

Library Management and Enquiry System using GSM

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Abstract-The Library management system is the application software that is developed to make a record of Book purchasing, book searching, book issuing and rent, book returned, catalogs, stock creation, all other fine books, popular and bestsellers and other Library related works. The aim of the project is to make the manual handling of Library system into computerized system which includes all above features. The scope of this software application is to generate the automatic process of manual handling of Library records and to handle the stock as well as book issues related information. Maintaining records of application for estates, the annual system is too complex & cumbersome. Since time and resources available we have been proposed to developed an inventory system

.All the outset the application requirements were studied and analysis and design were carried out. The development platform and software tool were identified as visual basic 6.0 and access database. Using visual programming, object are manipulated directly and also due to the feature of fast and easy prototyping and GUI building visual basic 6.0 as used.

Keywords: GSM, LCD, RS 232, library management system, mobile phone.

I. INTRODUCTION

In library there are various types of books with various authors are available. And to keep track of all of them is bit difficult job. This system is used to keep a record of them. Also it provides one advanced feature as students or user can check the status of particular book with the help of just SMS, and in addition to that he can also secure the same book with the help of single SMS. At the same time library person gets the intimation on the LCD display provided on the module with book name and mobile number.

In order to get compatibility with current library records, database is made in MS Access. User interface software is designed in Visual Basics 6 language. There is standard serial communication between module and computer. Microcontroller and LCD are used for visual indication for librarian.

Libraries are the source of knowledge and wisdom, but with the increasing education branches and new researches, millions of the books are being added to libraries. Manual sorting and placement of these books in shelves is a time consuming and cumbersome process for humans. This often results in incorrect placement of books on shelves. Consequently people find it difficult to locate the book because the exact location of book returned by the database differs from its present location. Thus an efficient and automatic book

placement system is required to facilitate the people in locating the desired book in a short period of time. The question then arises to which information is necessary to automate the system. The front cover of the book contains information such as the title of the book, edition of book, name of authors and also publisher name in some cases.

II. LITERATURE SURVEY

In [1], Umar Farooq has describes Automatic book placement and book searching technique for performance enhancement of existing library systems that the book placement mechanism issued to ensure the placement of book according to assigned code to facilitate manual searching. In [2], Veeramuthu Venkatesh has proposed Enactment of smart library management system ubiquitous computing that the Web services are intended for realizing, storing, processing and disseminate data from environmental resources. Context aware is concerned with reasoning and adapting the environmental context on the server side and providing services to the clients in an efficient way. In[3], Sree Lakshmi Addepalli has proposes RFID Based Library Management System that would allow fast transaction flow and will make it easy to handle the issue and return of books from the library without much intervention of manual book keeping which benefits

by adding properties of Trace ability and security. . In [4], Library is a fast growing organism. The ancient methods of maintaining it are no longer dynamic and efficient. Library automation refers to mechanization of library housekeeping operations predominantly by computerization. It is found that this automation projects will serve as a model for any library. Being an open source, any Library wanted to go for automation for their library housekeeping operations can make use of this software. In [5], Akansha Verma has proposed in research paper RFID Library Implementation that, this research paper shows how one can actually implement RFID into libraries. Paper shows the library scenario to give a clear understanding where the readers, tags and antennas will be placed in an example library.

Objectives:-To reduce the number of worker, After the system will be computerized only a single compute operator will be needed to operate the system while now more than one workers work in the system. To reduce the load, as the new system will be computerized, the database will be automatically updated at the time of entry. Everything will be done automatically just by clicking few buttons. There will be no need to maintain any files or registers.

III. SYSTEM ARCHITECTURE

In library there are various types of books with various authors are available. And to keep track of all of them is bit difficult job. This is system is used to keep a record of them. Also it provides one advanced feature as students or user can check the status of particular book with the help of just SMS, and in addition to that he can also secure the same book with the help of single SMS. At the same time library person gets the intimation on the LCD display provided on the module with book name and mobile number.

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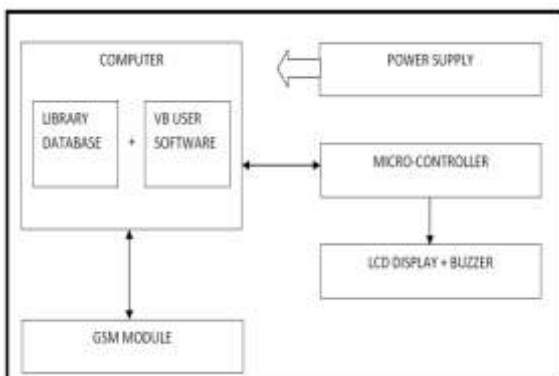


Figure 1. System Block Diagram

As shown in Figure 1. System block diagram, computer is connected via serial RS232 interface. On computer database and VB software is connected. Also GSM module communicates with PC. Micro controller is interfaced with LCD display and buzzer. Power supply is to provide supply to

each component.

