Avoiding Unauthorized Entry in Secured Zone

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Abstract— These days, our use of smart devices is more, and we have many different devices like mobiles, laptops, computer, TV, smart watches. All these smart devices have different method to set in lock or unlock mode to secure our private data. But sometimes they make limited and have bad feeling for us when we need to pass security section to use our device, However, when we need to pass a security section in order to use our device, they can make us feel limited and uneasy. For example, when you're working in your private room and there are no body near you don't need have security section and making a plan for your device to turn it off is a little complicated or when you're working in your private room with no one around, you don't need a security section, and making a plan to turn off your device is a little challenging. So, we came up with the idea of creating a small gadget that could be connected to all our smart devices and used when we want to work quickly without sacrificing security. an idea to make a small gadget that could connected with all our smart devices and when we want to work easy without security, we simply activated it using our finger ID. When the gadget activated, it pair with our devices by Bluetooth and they will be unlocked till the gadget is in near to them

I. INTRODUCTION

Nowadays, our use of smart devices has improved, and we have a variety of data in our devices such as chat content, contacts, images, notes, and so on. All smart gadgets have different methods to set in lock or unlock mode, however they sometimes limit us and give us a horrible feeling when we need to pass security section to use devices. When you're working in your private area with no one around, you don't need a security section, and devising a plan to turn off your gadget is a little complicated. New laws are taking effect across the globe to regulate the collection, use, retention, disclosure and disposal of personal information. At the same time, the rate of cyber-attacks, data breaches and unauthorized use of personal data is growing exponentially.

1.1 Background Study:

The Prospect of unauthorized access to our data used to be the most serious threat to our digital selves – that was a world where we were concerned about intruders seeking to get data, we wished to keep secret. Because of the capability of increasingly common machine learning algorithms, the potential of unintentional inferences has become the most serious threat to our privacy and security. We have an idea to create a small gadget that can be connected to all of our smart devices and activated by our finger ID when we want to work easily without security. When the device is turned on, it connects to our devices through Bluetooth and unlocks them till the device is close to them.

1.2 Objectives and Scopes:

The Prospect of unauthorized access to our data used to be the most serious threat to our digital selves – that was a world where we were concerned about intruders seeking to get data, we wished to keep secret. Because of the capability of increasingly common machine learning algorithms, the potential of unintentional inferences has become the most serious threat to our privacy and security. We have an idea to create a small gadget that can be connected to all of our smart devices and activated by our finger ID when we want to work easily without security. When the device is turned on, it connects to our devices through Bluetooth and unlocks them till the device is close to them

Circuit:

Connect Enable and VCC pins of HC-05 together.
If you want to connect LED to VCC pin, Use resistor.
According to sample code, You should connect
Tx and Rx Serial pins of Fingerprint sensor
to pins 2 and 3 of Arduino,But if you use
pins 0 and 1, you should change the code a little.

www.ElectroPeak.com
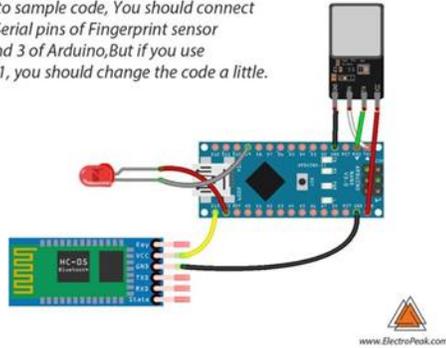
Block Diagram:
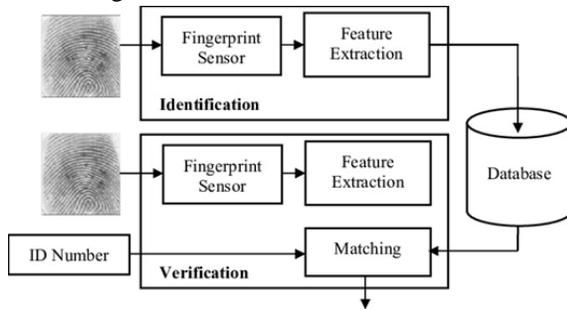
Methodology:

First, we should pair the Bluetooth module with your device. To pair with Win10, go to settings and search sign-in options and enable dynamic lock and pair your BT module from there. For Android smartphones, go to Settings > Display section > Lock screen then Enable Smart Lock from there and pair with BT. For IOS, Go to Settings, enter Touch ID and Passcode and make it from there.

