**DIGITAL DOOR LOCK SYSTEM**

**Abstract:-**

Security is a prime concern in our day-today life. Everyone wants to be as much secure as possible. An access control for doors forms a vital link in a security chain.  
 This project is a ATMEGA328 microcontroller based digital door lock system using keypad which will provide complete security solution to lives and properties at homes, schools and offices. The security system contains a 4X4 keypad input unit for entering the Personal Identification Number (PIN) and a display unit in form of Liquid Crystal Display (LCD) for visual display of information. It also contain a DC motor that serves as a switching for locking and unlocking the door and a programmed microcontroller that processes the input information and take appropriate action. When a user enters a PIN into the security system installed at any entrance, the system captures the PIN and compares it with the stored PINs for a match. If the captured PIN matches with any of the stored PINs, access granted is displayed on the LCD and the door opens; otherwise, access denied is displayed on the LCD and the door remains closed.

**BLOCK DIAGRAM OF DIGITAL DOOR LOCK SYSTEM**

LED

ATMEGA328

MICROCONTROLLER

MOTOR

MOTOR DRIVER

(L293)

POWER SUPPLY

KEYPAD MODULE

4X4 MATRIX

**1. Power Supply:** A power supply is an electronic device that supplies electric energy to an electrical load. The primary function of a power supply is to convert one form of electrical energy to another and, as a result, power supplies are sometimes referred to as electric power converters.

**2. Keypad:** A keypad is a miniature keyboard or set of buttons for operating a portable electronic device.

**3. ATMEGA328:** This is one of the popular Microcontrollers. It has only 20 pins and there are 15 input/output lines. The microcontroller has a flash memory of 32Kbytes, 1 Kbyte EEPROM and 2 Kbytes RAM. The microcontroller continuously monitors the keypad and if somebody enters a password it will check the entered password with the password stored in the memory and if they match then the microcontroller will switch on the corresponding device.

The system will allow access to the person who knows the password and it will not allow access to unauthorized people. The system has an alarm to thwart the people who may try to break the protection barrier.

**4.LCD Display:** The LCD display is used to see whether the entered password is correct or not. It is also used to interface with the project to output lock status.

**Working:-**

First the ATMEGA328and the LCD will be energized using 5v power supply. Whenever anyone press the password on the keypad. The signal will go to the ATMEGA328. In ATMEGA328, AVR RISC controller is used where the program for the project is written. It is also used for continuously monitors the keypad for a match with the stored password which is stored in its flash memory and also to provide digital and analog signal to the devices. The microcontroller inside it will check whether the enter password is correct or not. If the password is correct the ATMEGA328 will send a signal to LCD display which will then display that access granted and motor turns ON. Any mechanism connected will be started. If the password is wrong then it will display wrong password.

**Flowchart:-**

START

LOCK DOOR

ENTER PIN

ENTER 1 TO LOCK AGAIN

PIN CORRECT?

WRONG PASSWORD

UNLOCK DOOR

YES NO

END

FLOW CHART

**Conclusion**

This project is effective in providing enough security as long as the password is not shared. In future this “Digital door lock security locking system” can be provided maximum security by the above enhancements in order to completely satisfy user’s needs. Hence, a common man can afford to purchase such locking system in minimal cost to keep his valuables safely without any worries.