

Automatic Door Lock System User Manual

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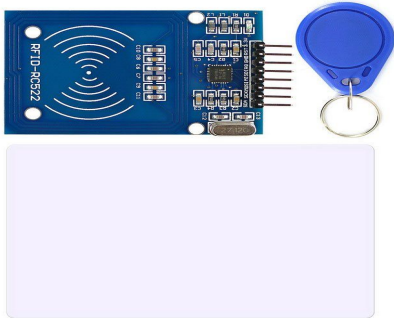
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Node 1 : RFID Door Lock System

1.1. Specifications

1.1.1. RFID Module



The MFRC522 is a highly integrated reader/writer IC for contactless communication at 13.56 MHz. It adopts advanced modulation and demodulation theory and has integrated all types of passive contactless communication mode and protocols at 13.56 MHz. MFRC522 supports faster contactless communication such as MIFARE. The bidirectional data transfer rate is as high as 424kbit/s.

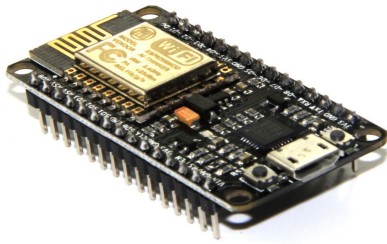
- Working current: 13 - 26mA/ DC 3.3V
- Idle current: 10-13mA/ DC 3.3V
- Sleep current: <80uA
- Peak current: <30mA
- Working frequency: 13.56MHz
- Supported Card type: Mifare1 S50 Mifare1, support S70, Mifare UltraLight, Mifare Pro, Mifare Desfire
- operating temperature: -20 - 80 degrees Celsius
- storage temperature: -40 - 85 degrees Celsius
- Relative humidity: 5% - 95%
- Data transmission speed: 10M bit/s at Maximum.

1.1.2. Electromagnetic Door Lock



- Lock size: 54 x 41 x 30 mm
- Material: Steel frame and copper coil
- Voltage: DC 12V
- Working Current: 0.80A Max (at DC12V 20C)
- Power: 9.6 W
- DC Resistance: 14 ohm±10%
- Plug pin route length: 10 mm
- Stroke and force: 10 mm-- >=250gf
- Unlock time: 1s, max power on/time < 30S.
- Operation temperature : -5C --+55C

1.1.3. NodeMcu



- Use CH340G.
- 3.3 V Power Supply
- Open-source, Interactive, Programmable, Low cost, Simple, Smart, WI-FI enabled
- Arduino-like hardware IO
- Advanced API for hardware IO, which can dramatically reduce the redundant work for configuring and manipulating hardware.
- WiFi operation current: continuous transmission operation: $\approx 70\text{mA}$ (200mA MAX), idle mode: $< 200\mu\text{A}$
- Serial WiFi transmission rate: 110-460800bps
- Temperature: $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$
- Humidity: 10%-90% non-condensing
- Weight: about 20g (0.7oz)

1.1.4. IR Sensor

- Voltage: 3.3V - 5VDC
- Detection distance: 2m--60m(adjustable)
- Detection Angle: 35°
- the comparator using LM393
- Screw holes: 3mm
- Size of board: 31mm(length)*15mm(width)
- Size of cable: 21.3mm(including the port)
- Pin definition : VCC, GND, OUT
- Pitch : 2.54mm
- the sensor module output port OUT can be directly connected to the microcontroller IO port can,
- also can drive a 5v relay directly; Connection mode: VCC - VCC; GND - GND; OUT - IO