If our devices do not pair automatically, we can use this trick. When we try to pair for the first time, send a character to the device.

3.1 Hardware Implementation:
1. The fingerprint is scanned.
2. The fingerprint is put in a condition where it scans for the match of the fingerprint. If a match is found, it moves to step 3. Else it moves to step 5.
3. The information of the person is recorded like name, time of entry/exit, etc.
4. A welcome message is displayed.

5. It will check if the unrecognized fingerprint is tried more than 3 times. If such an attempt is made, it will move to step 6. Else, it will move to step 9.
6. Store the unrecognized fingerprint.
7. Store photograph of unauthorized user.
8. Send a message to the owner.
9. Display error message.
10. Repeat step 9.

3.1.1 Hardware Requirements:

• HC05 Bluetooth module:

HC-05 Bluetooth Module is an easy-to-use Bluetooth SPP (Serial Port Protocol) module, designed for transparent wireless serial connection setup. Its communication is via serial communication which makes an easy way to interface with controller or PC. Wireless communication is swiftly replacing the wired connection when it comes to electronics and communication. Designed to replace cable connections HC-05 uses serial communication to communicate with the electronics. Usually, it is used to connect small devices like mobile phones using a short-range wireless connection to exchange files. It uses the 2.45GHz frequency band. The transfer rate of the data can vary up to 1Mbps and is in range of 10 meters, The HC-05 module can be operated within 4-6V of power supply. It supports baud rate of 9600, 19200, 38400, 57600, etc. Most importantly it can be operated in Master-Slave mode which means it will neither send or receive data from external sources.

HC-05 (Bluetooth Module)
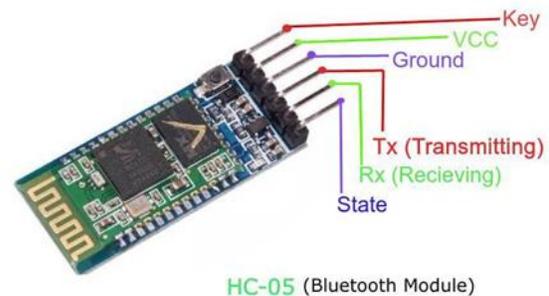
2. Arduino Nano R3:
The Arduino Nano is one of the smallest and yet most exciting breadboard-friendly boards available on the market today. It's become exceptionally popular with beginner programmers thanks to its excellent functionality and the sheer variation of

potential applications. Based on the ATmega328P, this tool is fantastic for those who wish to improve their programming skills and create some interesting and unusual projects. While the item does not come with a DC power pack, it benefits from a mini-USB cable for power, and that means you can use it with any PC or laptop device.

The Nano was designed and is being produced by Gravitech. So, let's take a look at the specs:
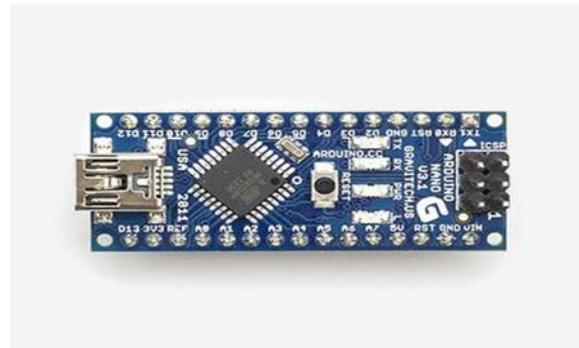
Specifications:
- Microcontroller - ATmega328
- Operating Voltage - 5 V
- Flash Memory - 32 KB (2 KB used by bootloader)
- SRAM - 2 KB
- Clock Speed -16 MHz
- Analog IN Pins - 8
- Input Voltage - 7 to 12 V
- PWM Output - 6
- Power Consumption - 19 mA
- PCB Size - 18 x 45 mm
- Weight - 7 grams

