NFC Hours Tracker - User Guide

Table of Contents

Chapter 0: Prerequisites

Required hardware

- Raspberry Pi
    - Access to internet
- PN532
- 3.3V power supply

Raspbian OS

1. Set up your Raspberry Pi with Raspbian
2. Enable I2C on your Raspberry Pi

Software installation

Download the code from https://github.com/jasonli0616/5409-rfid-checkin

Install the required libraries using the Python package manager
`pip3 install -r requirements.txt`

Google Sheets

Create a Google Sheet, and paste this file into Google Apps Script (*Extensions* > *Apps Script* within Google Sheets)

Chapter 1: Configuration and authorization

Google Cloud integration

1. Enable “Google Drive API” and “Google Sheets API” in Google Cloud Console (click the links, or see how)
2. Follow the authorization instructions
3. Paste the file paths to the `config.json` file
4. Paste the Google Sheet ID to the `config.json` file

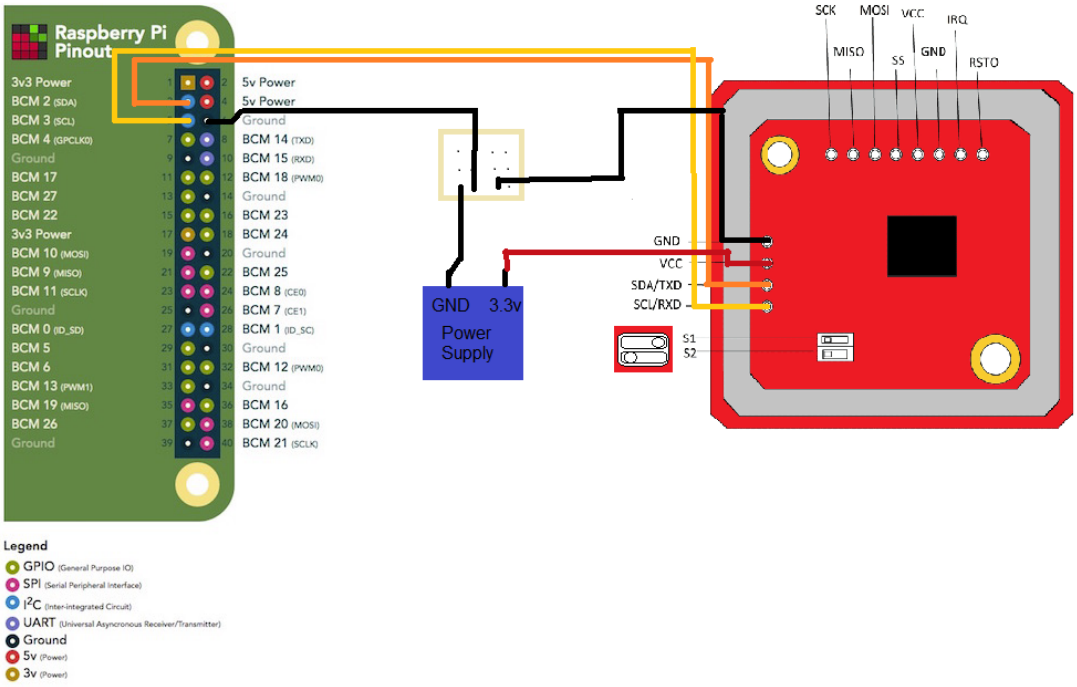
MongoDB integration

1. Create a free MongoDB Atlas database (see Atlas UI instructions in link)
2. Add a database user
3. Get the connection URI, and paste it to the `config.json` file

Chapter 2: Wiring

PN532 (NFC Module)

Wire the PN532 to the Raspberry Pi accordingly:

