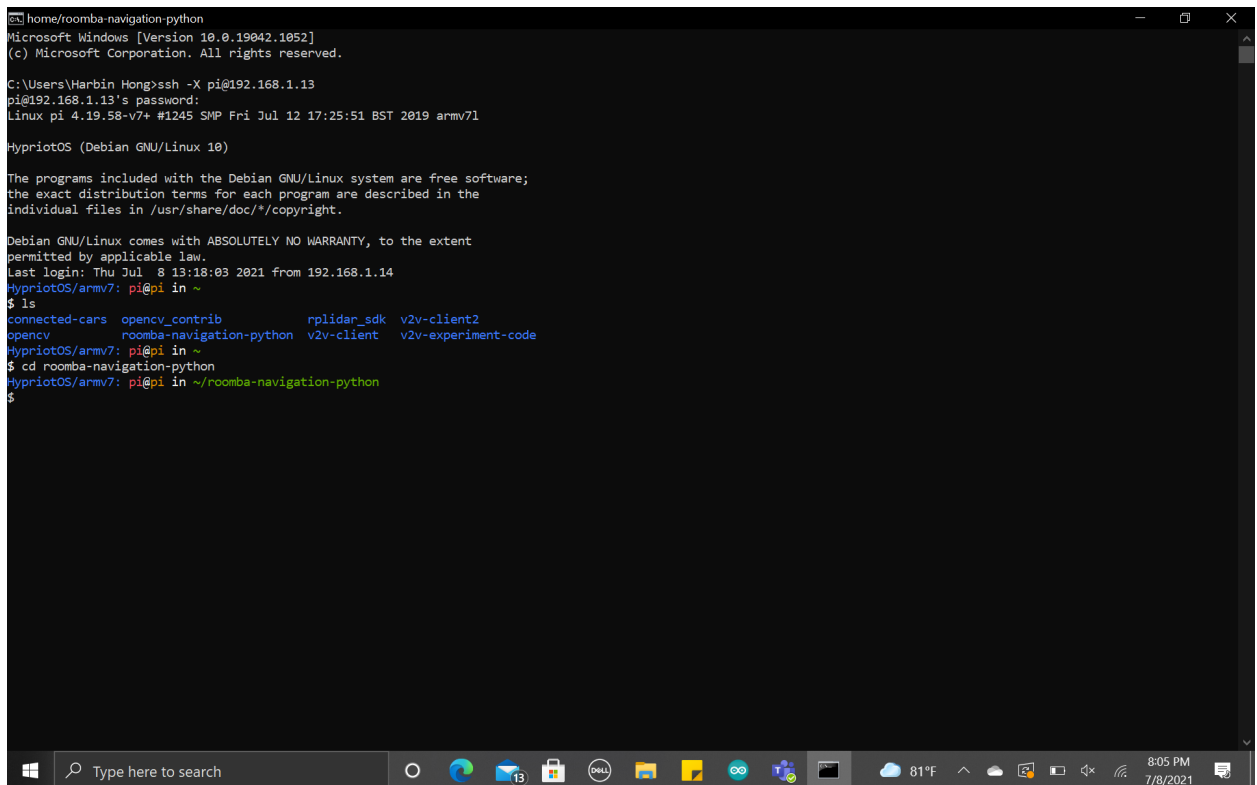


1. Go to IP Address 192.168.1.1
2. Username is "admin" and password is "78zBJr!4bVdpaFIQ"
3. Find the correct IP address of the Raspberry Pi with tag of 7F
4. Open command terminal
5. Connect to the correct Raspberry pi (7F) using the following command:
"ssh -X pi@(insert IP address of the Raspberry Pi)"
6. Once you connect to the Raspberry Pi, check that you are connected to the correct Raspberry Pi by typing in the command "ls." If the previous steps have all been completed correctly, there should be a directory called "roomba-navigation-python"
7. Switch to that directory by typing in the command "cd roomba-navigation-python." Your screen should now look similar to this. If not, close terminal and repeat the previous steps.



```
home/roomba-navigation-python
Microsoft Windows [Version 10.0.19042.1052]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Harbin Hong>ssh -X pi@192.168.1.13
pi@192.168.1.13's password:
Linux pi 4.19.58-v7+ #1245 SMP Fri Jul 12 17:25:51 BST 2019 armv7l

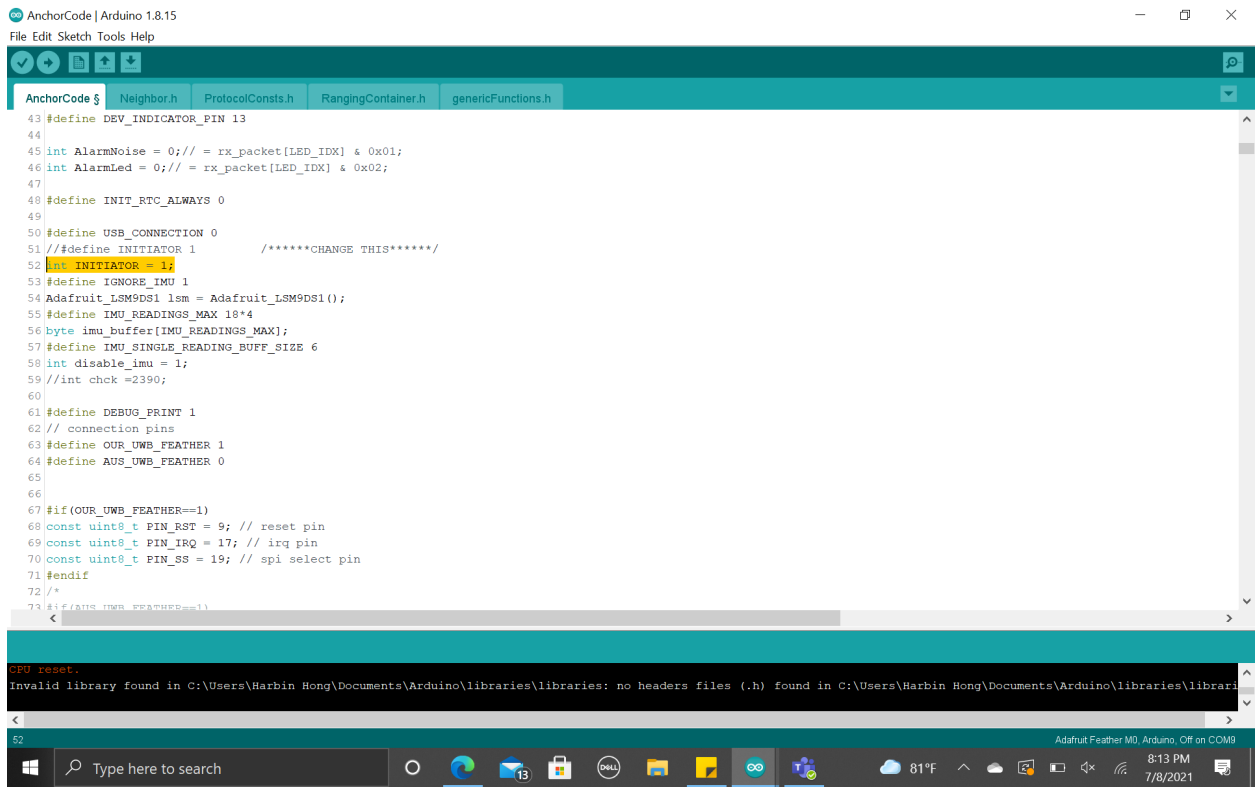
HyprIoTOS (Debian GNU/Linux 10)

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
Last login: Thu Jul  8 13:18:03 2021 from 192.168.1.14
HyprIoTOS/armv7: pi@pi in ~
$ ls
connected-cars  opencv_contrib  rplidar_sdk  v2v-client2
opencv         roomba-navigation-python  v2v-client  v2v-experiment-code
HyprIoTOS/armv7: pi@pi in ~
$ cd roomba-navigation-python
HyprIoTOS/armv7: pi@pi in ~/roomba-navigation-python
$
```

