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OTP BASED SMART WIRELESS LOCK SYSTEM

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ABSTRACT

In today's world advancement and technology both are necessity for human being. Every person needs own privacy and security. Security defines that no one can access place or any information without permission of owner, so for the safety it is necessary to have good locking and unlocking system that can be unlocked without any physical contact it can be done with wirelessly. Our main objective is to develop a project smart wireless lock systema and to give safety at every common places like home, public places. In this user would give a known password. This system gives service at low cost compared to the cost of the available security system. This project majorly focuses on the use of Arduino, Bluetooth and Servomotor.

Keywords : OTP, Arduino, LED, Servomotor, Bluetooth device

1. INTRODUCTION

As an increase in population the number of households also increasing, every household requires security system which is against the password leakage system. So this paper is based on Security system generates one time password (OTP) every time whenever owner wants to unlock the lock, which

Provides extra security. This can be done by the help of Arduino UNO and

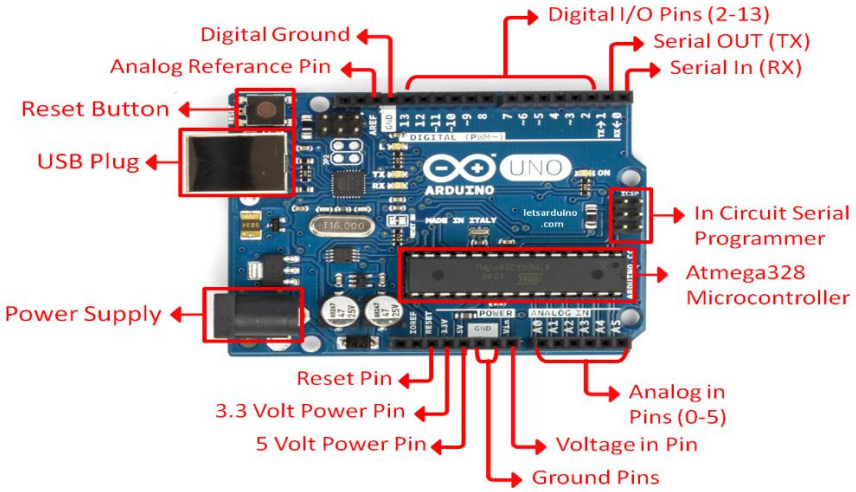
Servo motor to represents opening and closing of door. The entered password is compared with the known password. If it is correct password, the system opens the door by servo motor and displays the status of door on LED. If the password is wrong door remains closed.

In this paper detail information about system has been given in which we can unlock the door by using pre-decided password. It increases the security level to prevent an unauthorized unlocking done by attacker. In case the user forgets the both passwords, this system gives the flexibility to the user to change or reset the password. This automatic password based lock system will give user more secure way of locking-unlocking system. User's combination will be compared with pre recorded password which are stored in the system memory.

2. MATERIALS

2.1 ARDUINO

Arduino is an open-source electronics platform based on easy-to-use hardware and software. Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED, publishing something online. There are 20 of pins out of which 6 are analog input pins and 14 are digital input output pins It has an operating voltage of 5v.



2.2 BLUETOOTH DEVICE HC-05

HC-05 connects microcontrollers (like Arduino) to other Bluetooth enabled devices. This allows the devices to communicate wirelessly with each other. HC-05 is a Bluetooth SPP (Serial Port Protocol) module designed for wireless communication. It can also be operated as a master or slave configuration. It has 6 pins named as Vcc, TX, RX, Key, and LED.

