It frames a far off component in hardware circuit's execution and dependability. The profitability of the PCB and its get together and administration capacity likewise relies on upon the configuration. The planning of the PCB comprise of the outlining of the format took after by the era of the fine art. Orcad is a minimal effort highlight rich programming bundle for outlining hardware circuit charts. The different instruments in Orcad and their usage and planning the PCB are examined underneath. With the coming of effective processing framework and intelligent programming, a few stages in the configuration and improvement of an electronic circuit has experienced computerization. The product and this equipment device, which hempower this robotization are called EDA instruments. This instrument offers us in a manner that we some assistance with canning draw that circuit; list the working of the circuit in light of the best inputs in digestion programming after fruitful mimicking the circuit.

RESULTS AND BENEFITS

A framework that can follow out the specialists, attendants, patients, onlookers and other staff is conceived according to the above subtle elements. The framework demonstrates an outstanding execution as for our endeavors. Also, it delivered an enormous result. We could actualize the framework effectively with all the required details.

CONCLUSION

A framework that can follow out the specialists, medical caretakers, patients, spectators and other staff is contrived according to the above subtle elements. The framework demonstrates an outstanding execution as for our endeavors. The framework is formulated in three units, a correspondence expert unit, entryway control units and a PC. The transformer ventures down 230V supply voltage to a low greatness supply and the rectifiers, changes over this low voltage air conditioning into unidirectional current. Channel capacitors are utilized to decrease the swells in the yield voltage and controllers are utilized to give direct present. . The clock generator segment conveys clock recurrence to the center of the microcontroller and recurrence will be that of the gem associated over the XTL1 and XTL2 pins. Above all else we can concentrate on the entryway controller. This unit is furnished with a force supply unit, card per user unit, a dc engine drive and a 16x2 line alphanumeric smart Liquid Crystal Display unit. The microcontroller in this unit trains the client to enter his card in the given opening. . However the associations of the card printed circuit board will drive this pin rationale low level similarly as the card is kept in the attachment. The system will hold up until this pin voltage goes to rationale low level. The system moves the data stored in the card to the internal registers starting from 10h to 25h. The system will proceed only after the user removes his card. The system there after seeks the access code 'E0h' stored in the location 10h in the card, 20h in the microcontroller. The system will open the door by driving the dc motor in clockwise direction for 5 sec and switch it off. . The door will be closed after 5 second and the system uploads this data to the communication master.

The microcontroller will clears its 'TXD' pin and checks whether the communication master acknowledges the request. If the communication master failed to acknowledge this request the microcontroller will display communication error. Otherwise the microcontroller will send the user information to the communication master and the communication master uploads this data to the personal computer. The program will jump to the start condition after uploading data. The microcontroller in the communication master starts fetching instructions from the address location 0000h in the internal ROM. The master controller in this unit will display the name of the subject and room number, whichever is transmitted by the card, in the display unit. Also the microcontroller sends this data to the personal computer via RS232 level converter that interconnect the serial port of the personal computer and the UART in the microcontroller. The door controller sends data bit by bit and communication master receives this data and stores it in a temporary buffer. After all data are received, the communication master displays the room number and the name of the user. The program starts uploading this data to the personal computer via serial communication interface port of the personal computer. After initializing the serial communication port, the visual basic will display the frames and forms used in GUI. The Visual Basic 6 program will save the received data in the text box labeled as 'Global Entry' as soon as the data reception is completed. The received data string will be analyzed thereafter and the room number is identified. The name of the person and entry time along with date is also printed in the text box given to that room number. The program will open the text file reserved for that user and register his current entry. The security officer can watch the entry of the any person any time by simply searching the data base. The program will open the file for that user and load the information to a pop up screen. The photograph of that user is also loaded to the pop up window. The widow routine can be ceased by simply clicking the exit button.

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