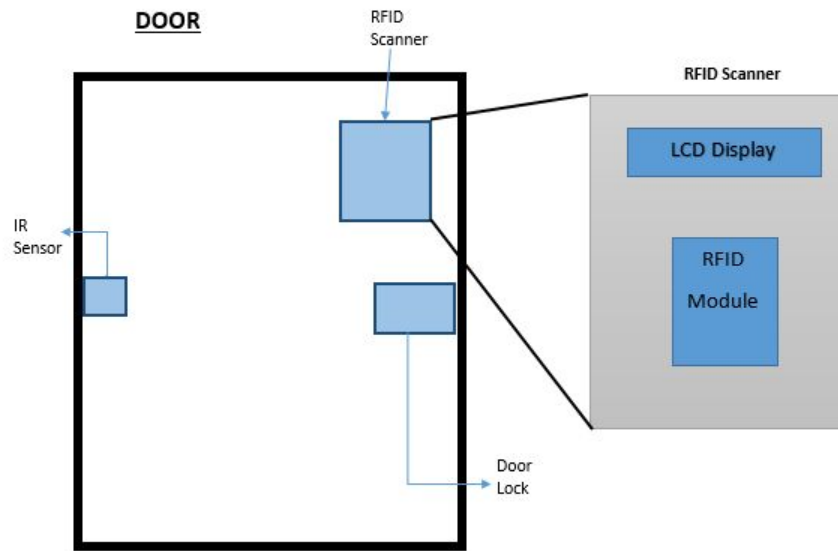
1.1.5. LCD Module



A 16×2 LCD display is very basic module and is very commonly used in various devices and circuits. It utilizes the extremely common HD44780 parallel interface chipset. It can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5×7 pixel matrix. This LCD has two registers, namely, Command and Data. It works of 5V and has a Blue Backlight which can be switched on and off as desired. The contrast of the screen can also be controlled by varying the voltage at the contrast control pin.

- Backlight (White character on Blue background)
- Supply voltage: 5V
- Size: 82x35x18 mm
- Display: 16 Characters X 2 lines

1.2. Identification of Product



1.3. How to Use

1.3.1. Registering cards/tags

In order to register a new card / tag, administrator should fill the form provided in the website with the RFID card/tag ID which is uniquely provided for each card/tag. Here, the card/tag is registered for one specific person. One person will have only one card/tag relevant to his/her registration.

1.3.2. Access using Cards/tags

Contact the RFID card/tag to the RFID reader. Then the access will be granted if the card/tag is a registered one by the administrator for that person. LCD display will display the information whether access has been given or not. All the accesses will be recorded on the website.

1.3.3. Unauthorized Access

If any unauthorized access is detected i.e. using an unregistered card/tag or trying to access more than one person into the room using one card/tag, access will not be granted and the buzzer will make a loud sound. LCD display will display the information whether access has been given or not These accesses will be recorded on the website.

Node 2 : Fingerprint Door Lock System

2.1. Specifications

2.1.1. Fingerprint Sensor



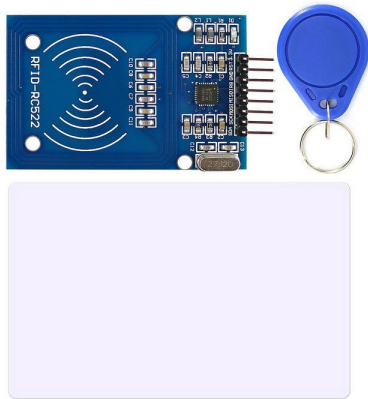
- Supply voltage: DC 3.6 ~ 6.0V / 3.3V Supplying
- Supply Current: Current: <120mA
- Peak current: <140mA
- Fingerprint image time: <1.0 seconds
- Storage capacity: 300
- Search time: <1.0 seconds (1:500, the mean)
- PC Interface: UART (TTL logic level) or USB2.0 / USB1.1
- Communication baud rate (UART): (9600 \times N) bps where N = 1 ~ 12 (default value N = 6, ie 57600bps)
- Working environment:
 - Temperature: -20 °C - +50 °C
 - Relative Humidity: 40% RH-85% RH (non-condensing)
- Storage environment:
 - Temperature: -40 °C - +85 °C
 - Relative humidity: <85% H (non-condensing)

Hardware connection:

Module via a serial communication interface, directly with 3.3V or 5V power microcontroller communication: Module data transmission feet (2 Foot TD) connected to the data bit machine receiving end (RXD), data receiver module feet (3 feet RD) connected to the data sender bit machine (TXD).

For the RS-232 level (for example: PC machine) for PC communication, increase the level conversion between the module and the host computer

