



ADVANCED LIBRARY MANAGEMENT SYSTEM USING SMART CARD

Kr. Manohar¹, M.Saritha², G. Ravindranath Kumar³

¹Pursuing M. Tech (ES),²Assistant Professor,³Professor

^{1,2,3}Visvesvaraya College of Engineering and Technology

Patelguda, Ibrahimpatnam, Rangareddy Dist, Telangana, (India)

ABSTRACT

The Library management system is a very important issue in schools, colleges and public libraries in villages and towns. Compared to the olden days, the utilization of libraries and books became less due to the development in the field of electronics and computers. Libraries are still successful due to there is a special significance to libraries from the book lovers and people who passionate about reading books. The main consideration in libraries is the database maintenance about users and also books. So, the modern library management systems involved with computer systems to maintain the database and various technologies for extracting the information about users and books.

A Smart Card is a device integrated with an IC and also having memory capacity in it. A smart card reader is needed to read the information from smart card with a physical contact with the Smart card. In our project, the smart card is used as authentication for users and also books i.e. every user will be provided with a smart card and every account is also contains a smart card tagged with it. When the user wants to borrow a book from the library, she/he has to insert their smart card into the reader. Then the details of the user can be analyzed by the microcontroller in our system and allows the user to borrow the book if they are authorized. The details of the books also can be read by the smart card before giving to the user. The data about the borrowed books will be stored in the smart card allotted to the user. If the limit exceeded to borrow the books, the system automatically intimates the user when they tried to borrow a book. The database will be maintained in the individual smart cards of users. Here no need to use any external memory for storing the data. The details of books will be automatically updated in smart card every time when the user inserted the smart card.

Keywords: *Arm7 Board, Smart Card Reader, Keypad, Gsm.*

I. INRODUCTION

The Library management system is a very important issue in schools, colleges and public libraries in villages and towns. A smart card is reader is needed to store the data. In our project the authorized person details and will stored in the smart card. For every user we will provide a one smart card. Whenever we need a book from the library we need to place the smart card on the reader. The book data we need to enter through keypad that data will be stored in the smart card and system data base. While we are returning the book we need the place the card on the reader to deduct from the book from the account.

II. LITERATUREREVIEW

2.1 Existing System

The existing technologies for library management systems include Manual Registers, Bar code readers, etc. The library management systems with bar code readers will be very expensive and having more disadvantages such as it needs a human intervention to read the details from bar code and require reading the code in a line of sight communication with a laser beam projection. So, by overcoming the drawbacks with the existing technologies, we are introducing the Smart card technology for library management systems.

III. PROPOSED SYSTEM

A Smart Card is a device integrated with an IC and also having memory capacity in it. A smart card reader is needed to read the information from smart card with a physical contact with the Smart card. In our project, the smart card is used as authentication for users and also books i.e. every user will be provided with a smart card and every book is also contains a smart card tagged with it. When the user wants to borrow a book from the library, she/he has to insert their smart card into the reader. Then the details of the user can be analyzed by the microcontroller in our system and allows the user to borrow the book if they are authorized. The details of the books also can be read by the smart card before giving to the user. The data about the borrowed books will be stored in the smart card allotted to the user. If the limit exceeded to borrow the books, the system automatically intimates the user when they tried to borrow a book. The database will be maintained in the individual smart cards of users. Here no need to use any external memory for storing the data. The details of books will be automatically updated in smart card every time when the user inserted the smart card.

