IoT Lab 1 Protocol

## Starting up

Your SD card is loaded with an image that contains everything you need. When starting up the Raspberry Pi with the SD card inserted it will automatically connect to the lab wifi.

1. Put the Raspberry Pi into the protective box.
2. Attach the Sense HAT to the Raspberry Pi like the instructor shows you, attach the camera if you have one.
3. Insert the SD card into the Pi.
4. Plug the power adapter into the Pi and to the wall socket.
5. Connect your laptop to the lab wifi:
   1. Name: IoT\_lab
   2. Password: discoveroldspacechild
6. Ask the instructor to help you find the IP of your Pi.
7. Using SSH (you can use [PuTTY](https://www.chiark.greenend.org.uk/~sgtatham/putty/latest.html) on windows), connect to the IP:
   1. Username: pi
   2. Password: raspberry
8. You should now have terminal access over SSH to the Pi to do what you want.

## Testing the Sense HAT

The Sensor HAT integrates seamlessly into the Raspberry Pi and contains the following peripherals

* Gyroscope
* Accelerometer
* Magnetometer
* Temperature sensor
* Barometric pressure sensor
* Humidity sensor
* five-button joystick
* 8×8 RGB LED matrix

In order to test your Sensor HAT do the following:

1. Make sure the Sensor HAT is attached on top of your Raspberry PI in the way instructed.
2. SSH to your Pi.
3. Run the following command:  
   python -c "from sense\_hat import SenseHat; SenseHat().show\_message('IoT Lab\!')"
4. You should see a message displayed on the LED matrix.
5. To learn more about how to operate the Sense HAT and see further examples go to <http://pythonhosted.org/sense-hat/>

## Lab goals

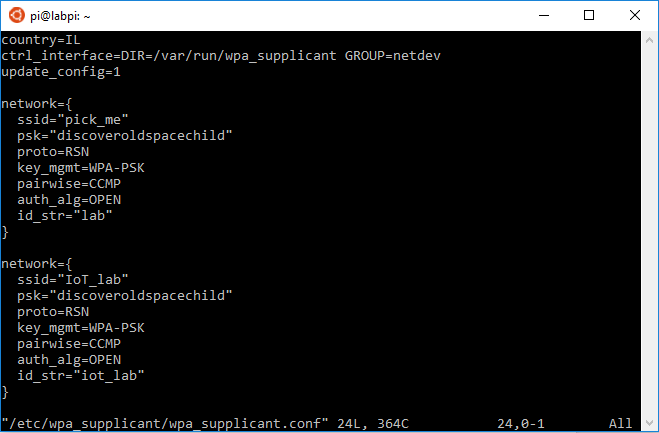
Now that you have the Pi up and running with the Sense HAT, please use the lab time to create a simple sensor that interacts with the user.

Example: A temperature sensor that shows an alert on the RGB matrix when the temperature had changed.

Additional Information

## Adding more wireless networks

Your Raspberry Pi is only configured to connect to the lab wifi. You can use the procedure below to add more networks such as your home network.

1. Connect over SSH to your Pi
2. Using ‘nano’ or ‘vim’ edit the file “/etc/wpa\_supplicant/wpa\_supplicant.conf” (don’t forget to sudo)
3. There are already two networks configured here, add your own network in the same configuration. Normally you shouldn’t change anything but the ssid (network name) and psk (password).   
   There is no need to delete anything in the existing configuration, keep the networks there so your Pi still knows how to connect to the lab.  
   
4. Save the file and restart the Pi

## How to reset the device to initial configuration

If you want to start over and format your device you can follow these steps:

1. Download the image file from this link <https://goo.gl/QYuHxG>
2. Extract the .rar file using winrar or any other compatible software
3. Follow the instructions here:  
   <https://www.raspberrypi.org/documentation/installation/installing-images/windows.md>