AUTHENTICATED LOCKER SYSTEM USING WATCHWORD PROTECTION

BANDARI THEJA[1], KODE ANITHA[2], B. THANUJA[3]

1,2Assistant Professor, Dept. of ECE, St. Martin's Engineering College, Hyderabad, Telangana, India.
3Assistant Professor, Dept. of ECE, CMR Technical Campus, Hyderabad, Telangana, India.

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Abstract: *In this cotemporary world, the requirement of security is feeble. So there exists a lot of robbery, theft and many crimes indulging on in and around the world. So, people are scared to place any of their valuables in their houses. Henceforth, many people prefer to keep it in banks. However, in this insecure and greedy world even banks are not too authentic and safe enough to act according to the people needs. A normal layman feels his valuables are secured if there is reliability in case of efficiency in security. Hence this paper can give effective security in minimal cost. We can make a framework that will give 24/7 benefit at affordable budget. Password based lock system allows only authorized persons to access restricted areas. This system is fully controlled and monitored by Arduino. The password can be accessed via a keypad. If the password can keep up with the stored password in Arduino the door gets open. This programmed password relied bolt framework will give client more secure and minimal effort method for locking-opening framework. The security lock automation system promises a very bold envisioned step to the future where mechanical door locks will be replaced by electronic locks.*

Key words: ATMega328P, Servo, Keypad, LCD, sensors.

I. INTRODUCTION

In this we are availing enough security to meet the user's needs. The user will be prompted to enter a password to unlock the door. On successful password entry, the door unlocks for a respective amount of time enabling him/her to store or restore his/her valuables. On the other hand, if the user prompts an invalid password then corresponding equivalent message will be displayed. It can be used to provide best security in various domains like bank lockers, security doors, BIOS locking in computer etc[1]. This paper make use of an Arduino kit that consists of ATMEGA 328 which is one of the most popular microcontrollers that consists of 14 digital pins and 6 analog general purpose pins, EEPROM of capacity 1KB and a RAM of2KB.

Password Based Door Lock System is designed using ARDUINO UNO where in once the correct code or password is entered, the door is opened and the authorized person is allowed access to the secured area. Password Based Door Lock System using Arduino UNO is a simple project where a secure password will act as a door unlocking system. Old fashioned lock systems use mechanical locking and these can be replaced by new advanced techniques of locking systems [2]. These methods are a combination of mechanical and electronic devices and are highly efficient as well as intelligent [3]. One of the distinct features of these intelligent lock systems is their simplicity and high efficiency [4].

Such an automated lock system consists of electronic control assembly, which controls the output load through a password [5]. The example of this output device can be a motor or a lamp or any other mechanical/electrical load or a device. Here, we made an electronic code lock system using Arduino UNO, which provides control to the actuating the load. It is a simple embedded system with takes input from the keyboard and the output being actuated accordingly.

Main idea behind this paper is of a door-latch opening using a password prompted through keypad [6]. As well as turning on the Buzzer when pass code is entered wrong for multiple times. User can reenter his password anytime he/she wishes using a keypad. Here Arduino UNO which is basically used to send a text message to owner of the house about the breach of security.4*4 keypad is used to enter the password. The entered password is compared with the known password. If it is correct password, the system opens the door by servo motor and displays the status of door on LCD. If the password is not matched then door remains closed and displays "WRONG PASSWORD" on LCD.

II.THE HARDWARE SYSTEM

ATMEGA328P:

Arduino Uno is based on AVR microcontroller called Atmega328 [7]. This controller comes with 2KB SRAM, 32KB of flash memory, 1KB of EEPROM. Arduino Board comes with 14 digital pins and 6 analog pins. ON-chip ADC is used to sample these pins. A 16 MHz frequency crystal oscillator is equipped on the board. Following figure shows the pin out of the Arduino Uno Board.