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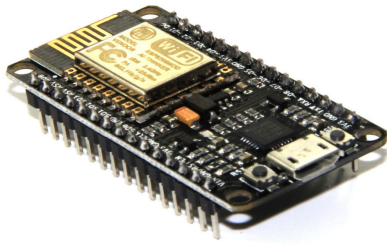
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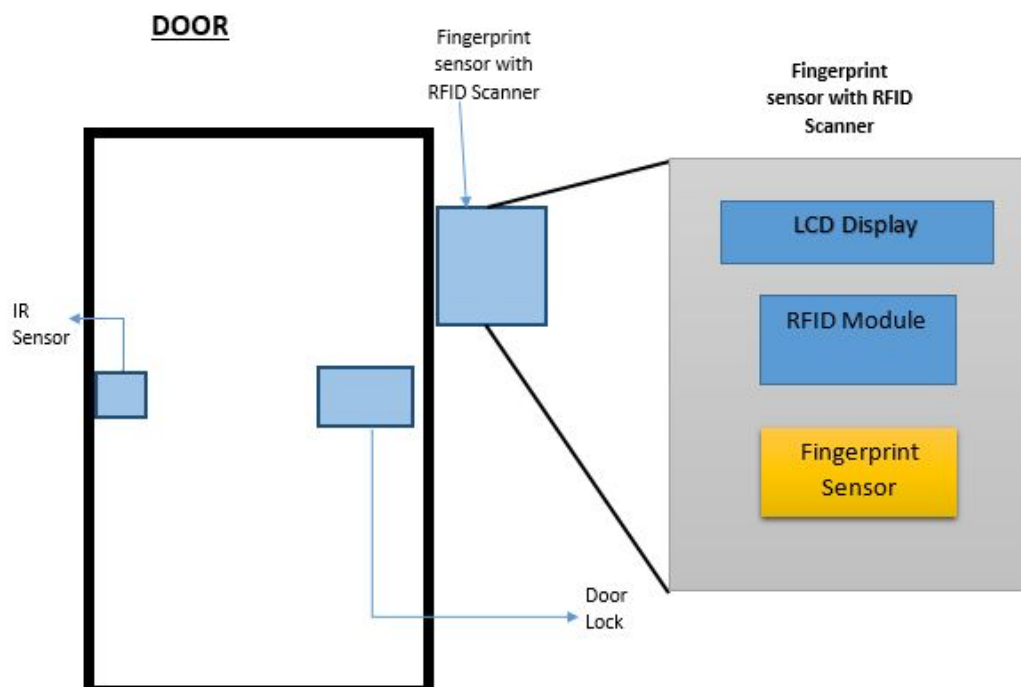
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- Backlight Type: Yellow LED
- Supply voltage: 5V
- Size: 82x35x18 mm
- Display: 16 Characters X 2 lines

2.2. Identification of Product



2.3. How to Use

2.3.1. Registering fingerprints

To grant access for high security areas we are using the fingerprint sensor. Before registering the fingerprint, the user should have a valid UID tag. Administrator should use the node which is specified for him. From that he can register the authorized users.

2.3.2. Access using fingerprint

Before accessing through the fingerprint sensor the user should have a valid UID tag and valid fingerprint ID. Then the person can access.

2.3.3. Unauthorized Access

If more people try to enter behind an authorized person it will be detected by the IR sensor and will be displayed as an unauthorized access.

3. Website

3.1 Specifications

3.1.1. Security of the Website

- Users with authorized credentials can log to the website.
- Only Admin (may be the security department management) can add users to the website.
- Credentials can not be attacked by any third party.

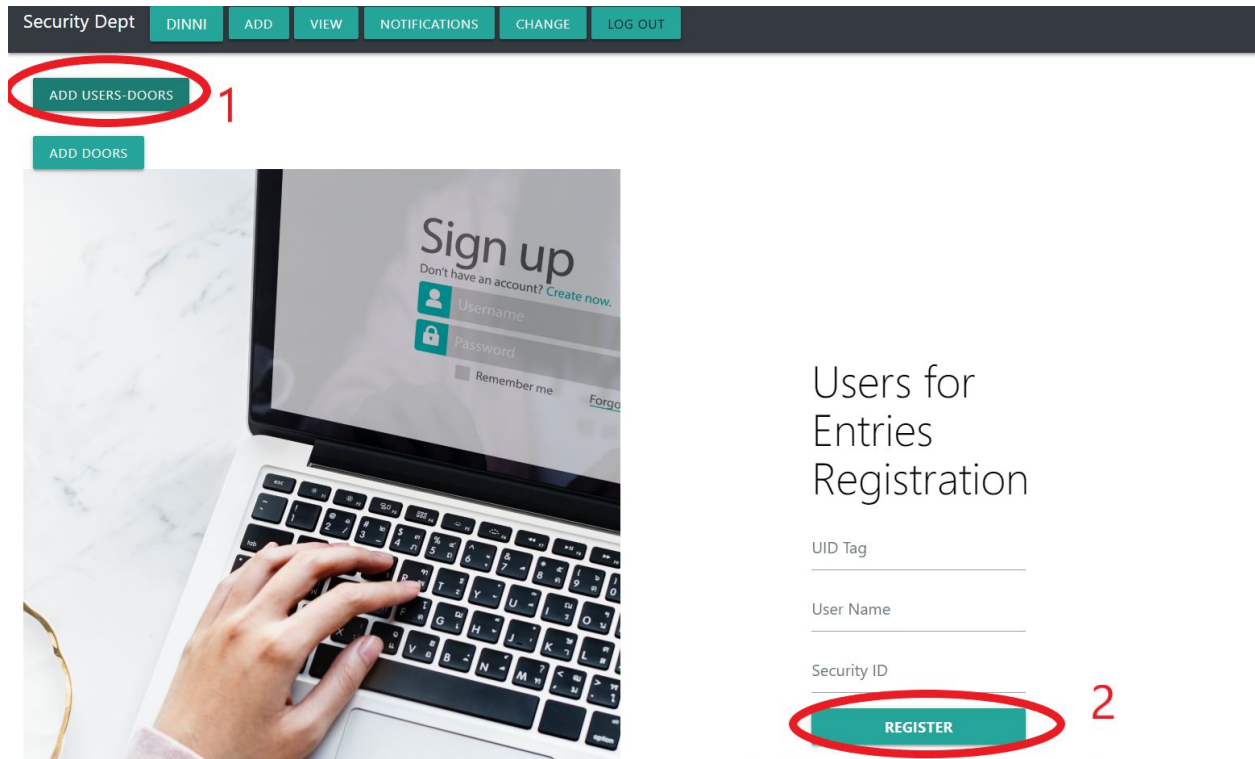
3.1.2. Technical Specifications and Uses