Block Diagram

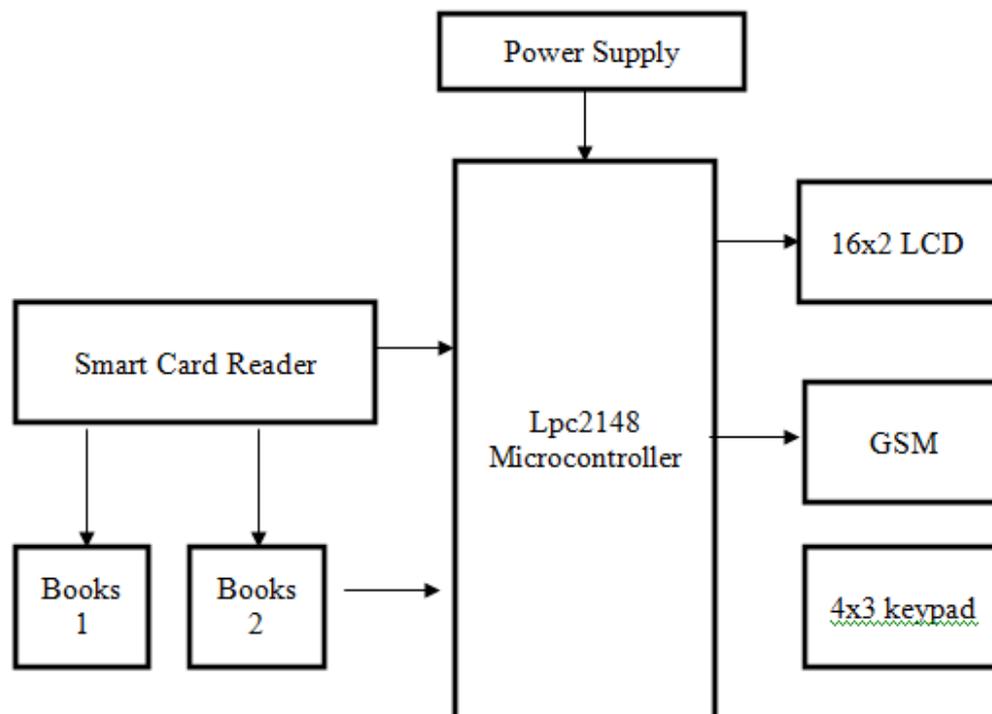


Fig 1: block diagram

IV. HARDWARE REQUIREMENTS

4.1 LPC2148 microcontroller

The Advanced RISC Machine7 (ARM 7) board is primarily based on a 16/32 bit, consists of 16/32 bit consist of ARM7 TDMI-S micro controller. It consist of the on the on-chip static RAM memory and 512 bytes of flash memory, 128 bit In-system programming (ISP). 32 timers/ counter used as generating the time delay and counting the number of events are occurring outside the controller. PWM pulse width modulation unit with six outputs and watch dog timer and low strength Real Time Clock (RTC). The most important feature is the ARM 7 controller contains the two UARTs (uart0 and uart1) and 32 interrupt lines with priority. It contains the totally 64 pins those are divided into the two ports (port 0 and port 1) with 48 GPIO pins.