When some user/student wants to enquire for the particular book he has to send SMS to the system mobile number in specific format. System will search for the requested book in the database. Based on the availability system will send back SMS to user. After that if user wants to secure the book, user will have to reply again in predefined format. Then system will give intimation to concern library person, with mobile number, book name & other details on LCD display with buzzer. This enables user to save his time as requested book will be ready available at the library desk.

IV. SYSTEM REQUIREMENTS

The system required are, hardware & software. Hardware includes GSM Modem, LCD Display, Microcontroller IC 89s52, RS 232 & Software includes, Visual Basic, MS access.

1. Hardware

A. GSM Modem:

This is a plug and play GSM Modem with a simple to interface serial interface. Use it to send SMS, make and receive calls, and do other GSM operations by controlling it through simple AT commands from micro controllers and computers. It uses the highly popular SIM300 module for all its operations. It comes with a standard RS232 interface which can be used to easily interface the modem to micro controllers and computers.

The modem consists of all the required external circuitry required to start experimenting with the SIM300 module like the power regulation, external antenna, SIM Holder, etc.

Features

- Uses the extremely popular SIM300 GSM module
- Provides the industry standard serial RS232 interface for easy connection to computers and other devices
- Provides serial TTL interface for easy and direct interface to microcontrollers

B. LCD:

It is a flat panel display, electronic visual display, or video display that uses the light modulating properties of liquid crystals. Liquid crystals do not emit light directly.

GENERAL SPECIFICATION:

- Drive method: 1/16 duty cycle
- Display size: 16 character * 2 lines
- Character structure: 5*8 dots.
- Display data RAM: 80 characters (80*8 bits)
- Character generate ROM: 192 characters
- Character generate RAM: 8 characters (64*8 bits)

C. Microcontroller Unit:

We can use PIC or MCS51 Family micro-Controllers. GSM module can communicate with the PC through the PIC or Microcontroller board. MAX232 and other level converter circuitry can be used for interfacing.

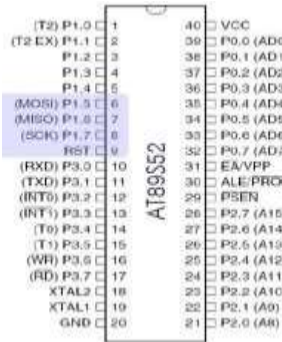


Figure 2. Microcontroller IC 89s52

D. RS232:

RS 232 is a serial communication cable used in this system. Here, the RS 232 provides the serial Communication between the microcontroller and the outside world such as display, PC or Mobile etc. So it is a media used to communicate between microcontroller and the PC. Here RS232 serves the function to transfer the edited data from PC (VB software) to the microcontroller for the further operation of the system.

2. Software

A. Visual Basic:

Visual basic used to build very complex applications. VB is a software that can be perform all essential management functions. Can used for create database, store data and Edit data record.

B. MS Access:

Database is a collection of information. Using it u can manage your all information. It is easy to use and learn. More reliable for data updating. Data security is a high.

V. DESIGN METHODOLOGY

Flowchart

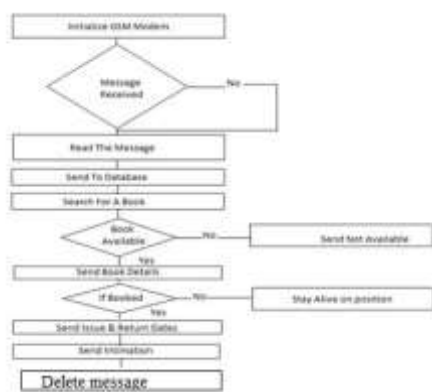


Figure3.flowchart

Algorithm

The implemented algorithm is shown in Figure.4.as follow

1. Initialize the GSM Modem.
2. Check the message.
3. If Message Receives read it.
4. Send it to Database.
5. Search for the book.
6. If book is available send book details or else send not available.
7. IF booked, send issued date or else stay alive on position.
8. Send the intimation.
9. Stop.

VI. Result

The system is tested with different books having different edition for sending query. It is found that 75% of time, system has remained successful by availing books.

VII. CONCLUSION AND FUTURE WORK

In this paper we have presented a library management & enquiry system using GSM. Here mobile phone are used by each user so that the user will be authorized and time consumed by the user and the librarian will be reduced to some extent. A GSM modem is used for sending message to the user regarding the last due date of returning the book and the fine to be paid if the book is not returned before the due date. The system will help to reduce the waiting time of users in queue for issuing and returning of books in the library.

My future work is to cover other module of library which is not explained in this paper i.e. searching module for the library i.e. booking searching.

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