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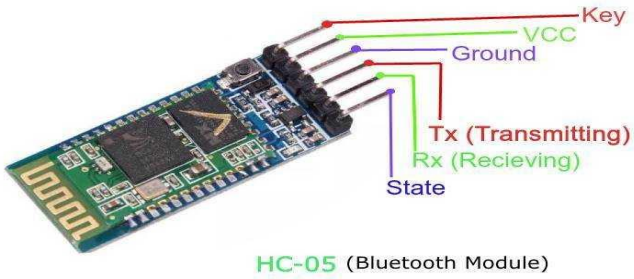
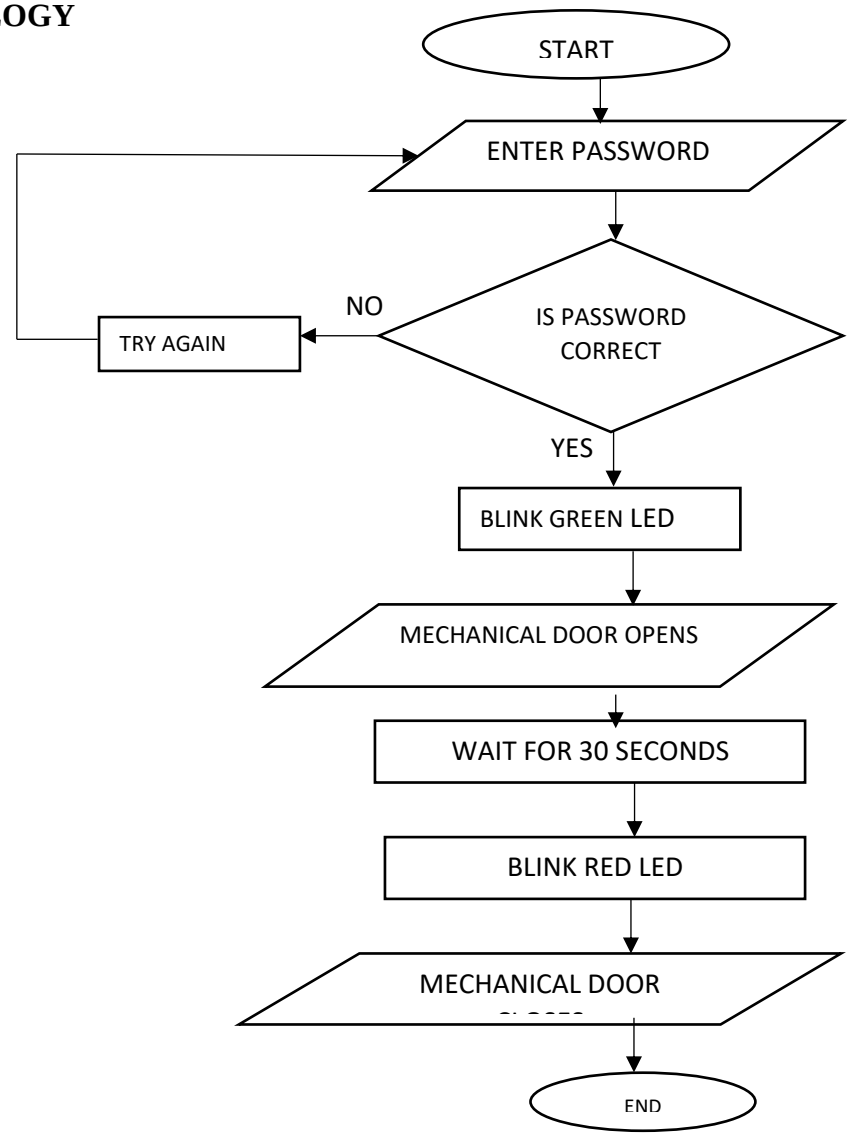


HC-05 (Bluetooth Module)

2.3 SERVOMETER

The servo motor used in the project is SG90 Micro Servo weighing about 9g. This is programmed using the library. If the motor as a controlled device, associated with servomechanism is DC motor, then it is commonly known as a DC Servo Motor.