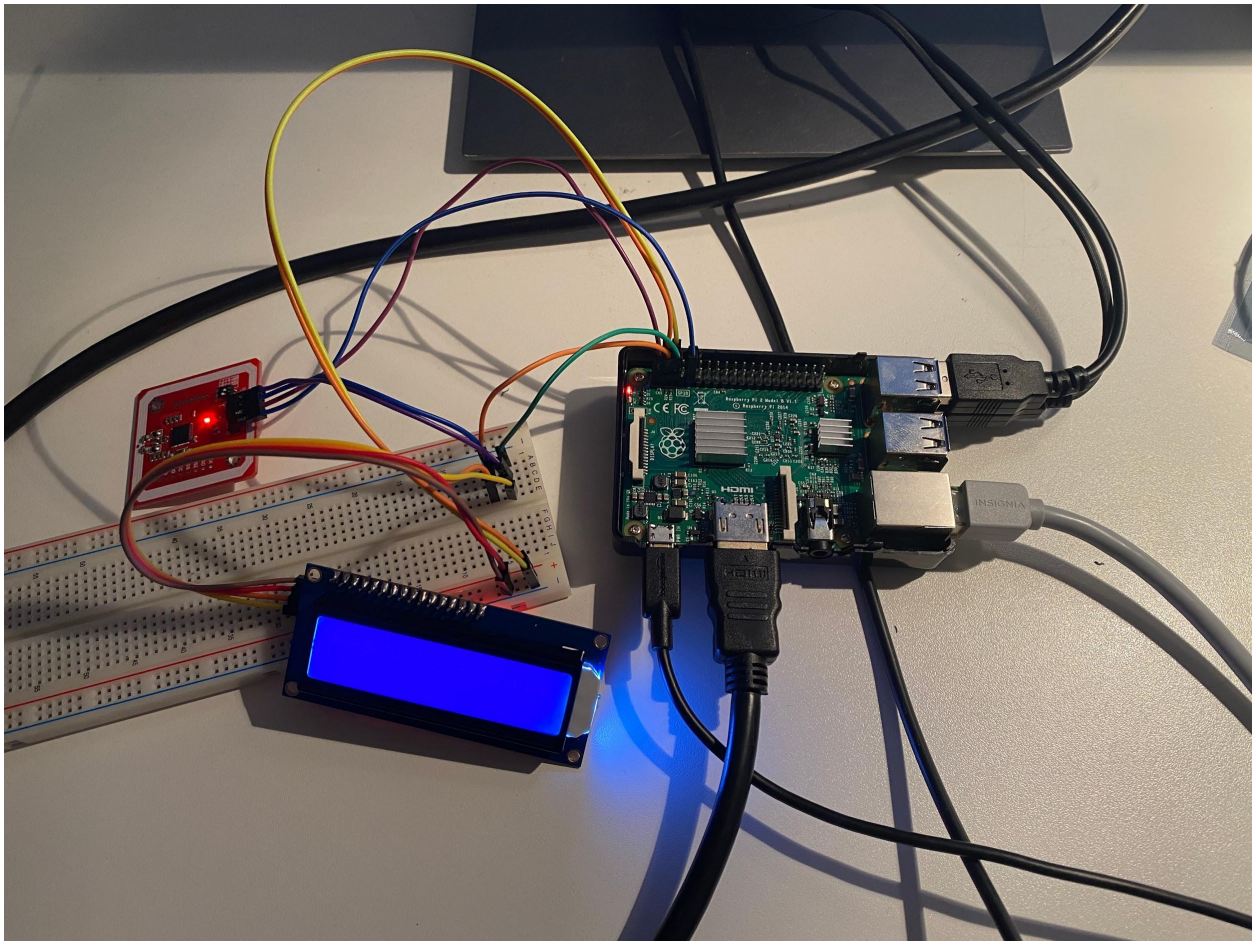


Theoretically, a 3.3V power supply is required for the PN532, because the Raspberry Pi does not provide enough current (source). I have not encountered any issues with just using the 3.3V supplied from the Raspberry Pi.

Ensure that the switch on the PN532 is set to I2C (see image above).

LCD Display

An LCD display can be used instead of using a monitor, to display text output. You can daisy-chain I2C to the LCD, instead of wiring the LCD directly.



Chapter 3: Using the program

Run the Python script on the Raspberry Pi using the command:
`python3 main.py`

You can view users' hours on the Google Sheet. The script will automatically run when you open the file. You can also manually run the script in the menu bar.

Chapter 4: Maintenance

To edit/remove users, or to edit hours, connect to the MongoDB database through their website, browse collections, and edit the data. Editing the Google Sheet will make any permanent changes, they will be overwritten by the script.

Resources Used

This project was made with the help of the following resources:

- https://pypi.org/project/pn532pi/
- https://pygsheets.readthedocs.io/en/stable/
- https://www.raspberrypi.com/documentation/computers/getting-started.html
- https://www.raspberrypi.com/documentation/computers/raspberry-pi.html
- https://rplcd.readthedocs.io/en/stable/