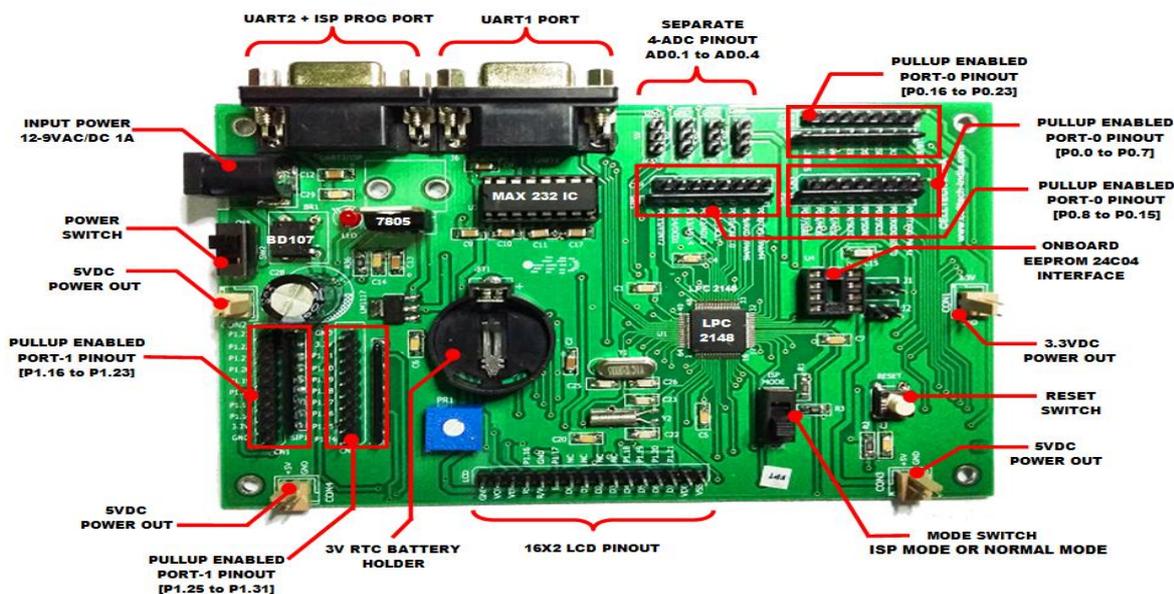


Fig 2: ARM 7 board

4.2 LCD

LCD (liquid crystal display)is important component for the every project. It is in the form 16x2 matrix, that means it contains two lines and every line we can use the 16 characters. In this LCD every character is displayed by the 5x7 matrix form.in this we have the 8 data lines, two power supply pins ,one contrast pins, two back light pins, and three control pins. The data will transmits or received through that 8 data lines only. The data is that the ASCII worth of the character to be shown on the LCD. In this LCD we have some commands like clearing, for next line and for shifting having some different commands for the LCD

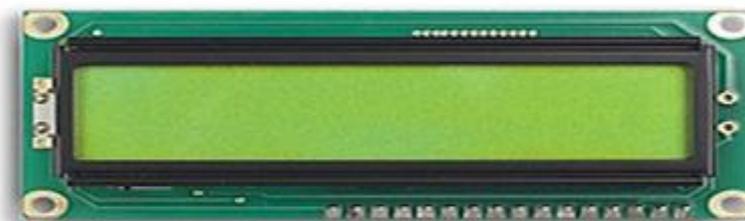


Fig 3:16x2 lcd display

V. GSM (GLOBAL SERVICE FOR MOBILE COMMUNICATION)

The GSM module is SIM 900D is a powerful GSM module for SMS and call control. GSM networks feature in four specific frequency levels. Maximum GSM networks feature within the 900 MHz or 1800 MHz bands. A few international locations in the Americas use the 850 MHz and 1900 MHz bands because the 900 and 1800 MHz frequency bands had been already allotted. The rarer 4 hundred and 450 MHz frequency bands are assigned in a few worldwide places, wherein those frequencies were previously used for first-era structures. The module consists of SIM 900 A for calling and messages.

