

iBUTTON ELECTRONIC LOCK

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Abstract— This paper discuss about the concept of security using an iButton. The locking system is modified using an iButton. When an iButton is connected to the system as a key, and the remaining circuit acts as a lock. Also we need to enter password at the start in the database and making the overall system more secure. In this paper firstly we will see the introduction, then we will talk about the existing systems and then the components.

Keywords: iButton, Microcontroller, Database.

I. INTRODUCTION

This electronic lock can be used with any type of iButtons you may already have, since the only thing needed is the internal serial number, that's different for every iButton. The command used to read the serial number is the same for all iButtons. The iButton family code that goes with every iButton, can be anything and is calculated as part of the whole serial number[3]. This electronic lock designed to work stand-alone and it's easy to construct. What the user sees (outside of the door for example) is an iButton socket and a led for the actual lock of the door a solenoid and a bold are used. Solenoid must be rated at 12Vdc. iButtons serial numbers stored in memory can be removed and updated when needed. Many regions of the country do not have proper security system. The iButton system is designed to take care of security problem by using intelligent Microprocessor technology[5].

II. PROPOSED METHOD

1. BLOCK DIAGRAM

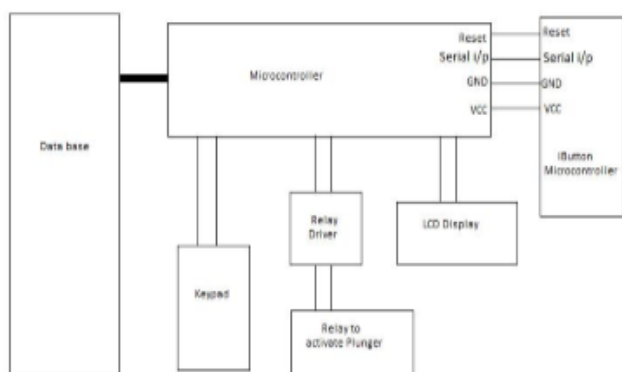


Figure 1. Block Diagram of Security System

Here, iButton Microcontroller act as a serial input which is nothing but an electronic key. Another microcontroller act as a reader which is used to read serial input. Database is used to store user information and also to enter password through keyboard. LCD Display is used to display input and various operation we perform. Relay Driver is used to drive relay which is a switch. Plunger is used for locking purpose. iButton is based on microcontroller ATmega328P. ATmega328P is high performance, low power 8 bit microcontroller. It has 1.8-5.5v operating voltage. It has low power consumption at 1MHz [6]. iButton is programmed with serial input. When it is inserted in iButton reader the reader reads the serial input. This processor requires +5v for this we use IC 7805. IC 7805 is voltage regulator integrated circuit. The voltage regulator IC maintains the output voltage at constant value. The IC 7805 provides +5v regulated power supply [5].

The user has to enter a password which is known to it on computer security system stored in the database of computer and it verifies the entered password, if the password is correct the user information of that person appear on the window screen and if the password is incorrect then it will display invalid user on the computer screen and the signal is passed through the database to the locker.

In iButton reader the ATmega328P is used as reader. It get serial input from iButton compares it with the serial data stored in it. When this serial number matches with iButton. The user has to enter the pin via keypad. Once again ATmega328P checks whether the pin inserted is correct. Then it instructs the relay driver which turn ON the relay & hence the plunger get activated [7].--

2. SYSTEM FLOW

The flow of operation of our proposed technique is as follows:

