Microcontroller Automatic Code Lock System

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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. The microcontroller based Door locker is an access control system that allows only authorized persons to access a restricted area. The system is fully controlled by the 8 bit microcontroller AT89C2051 which has a 2Kbytes of ROM for the program memory. The password is stored in the EPROM so that we can change it at any time.

The system has a Keypad by which the password can be entered through it. When the entered password equals with the password stored in the memory then the relay gets on and so that the door is opened. If we entered a wrong password for more than three times then the Alarm is switched on.

When we go inside and come back then the microcontroller will sense the person using the Laser light, the microcontroller will automatically open the door for you.

Introduction (*Heading 1*)

Password Based Door Security System using Microcontroller" is used in the places where we need more security. It can also used to secure lockers and other protective doors. The system comprises a number keypad and the keypads are connected to the 8 bit microcontroller AT89C2051. This is one of the popular Microcontroller. It has only 20 pins and there are 15 input/output lines. The microcontroller has a program memory of 2 Kilobytes. The microcontroller continuously monitor the keypad and if somebody enters the password it will check the entered password with the password which was stored in the memory and if it they are same then the microcontroller will switch on the corresponding device. The system will allow the person who knows the password and it will not allow who don't know the password and the system will also show the persons who try to break the protection barrier.

Objectives:-

Provide a secure and reliable method of access control: The code lock system should be able to restrict access to an area or device to only authorized personnel by requiring a specific code to be entered.

Implement a user-friendly interface: The system should be easy to use and the code entry process should be intuitive for the user.

Allow for customization: The code lock system should be flexible enough to allow for different types of codes (e.g., numeric codes, alphanumeric codes, etc.) and varying lengths of codes.

Provide real-time feedback: The system should provide feedback to the user indicating whether the code entered is correct or incorrect.

Ensure system stability: The microcontroller-based system should be reliable and stable, with a low risk of failure or malfunction.

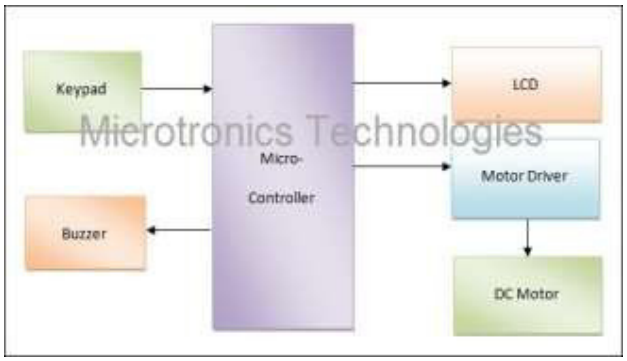
Purpose:-

The purpose of a microcontroller automatic code lock system is to provide a secure and reliable method of access control to a physical space or device. It is designed to restrict access only to authorized personnel by requiring a specific code to be entered. The system is based on a microcontroller that controls the code entry and verification process, and can be programmed to allow for different types of codes and varying lengths of codes.

The system provides several benefits, including increased security, user convenience, real-time feedback, and remote management capabilities. It can be used in a variety of applications, such as securing doors, cabinets, safes, and other access points.

The system can also be customized to meet specific requirements, such as integrating with existing security systems or adding additional layers of authentication. Overall, the microcontroller automatic code lock system provides an effective and cost-efficient solution for access control and security.

Block diagram:-



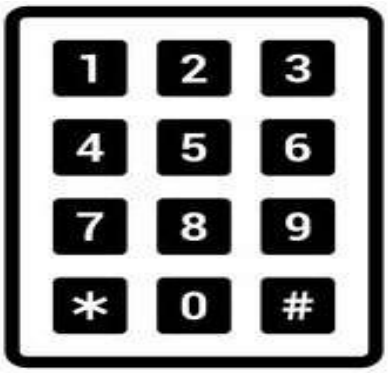
COMPONENT USED:-

LED Display :-

Buzzer :-

DC Motor

KEY Pad



Transformer

ON-OFF Switch

WORKING:-

Initialization: When the system is powered on, the microcontroller initializes and prepares for code entry.

Code entry: The user enters a code using the keypad. The code can be a numeric code As the user enters each digit of the code, the display shows the digit entered.

Code verification: Once the code is entered, the microcontroller checks if the code matches the stored code. If the code is correct, the microcontroller sends a signal to unlock the lock mechanism. If the code is incorrect, the microcontroller sends a signal to indicate that the code is invalid.

Real-time feedback: During the code entry and verification process, the system provides real-time feedback to the user through the display and/or auditory signals. For example, the display may show a message indicating whether the code entered is correct or incorrect.

Security: The system is designed to provide a high level of security by restricting access only to authorized personnel. The system can also be programmed to include additional layers of authentication, such as biometric verification or proximity sensors.

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" Microcontroller automatic code lock system"

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