8. Once you have gotten to this screen on the command terminal, you should now switch to setting up the arduino boards, a.k.a. the UWB sensors.
 - a. I have copied and pasted the instructions that Haige Chen sent me for setting up the boards into another file. [Haige Chen's Instructions for UWB sensors - Google Docs](#)
9. At least three boards will be Anchors while the other is the Tag. Connect the USB port of the first Arduino board to your computer and manually change the port on the Arduino program. This step must be done every time you change which Arduino Board is connected to your computer

11. Also remember that only the first Anchor has an Initiator value of 1 while the rest have Initiator values of 0.



```
AnchorCode | Arduino 1.8.15
File Edit Sketch Tools Help

AnchorCode | Neighbor.h | ProtocolConsts.h | RangingContainer.h | genericFunctions.h

43 #define DEV_INDICATOR_PIN 13
44
45 int AlarmNoise = 0; // = rx_packet[LED_IDX] & 0x01;
46 int AlarmLed = 0; // = rx_packet[LED_IDX] & 0x02;
47
48 #define INIT_RTC_ALWAYS 0
49
50 #define USB_CONNECTION 0
51 // #define INITIATOR 1 //*****CHANGE THIS*****/
52 int INITIATOR = 1;
53 #define IGNORE_IMU 1
54 Adafruit_LSM9DS1 lsm = Adafruit_LSM9DS1();
55 #define IMU_READINGS_MAX 18*4
56 byte imu_buffer[IMU_READINGS_MAX];
57 #define IMU_SINGLE_READING_BUFF_SIZE 6
58 int disable_imu = 1;
59 //int chk = 2390;
60
61 #define DEBUG_PRINT 1
62 // connection pins
63 #define OUR_UWB_FEATHER 1
64 #define AUS_UWB_FEATHER 0
65
66
67 #if(OUR_UWB_FEATHER==1)
68 const uint8_t PIN_RST = 9; // reset pin
69 const uint8_t PIN_IRQ = 17; // irq pin
70 const uint8_t PIN_SS = 19; // spi select pin
71 #endif
72 /*
73 #if(AUS_UWB_FEATHER==1)
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```
home/roomba-navigation-python
exit
hypr105/armv7: pi@pi in ~/roomba-navigation-python
$ ./start.sh
roomba-navigation-python_python_env_1 is up-to-date
root@pi:/shared#
```

18. At this point, go into your web browser, type in the raspberry pi's IP address followed by "8888" and you should see a screen like this

The screenshot shows a web browser window with the address bar displaying "192.168.1.13:8888/tree?". The page content is the JupyterLab interface, which includes a "Files" tab and a table of files in the current directory. The table has columns for "Name", "Last Modified", and "File size".

Name	Last Modified	File size
Roomba.ipynb	7 days ago	5.76 kB
rotatingAndDrivingTests.ipynb	a day ago	29.4 kB
Untitled1.ipynb	a month ago	748 B

19. The `rotatingAndDrivingTests.ipynb` is the correct file. Click on this file, run all the commands in the start-up procedure, run the functions, and you should be able to start controlling the Roomba using your computer.
20. Note: If you have done all the steps in the start-up procedure and it still does not move when you use the drive command, try restarting the kernel, making sure the roomba is turned on, and running the start-up procedure again.
21. Once you are done working, use the `bot.close` command on the Jupyter Notebook (the very last line of the notebook) and use the `“./stop.sh”` command in the command terminal to properly close everything.