

Room Occupancy Step-by-Step

Using raspberry pi integrated into Salesforce

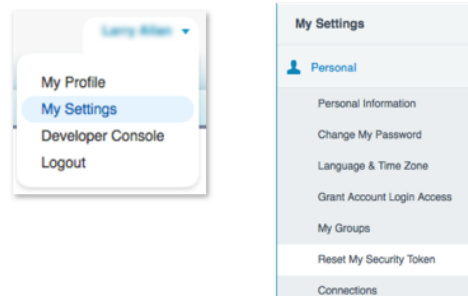
Prerequisites

- Raspberry Pi 2 or 3 [https://www.amazon.com/CanaKit-Raspberry-Complete-Starter-Kit/dp/B01C6Q2GSY/ref=sr_1_1?s=electronics&ie=UTF8&qid=1474338914&sr=1-1&keywords=raspberry+pi+3+starter+kit]
- PIR sensor (3.3 volts) [<https://www.adafruit.com/products/189>]
- Female to female wires to connect PIR to Pi [<https://www.adafruit.com/products/794>]
- Wired internet connection

Salesforce Setup

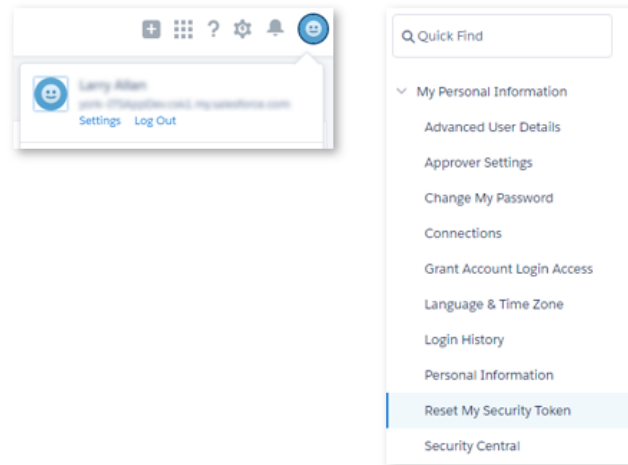
- 1) Create new custom object called Room
 - a. Create custom checkbox field called Occupied
- 2) Create custom object called Room Occupancy
 - a. Create custom master-detail field pointing to Room as master
 - b. Create custom datetime field called Start Date
 - c. Create custom datetime field called End Date
 - d. Create formula field called Duration (it will calculate difference between Start Date and End Date)
- 3) Create security token
 - a. In classic SF:

Navigate to: [your name] > My Settings > Personal > Reset My Security Token



- b. In lightning experience:

Navigate to: [your name] > Settings > My Personal Information > Reset My Security Token

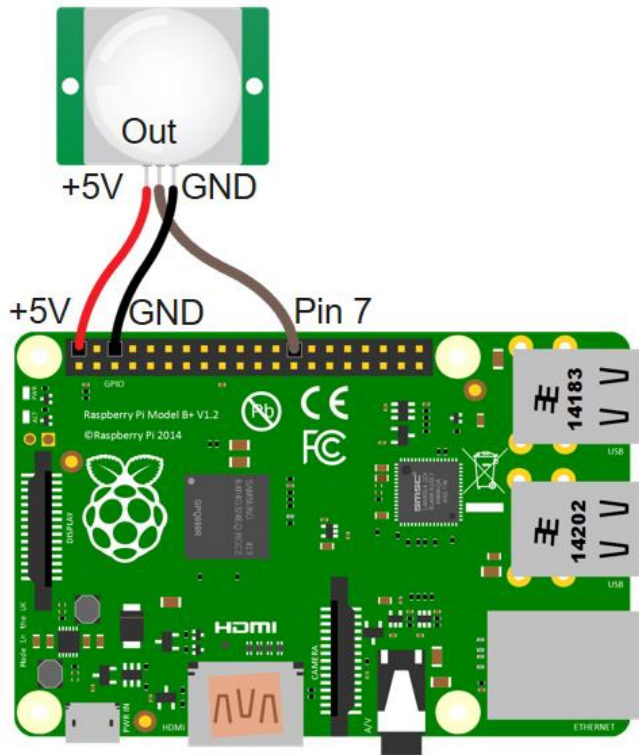


- 4) Create room record
a. Write down id by looking at URL

Setup Raspberry Pi

- 1) Format 16GB (or larger) micro SD card to FAT32
- 2) Download NOOBS OS installer here: www.raspberrypi.org/downloads
- 3) Copy the extracted files to the root directory on your micro SD card
- 4) Insert your micro SD card into your Pi. Connect your mouse, keyboard, and monitor.
- 5) Boot up your Pi and follow directions to complete the initial setup
NOTE: You will need internet connection to pi for next steps. Connect Ethernet from pi to modem/router
- 6) Open terminal from Pi desktop and run these commands
 - a. `sudo apt-get update`
 - b. `sudo apt-get install xrdp`
 - c. `sudo apt-get install python3-pip`
 - d. `sudo pip-3.2 install simple-salesforce`

- 7) Connect PIR sensor to GPIO pins



- 8) Download python script RoomMonitorDF16.py to pi
- 9) Setup python script variables:
- USER_NAME = your salesforce username
 - PASSWORD = your salesforce password
 - TOKEN = the security token you had emailed to yourself
 - SANDBOX = true/false (false if using developer edition)
 - ROOM_ID = the room record id
 - PIR_PIN = the pin you connected the PIR data wire to (we used pin 7)
- 10) Run python script from terminal or from raspbian desktop

Useful Resources

- GitHub Repo [<https://github.com/YorkRegion/RoomPresenceDF16>]
- Salesforce Trailhead – Create Custom Objects and Fields [https://trailhead.salesforce.com/force_com_admin_beginner/data_modeling/creating_custom_objects_fields]
- Salesforce Trailhead – Using Formula Fields [https://trailhead.salesforce.com/force_com_admin_intermediate/point_click_business_logic/formula_fields]
- Salesforce – Sign up for free developer edition sandbox [<https://developer.salesforce.com/signup>]
- Raspberry Pi NOOBS [<https://www.raspberrypi.org/downloads/noobs/>]

- Using Terminal on Raspberry Pi [<https://www.raspberrypi.org/documentation/usage/terminal/>]