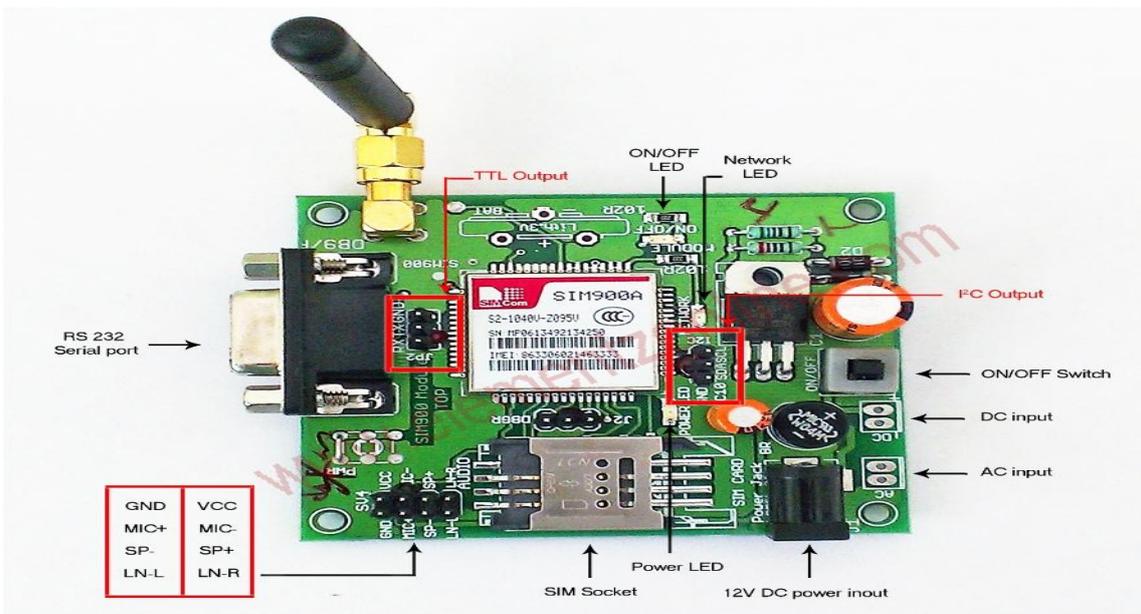


Fig4: SIM 900D GSM MODULES

5.1 Smart Card

The smart card is memory device which can store the 256 kb data. The smart card has the 256 kb of the data. In that 0-31 data was stored the company profile data from 32- 256 memory locations we can stored our required data. In the smart card we can write and read the data. In this we give one smart for every account, whenever the/she take the book from the library he need to place the card on the reader that data will be stored in the card and system data base. While we are returning the book again need to insert the card so that will be deducted in our account. By writing and reading the data we have a some specific format with that format only we can read and write the data.



Fig 5 smart card reader

5.2 Key Pad

A keypad is a set of buttons organized in numbers and letters, digits and other symbols however not a complete set of alphabetical letters. If it mostly contains numbers then it will conjointly be known as a numeric data input device. Keypad area unit victimization typewriting of security purpose area unit found on several alphabetic keyboards and on alternative devices such as calculators. It's given that an data input device, sometimes half of a typical keypad, consisting of a separate grid of numerical and function keys organized for economical information entry.

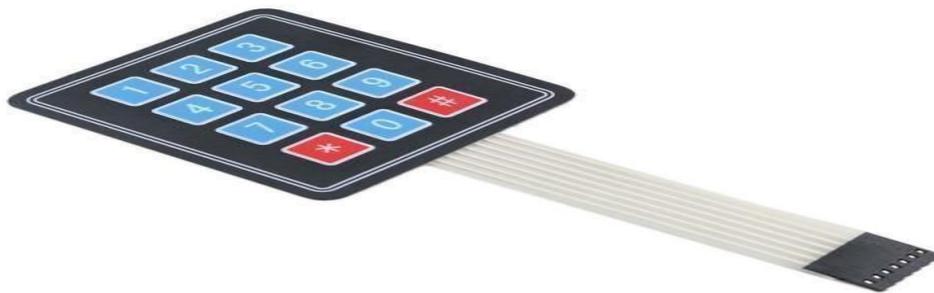


Fig 6: 4X3 keypad

VI. SOFTWARE DESIGN

In this proposed gadget, as we used LPC2148 we want to use following software equipment to program for it.

- Keil4 Vision
- Flash Magic

The Keil4 Vision is an IDE for Embedded C language. In this IDE, we want to import the utilities and libraries according to the controller. This IDE is very easy and user friendly way to apply. It consists of all the C/C++ compilers, assemblers, and debuggers in it. It simplifies the manner of embedded simulation and trying out in conjunction with Hex file technology.

The flash magic is a programming utility. The C/C++ software written in IDE may be processed into Hex document i.e. in hex layout. By using hex file we dump the code into microcontroller and perform the task with respective application.

