



Smart Door Lock Using Bluetooth

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ABSTRACT

It looks for the user and detects their approach, unlocking the door without the need to grab for the phone. Using a smart door lock system has a number of benefits, including: It's safe, straightforward, and simple to use, and it's pick-proof. We can utilize numerous smart locks because the entire lock and electronics box is adequately designed.

Keywords : Bluetooth, Smart Door Lock, Arduino

1 ARCHITECTURE OF THE SYSTEM

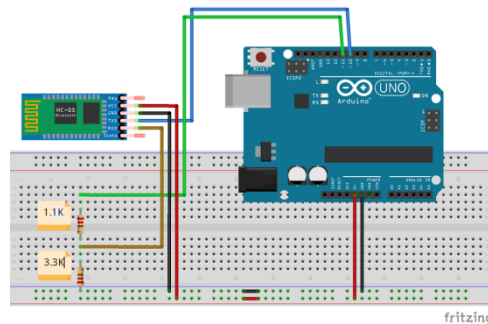


Figure 1: Architecture of System

- Connect HC-05
- Vcc to 5v, GND to GND.
- Tx to arduino Rx (what's the point? since when we send data from our smart phone to the Bluetooth module, the data is received and delivered to the Arduino, so we can say that the Arduino is receiving the data). Because both the Rx and Tx pins of the HC-05 module work on 3.3V and the arduino output can go up to 5V, we can't attach Rx straight to the Arduino board. As a result, we applied a voltage divider to protect our module.
- If you're not obtaining the results you want, double-check that you've picked the correct board rate. On 38400, mine works perfectly.

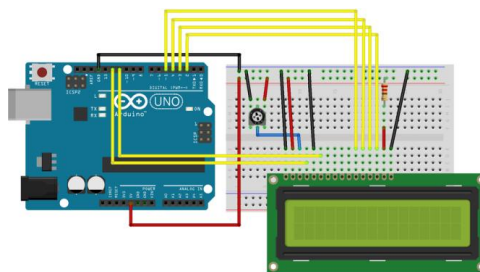


Figure 2: Connecting LCD Display

- We utilized a 16x2 alphanumeric LCD panel in this project. Connect the LCD display in the manner shown in fig.
- Data pins D0-D7 are used to transmit and receive data from the microcontroller. We didn't utilize D0-D3 because the LCD module can work in two modes: 4 bit and 8 bit. Only the D4-D7 pins are used in 4 bit mode (pros less wire required, cons printing speed is slow). In 8-bit mode, all pins D0 to D7 are used.
- Pins A and K are utilized for backlighting, and Vss and Vdd are gnd and +5V pins, respectively.
- VO is used to modify the display's contrast.
- The letter E stands for Enable.
- RW stands for read and write pin; we utilized the LCD module in write mode, so RW is grounded.
- RS stands for Register Select Pin. There are two modes on the LCD display: instruction mode and character mode.

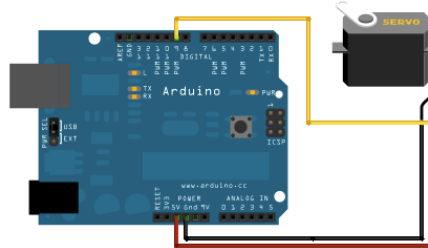


Figure 3: Servo

There are three pinouts on the Tower pro Sg-90 (Vcc, ground and signal) as seen in the diagram The PWM pin must be connected to the signal pin.

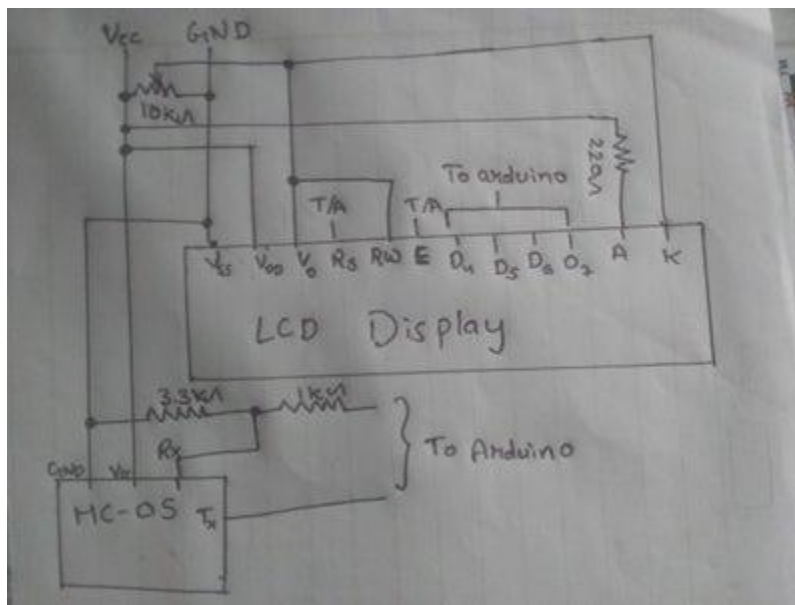


Figure 4: Main Circuitry and Servo Mechanism

We make a combined circuit for both the HC-05 and the LCD module instead of two separate circuits. The servo does not require a circuit because it may be attached straight to the Arduino board.

A single slider mechanism is used (it is the simplest mechanism for converting rotary motion to linear motion)

- Punch a hole in the box first.
- Next, attach one end of a metal wire to the rod and the other end to the servo (as shown in pic.)
- Use a glue gun or double-sided tape to secure the servo to the box.
- After that, add the arduino board and the main circuitry.

CODING

The Arduino IDE will be used to code in this section.

<https://www.arduino.cc/en/main/software/download>

- We utilized three libraries in this project: Servo.h for the servo, LiquidCrystal.h for the LCD, and SoftwareSerial.h, a header file that supports serial communication on the Arduino's other digital pins (Rx, Tx).
- It's locked by default, so if we turn it on, it'll automatically go into lock mode.
- Bluetooth data is sent in a serial format (character by character). So I just use a simple for loop to convert them to a character array, and then use the String var name(char name) function to convert them to a string.
- I also used two control variables to get control over my software (Flag and hold).
- After that, I simply use if else sentences.

CONCLUSION

In this project, a Bluetooth-enabled smart door lock is employed for home security. This is utilized in houses so that people can use speech technology to swiftly unlock the door. The benefit of employing this lock is that it may be used by anyone who is unable to open a door by hand or who is handicapped.

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