3. METHODOLOGY



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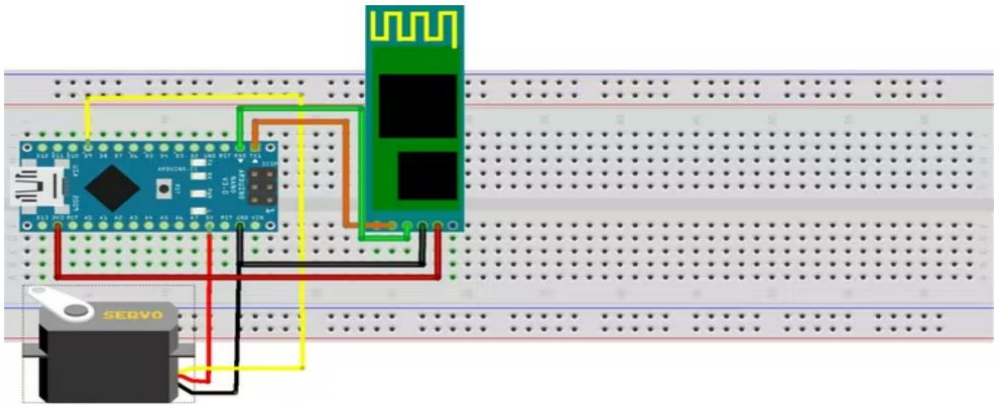
The above flowchart gives a brief idea as to how the project works. Initially the password is known. When the device is turned on, it resets the servo angle to lock the door. Now the user is prompted to enter the password. The user enters the passcode through a keypad which is read by the Arduino. Now the entered password is checked with the known password. If the password matches, then the servo motor deflects and the door unlocks for 10 seconds.



The connection are as follows:

Servomotor to Arduino-

- The Black wire on the servo is ground and it gets connected to ground on the Arduino.
- The orange wire is positive and it gets connect to 5v on the Arduino.
- The Yellow wire is the servos source connection and it gets connected to pin 9 on the Arduino.

Bluetooth module to Arduino-

- Rx pin on the Bluetooth module connects to the Tx pin on the Arduino.
- Tx pin on the Bluetooth module connects to the Rx pin on the Arduino.
- Vcc (positive) on the Bluetooth module connects the 3.3v on the Arduino.

Software Details

For developing an Android app we have used MIT app inventor in which Android is a mobile operating system (OS) based on the Linux kernel and recently developed by Google. Android has user interface based on direct manipulation which is used for touchscreen mobile devices such as smartphones and tablet computers to make processing fast.

In the first place, we need to incorporate the library and pronounce factors required, as in piece of code. We incorporate a servo library, then, at that point make a string cluster to produce a secret word. After this, we need to make a couple of additional string factors to store secret phrase, OTP and LED pin numbers as in scrap.

In the second piece of coding, we need to set up sequential and Braud rate for Bluetooth. Here I have utilized 9600 Baud rate however on the off chance that it didn't work, you can utilize default Baud pace of Hc 05 i.e (38400).

Then, at that point, we need to set up a pin for servo using servo attach (PWM pin number). After that, we can characterize pin mode as yield for drove.

In the third piece of code, we will make a circle and check the information coming from Bluetooth.

Then we create if() statement to check gadget id. In the event that it matches, it calls otp() function for age of OTP.

Then, at that point we need to create check() function to check if OTP is right. If it is correct then it goes servo to vacant position.

To develop **Android app** we use **Mit app inventor.**

Mit app inventor :- MIT App Inventor is **an online platform designed to teach computational thinking concepts through development of mobile applications**. Students create applications by dragging and dropping components into a design view and using a visual blocks language to program application behavior.

4. CONCLUSION

This is ongoing project. This is project is good enough to provide security as long as password not shared and project is completely based on Android platform which is free open source software, So implementation rate is also inexpensive and easy to install anywhere. Its main advantage is to open door lock using an android where password is encrypted and home owner's

mobile phone will be notified every time the door opens. Hence, the project can be achieved in lesser time compared to other techniques previously employed.

We have discussed a simple prototype in this paper but in future it can be extended to many other regions.

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