- Can add users who are allowed to enter through each door and can remove resigned users using website.
- Can view user entry details of each door.
- Can view last entered history of a particular user in a particular door.
- Website notifies with exact time whenever system recognized an unauthorized access. Use of this specification is user can check cctv of that time and recognize that person.

3.2. How to use

3.2.1 Add users for Doors

Follow these steps



Security Dept DINNI ADD VIEW NOTIFICATIONS CHANGE LOG OUT

ADD USERS-DOORS 1

ADD DOORS

Sign up
Don't have an account? [Create now.](#)

Username

Password

☐ Remember me [Forgot](#)

Users for Entries Registration

UID Tag

User Name

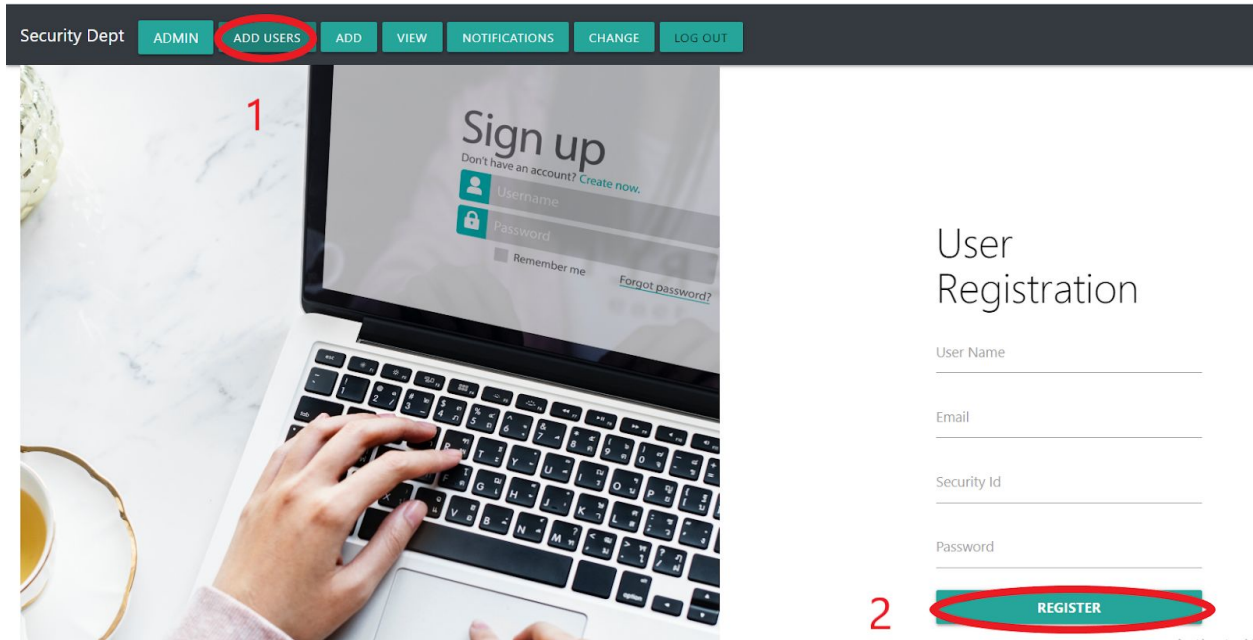
Security ID

REGISTER 2

Can add users to doors by using this page using UID Tag, User Name and the Security ID of that door user.

