

Indian Institute of Technology, Jodhpur

Lab Manual

Sensors and IoT

LAB - 4

Date: 23 Sept, 2024

Lab Objective

In this lab we will go through the usage of LoRa module

Part 1 : Setting Up Raspberry Pi

- In order to use the LoRa module certain changes need to be made in order to do so open the configurator

```
sudo raspi-config
```

- Use arrow keys to select Interface Options

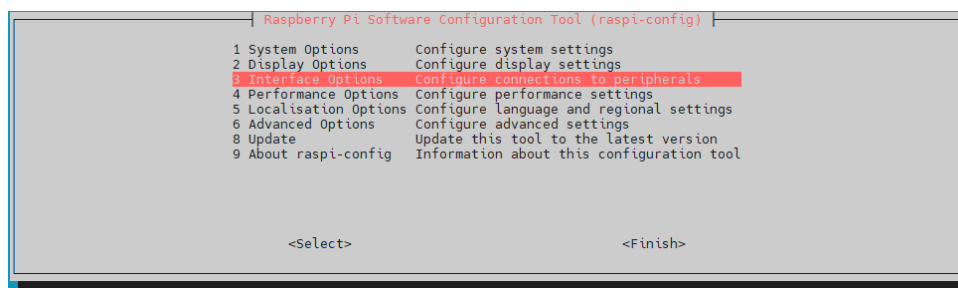


Figure 1: Select Interface Options

- Select Serial
- Select No in the first window and yes in the second window

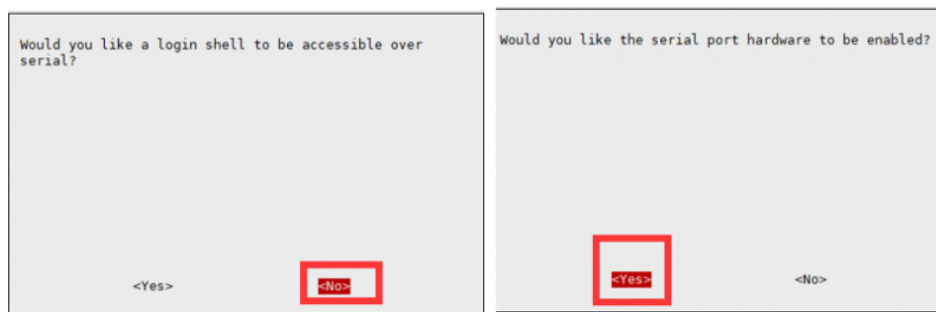


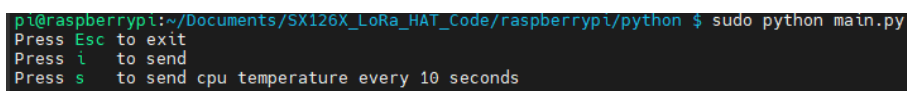
Figure 2: Enable Serial

- Run the following set of commands to get the sample code

```
cd Documents
wget https://files.waveshare.com/upload/1/18/SX126X_LoRa_HAT_CODE.zip
unzip SX126X_LoRa_HAT_CODE.zip
```

- once done run the code using

```
cd ~/Documents/SX126X_LoRa_HAT_Code/raspberrypi/python/
sudo python3 main.py
```



```
pi@raspberrypi:~/Documents/SX126X_LoRa_HAT_Code/raspberrypi/python $ sudo python main.py
Press Esc to exit
Press i to send
Press s to send cpu temperature every 10 seconds
```

Figure 3: Running the code

- Set the Lora Node configuration as per your team name

```
node = sx126x.sx126x(serial_num = /dev/ttyS0",freq=868,addr=0,
power=22,rssi=True,air_speed=2400,relay=False)
```

- freq - Defines the transmit frequency
- addr - defines node address (set your team number as addr)
- power - set transmit power
- rssi - display rssi value or not

- In order to transmit to a specific address press i and input

```
{RECIEVER_ADDRESS},868,Hello World
```

Assignment : Show Lidar data on OLED display

- In the LAB submission there are 2 experiments
 - Lab Experiments have to be done by 2 teams together
 - Team A will act as the transmitter and Team B will act as receiver
 - Experiment 1
 - Change the transmission power in the configuration and check the RSSI value at the receiver end
 - Experiment 2
 - Both the teams need to use the previous LAB's code to interface with the OLED module as well as the LiDAR module
 - Team A will use the LiDAR module to transmit the data to Team B
 - Team B will take that data the try to display it to the OLED display
 - In the LAB report please include the output from the provided examples, code written as part of the assignment, output images(if any).
 - LAB report can be prepared on ANY platform of your choice.
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