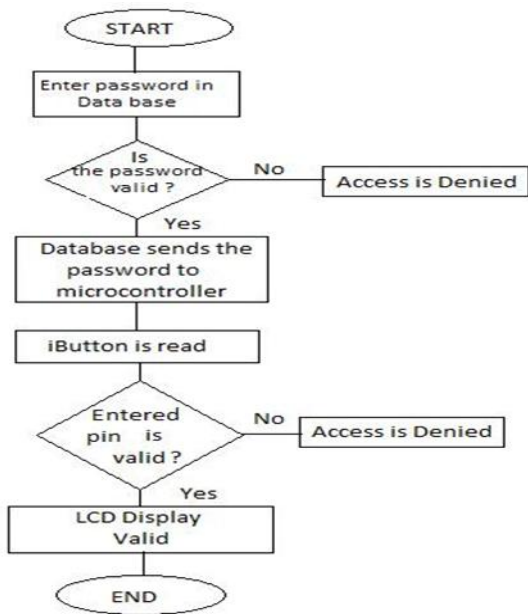
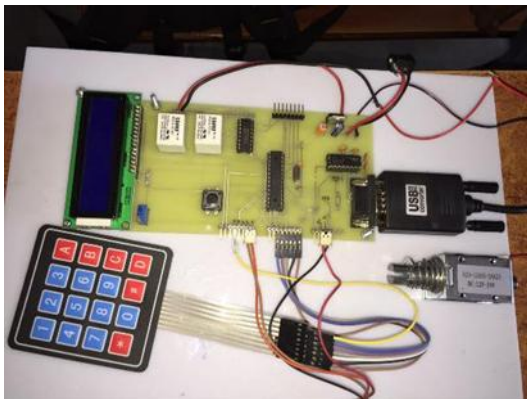
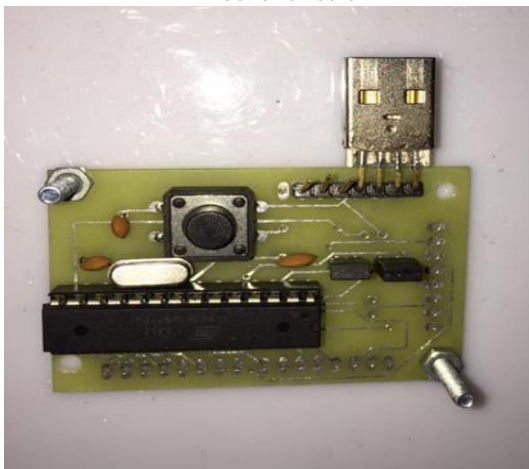


Figure 2. Flow chart for proposed method [2]