3.2.2 Add users for website by Admin panel

This page is only accessible for the named Admin panel



Whose username named as “Admin” recognized as Admin and only admin can use this page to add users to the website. Another admin can place a new admin using this page.

Should enter username, email, security id and password because those fields are necessary fields.

3.2.3. View all Door entries

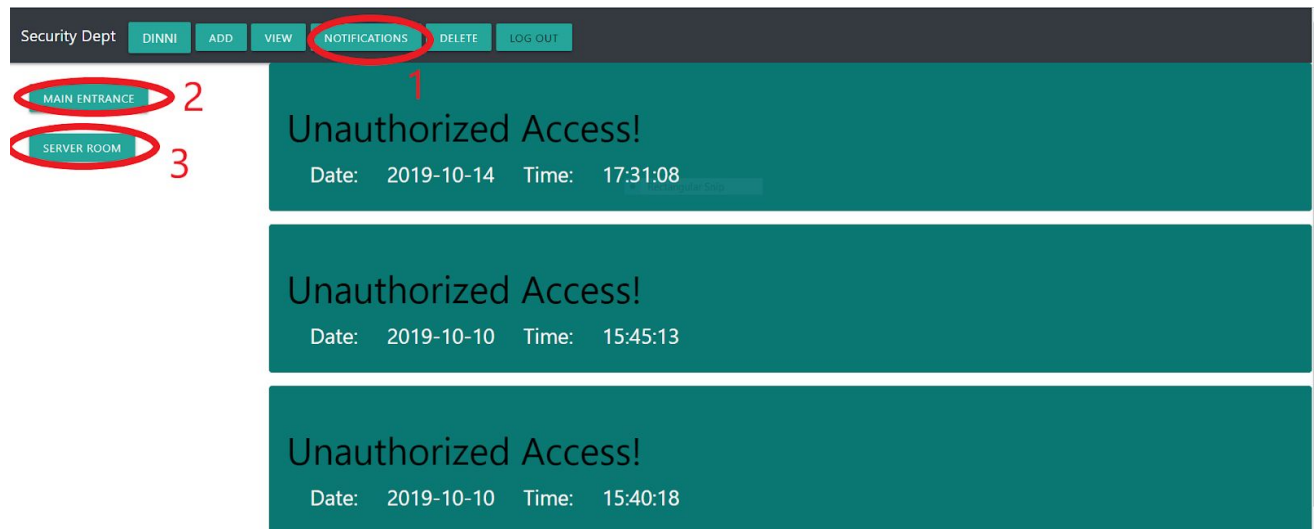
The screenshot shows a web application interface for 'Security Dept'. At the top, there is a navigation bar with buttons: DINNI, ADD, VIEW (circled in red and labeled 1), NOTIFICATIONS, DELETE, and LOG OUT. On the left side, there is a sidebar menu with several items, each circled in red and labeled with a number: REGISTERED USERS-DOORS (2), REGISTERED USERS-WEB SITE (3), MAIN ENTRANCE ACCESS (4), MAIN ENTRANCE ACCESS HISTORY (5), SERVER ROOM ACCESS (6), and SERVER ROOM ACCESS HISTORY (7). The main content area is titled 'Server Room Access History' and contains a table with three columns: Tag Id, Entered Date, and Entered Time. The table lists several access events for 'CB 3D AD0E' on '2019-10-14' and '2019-10-10'.

Tag Id	Entered Date	Entered Time
CB 3D AD0E	2019-10-14	17:31:10
CB 3D AD0E	2019-10-14	17:30:46
CB 3D AD0E	2019-10-14	17:30:16
CB 3D AD0E	2019-10-10	15:45:16
CB 3D AD0E	2019-10-10	15:45:02
CB 3D AD0E	2019-10-10	15:40:20
CB 3D AD0E	2019-10-10	15:39:34
CB 3D AD0E	2019-10-10	15:38:06

By going through steps 2,3,4,5 under step 1(view tab)

- 2 - Can view all the registered users for doors
- 3- Can view registered users for the website (may be the users from the security department)
- 4- Can view last access history of a particular user in main entrance(low security)
- 5- Can view access history of all doors in main entrance(low security)
- 6- Can view last access history of a particular user in server room(high security)
- 7- Can view access history of all doors in server room(high security)

3.2.4 Notifications of Unauthorized Access



This notifications tab notifies the website user with exact time whenever system recognized an unauthorized access. Use of this specification is user can check cctv of that date and time and recognize that unauthorized activity.