There are several I/O digital and analog pins placed on the board which operates at 5V. These pins come with standard operating ratings ranging between 20mA to 40Ma

Internal pull-up resistors are used in the board that limits the current exceeding from the given operating conditions [8]. However, too much increase in current makes these resisters useless and damages the device.
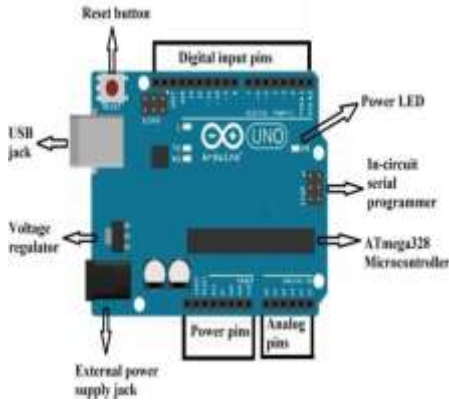

Fig II: Arduino UNO

1. SERVO MOTOR

A unique design for servo motors is proposed in controlling the robotics and for control applications [9]. They are basically used to adjust the speed and angular movement control at high torques and accurate positioning. It contains Parts like motor, position sensor and a highly developed controller. These motors can also be categorized according to the servo motor controlled by servomechanism [10].

If dc motor is controlled using this mechanism, then it is named as servo motor. Servo motors are readily available in market as an ASICS in power ratings from fraction of a watt to 100 watts. The rotor of a servo motor is designed concentrating on longer in length and smaller in diameter so that it has low inertia.

Fig 1: Servo 90

2. Liquid-crystal display:

Fig2: liquid crystal display

A liquid-crystal display (LCD) is a output display device and it is electronically modulated contrast optical device that makes use of the light-modulating properties of liquid crystals. Liquid crystals don't emit light directly, but it uses a backlight or reflector to induce images in color or monochrome. LCDs can also display high end and clear arbitrary images or fixed images with low information content, which can be displayed or hidden, such as preset words, digits, and seven-segment displays, as in a digital clock. They use the same rudimentary technology, except that arbitrary images are made up of many small pixels, where as other displays have larger elements. LCDs can either be normally on (positive) or off (negative), based on the polarizer alignment

3. BUZZER

A buzzer or beeper is an audio signaling device actuator or output device[11]; it may mechanical, electromechanical or piezoelectric. Applications of buzzers and beepers include alarm devices for certain applications like mines, timers, and confirmation of user input such as a mouse click or keystroke and many more.

Fig3: Buzzer

4. KEYPAD

A keypad is a cluster of structured buttons arranged in a block or "pad" which can have digits, symbols or the alphabetical letters[12]. Pads that containing numbers are called a numeric keypad. Numeric keypads are found on alphanumeric keyboards and the other devices which are mainly consists of numeric input such as calculators, push-buttons ,vending machines and the telephones Point of Sale devices, combination locks, digital door locks, Many devices follow the E.161 standard for their arrangement standard figure of keypad is shown below.

Fig4: Keypad interface
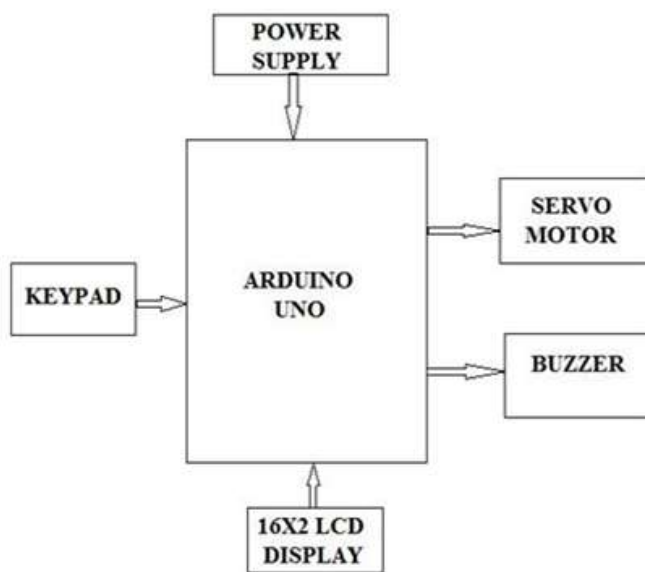
III.SYSTEM ARCHIETECTURE AND MODULE INTERFACE