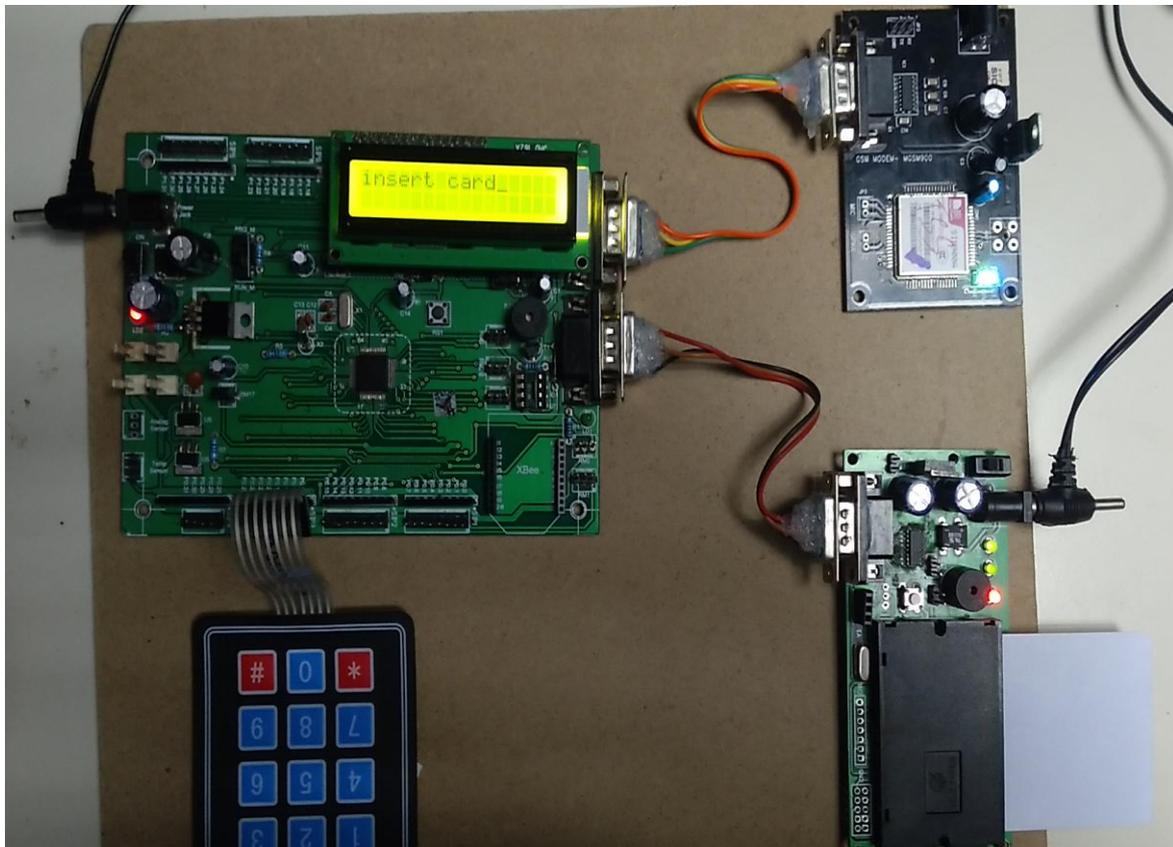
VII. WORKING PROCEDURE

The Library management system is a very important issue in schools, colleges and public libraries in villages and towns. Compared to the olden days, the utilization of libraries and books became less due to the development in the field of electronics and computers. Libraries are still successful due to there is a special significance to libraries from the book lovers and people who passionate about reading books. The main consideration in libraries is the database maintenance about users and also books. So, the modern library management systems involved with computer systems to maintain the database and various technologies for extracting the information about users and books.

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VIII. RESULT

Here we are shown the “Advanced Library Management System Using Smart Card”project was successfully implemented. Whenever the person need to take book from the library need to place smart card on the reader and need to enter the details of the book. So that book will added into our account and that data will be stored into the smart card. While returning the smart card again need to place the card on the reader and need to enter which book returning that was successfully implemented in our project.



By using this project the capability of making our personal lives and our work lives in the library more convenient. Libraries should not yet implement smart card systems. Libraries that choose to implement smart card technologies in advance of policy safeguards being put in place should take extra precautions to follow evolving best practices guidelines. Libraries should continue to protect privacy by ensuring that they are not seen as proponents of smart card before it can be safely deployed.

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AUTHOR DETAILS

	KR MANOHAR , <i>Pursuing M.Tech (ES)</i> from Visvesvaraya College Of Engineering And Technology, Patalguda, Ibrahimpatnam, RangaReddy dist. telangana, INDIA.
	M.SARITHA ² , working as Assistant Professor from Visvesvaraya College Of Engineering And Technology, Patalguda, Ibrahimpatnam, RangaReddy dist., telangana, INDIA.
	HOD(G. Ravindranathkumar), working as Assistant Professor from Visvesvaraya College Of Engineering And Technology, Patalguda, Ibrahimpatnam, RangaReddy dist., telangana, INDIA.