3. R301T Semiconductor Fingerprint Module

Features:

- fingerprint reader R301 (semiconductor)
- Interface: USB and RS232 (TTL)
- Communications baud rate (UART): (9600 × N) bps where N = 1 ~ 12 (default N = 6, ie 57600bps)
- Fingerprint reader module size: 33.4x22.4 (mm)
- Effective collection area: 10x10 (mm)
- Scanning Speed < 0.2 second
- Verification Speed < 0.3 second

- Matching Method: 1:1; 1:N
- Resolution 508 DPI
- Voltage: DC 4.2-6.0V
- FRR (False Rejection Ratio): ≤0.01%
- FAR (False Acceptance Ratio): ≤0.0001%
- Fingerprint capacity:500(Default)
- Antistatic capacity: 15KV
- Abrasive resistance intensity: 1 million times
- Peak power consumption: 100 mA
- Work environment: -25°C ---50°C
- Work Humidity: 0-90%

Fig semiconductor finger print module

4. 5mm 4Pin Common Cathode RGB LED:

With an RGB LED you can, of course, produce red, green, and blue light, and by configuring the intensity of each LED, you can produce other colors as well.

For example, to produce purely blue light, you'd set the blue LED to the highest intensity and the green and red LEDs to the lowest intensity. For a white light, you'd set all three LEDs to the highest intensity. To produce other colors, you can combine the three colors in different intensities. To adjust the intensity of each LED you can use a PWM signal. Because the LEDs are very close to each other, our eyes see the result of the combination of colors, rather than the three colors individually. To have an idea on how to combine the colors, take a look at the following chart. This is the simplest color mixing chart, but gives you an idea how it works and how to produce different colors.

3.2.2 SOFTWARE TESTING:

Code

We must add the fingerprint sensor's library and then upload the code. If it is the first time you are using an Arduino board, don't worry, just follow these steps:

- Go to www.arduino.cc/en/Main/Software and download the Arduino software compatible your OS. Install the IDE software as instructed.
- Run the Arduino IDE and clear the text editor and copy the following code in the text editor.
- Choose the board in tools and boards, select your Arduino board.
- Connect the Arduino to your PC and set the COM port in tools and port.
- Press the upload (Arrow sign) button.

1) Assembling:
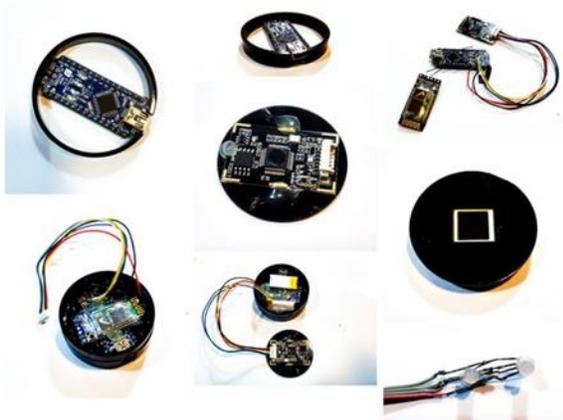
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II. FUTURE SCOPE

- This Gadget Will be For Android/iOS/Win10 Devices by Arduino.
- Using This Project, We Will be Able to Avoid Unauthorized Entry Within a Range.
- All Smart Devices Will be Unlocked with Only One Time Authentication.
- Once We Come Out of The Range All the Devices Will be Locked Again.

III. ADVANTAGES

- It is not dependent on network.
- Affordable to all

CONCLUSION

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