III. IMPLEMENTATION



Locker circuit

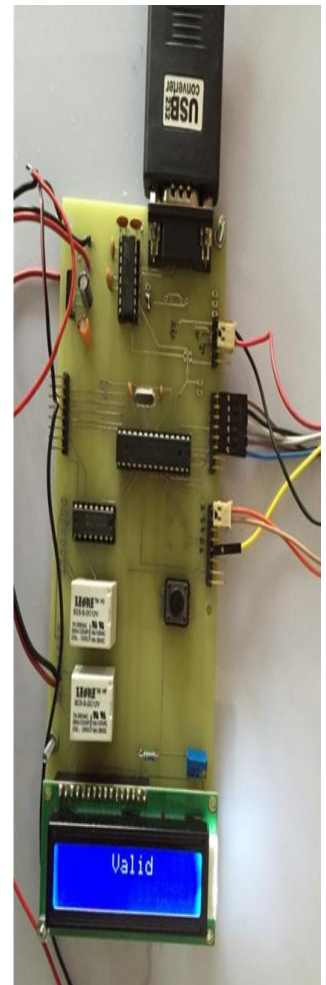


iButton

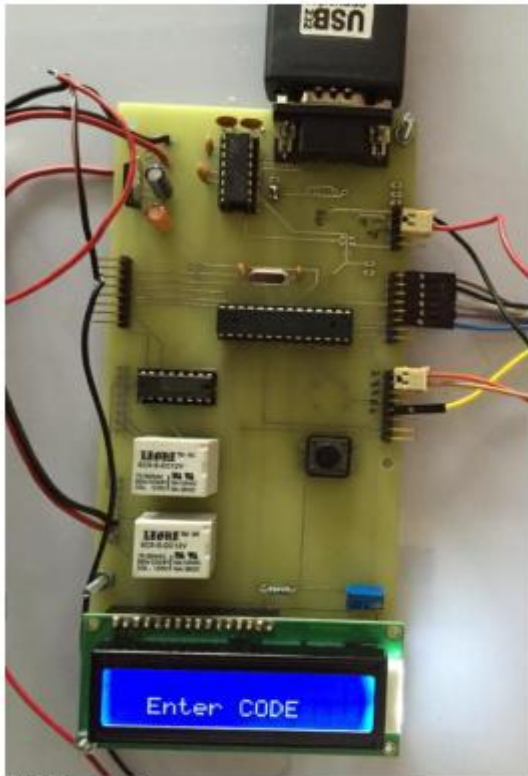
IV. .RESULT



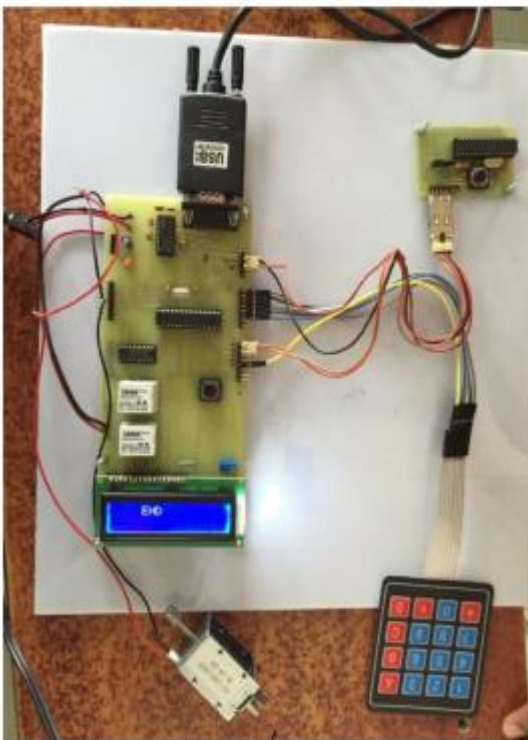
i. Enter password in database



ii. Database sends password to locker



iii. Enter pin



iv. Pin is verified and lock is open

V. ADVANTAGES & LIMITATIONS

1. ADVANTAGES

- Easy to implement because there are less components.
- Power Efficient.
- The proposed method is not mechanized in nature which makes it more secure.
- The system is more secure due to two way password verification of the authenticated user.
- The strength of the system lies in its robustness, randomness and the fact that no other person (bank official) but you possess the parameters required to provide access to your locker.

2. LIMITATIONS

- Due to usage of serial port iButton is not hot-pluggable.

VI. APPLICATIONS

Bank Lockers:-The major advantage of this project is that it is having a database, which usually any banks doesn't have for their lockers. This will provide a very high security to any of the customer's valuable things in bank [3][2]. Personal Safe:-No thief can steal valuable things from your personal locker as it is electronic lock. Garage:-Most of the garage is been locked by shutter. iButton electronic lock system can be applied here also for the extreme protection of garage.

VII. CONCLUSION

This paper is mainly aimed to improve security and reduce banker's workload. Time is considerably saved by this iButton based automated bank locker system. It has the potential to greatly reduce the manpower required during the access of bank lockers by the customers and also greatly saves time for both the banker and the customer. As this project is implemented using software tools keil μ Vision, the outputs can be easily checked before they are embedded on the hardware. This paper has the outputs can be easily checked before they are embedded on the hardware.

VIII. FUTURE SCOPE

This paper is about a wired project, so connecting to various lock can make the project complex. To overcome this defect we can use zigbee for wireless communication of signals so that more number of locks can be installed. We can also use Universal serial technology, so iButton can be hot-plugged in.

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