Fig III: Architecture Showing Arduino Interface with Various Input and Output Devices, Sensors

IMPLEMENTATION:

In this design, we have used EEPROM in the Arduino to store the password in it. The default password stored in it will be '123'. When authorized person enter a password, it will match it with the password stored in the Arduino EEPROM. If it is correct, then it will show 'Passkey Accepted' and the push pull solenoid will come in low state (Door Unlocked) and buzzer beeps and the yellow led glows. If the person is not authorized then he enters an incorrect password, then it will show 'Access Denied'. During this condition the buzzer will start producing beep sound and the push pull solenoid will remain in the high state (Door Locked) red led glows. The buzzer will also make sound once when any key is pressed. For changing the passkey, we have to press '#'. When we press '#', it will ask for current passkey. If we enter the correct password it will ask for new passkey and will save it in the EEPROM.

IV. ALGORITHM:

- STEP 1: Start
- STEP 2: Enter the password using keypad. STEP 3: Password is checked, whether it is correct or not. If it is correct go to step 4 else go to step 6.
- STEP 4: Door will automatically opened.
- STEP 5: Enter the reset password to close the door and goes to step 9.
- STEP 6: If password is wrong then buzzer beeps.
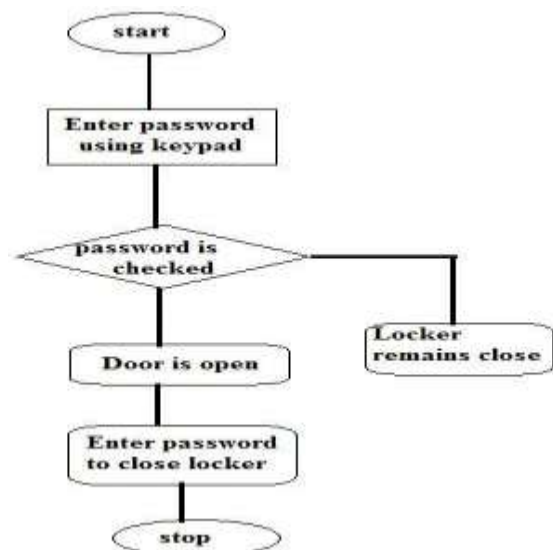- STEP 7: Door remains same.
- STEP 8: Stop

V. FLOWCHART

Fig V. Flowchart for password based locker system

VI. RESULT

Fig a): When we enter password correctly through keypad. Servo motor rotates 180 degree and the door opens. When we press "#" the door closes.

Fig b): When we enter incorrect through keypad. The door remains closed and buzzer beeps

This hardware setup gives a brief idea as to how the project "Password Protected Locking System Using Arduino" works. Initially the password is predefined.

When the designed system is switched on, it immediately resets the servo angle to lock the door. Now the user is prompted to enter the password. The person prompts the password through a keypad which is read by the Arduino.

Now the entered password is checked with there defined password. If the password matches, then the servo motor deflects and the door unlocks for 30s else the buzzer beeps and door opens. The led glows the user should "enter password". If the password is correct the door will open, led glows and the buzzer starts beeps. The servo motor deflects thus unlocking the door.

VII. CONCLUSION AND FUTURESCOPE

Password based locker security system is used in the places where we need more security more authentication. It's used in various domains and to secure lockers and other protective doors. The system consists of number keypad, buzzer and LCD and the keypads are connected to The micro controller continuously monitor the keypad press and somebody enters the password it will check the prompted password immediately with the password which was stored in the memory card or stored in program of controller and if they are same then the micro controller will switch on the corresponding device. The system will identify the authorized person who knows the password and it will not allow who don't know the password.

We can send this confidential information to remote location using mobile or internet. We can use fingerprint scanner so entry will be allowed for the authorized person using their finger prints. We can add fire, wind and LPG sensors so that in case of accidents to avoid damage.

VIII. REFERENCES

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