**Introduction:**

- Raspberry Pi uses bluetooth gui(Graphical User Interface or Command Line Interface)
- Uses 3 main libraries - BlueMan, Bluez and BlueTooth
- Uses Bluetooth Low Energy

**Connecting via Bluetooth**

**Mac**

Open Bluetooth settings on your mac computer by navigating to System Preferences then Bluetooth Settings
Ssh into Raspberry pi
Execute commands:
Sudo bluetoothctl
Agent on
Trust MAC Address
Pair MAC Address
Connect MAC Address

**Windows**

Sudo bluetoothctl
Agent on
Default-agent
Scan on
#Find the MAC address of your computer/device you're trying to connect to
#Under your computer's bluetooth settings, make sure your computer is set to "discoverable"
Pair [MAC Address]
Trust [MAC Address]
Connect [MAC Address]

**Linux**

Compatability between Mac, Windows, Linux:

- Windows - Easiest (Code shown below)
- Mac - Have to add extra libraries (code will be shown below tmrw)
- Linux - ?

**File to send files over bluetooth for Windows**

```
import os

os.system("sudo apt-get install obexpushd")

fin = open("/etc/systemd/system/dbus-org.bluez.service", "rt")
data = fin.read()
data = data.replace('ExecStart=/usr/lib/bluetooth/bluetoothd',
'ExecStart=/usr/lib/bluetooth/bluetoothd -C')
fin.close()
fin = open("/etc/systemd/system/dbus-org.bluez.service", "wt")
fin.write(data)
fin.close()

f = open("bluetoothshare", "x")
f.write("@reboot sudo mkdir /bluetooth \n @reboot sudo obexpushd -B -o /bluetooth -n
\n @reboot sudo sdptool browse local")

f.close()

os.system("/home/pi/Documents/bluetoothshare.txt")

print("rebooting")
os.system("sudo reboot now")


import os

os.system("bluetoothctl")
Type Discoverable on
Now use your computer's bluetooth MAC address to pair it with the pi
Once connected, you should see a notification in your terminal with a MAC address in
the format 00:00:00:00:00:00
devicemacaddress = raw_input("Right click to copy it and then paste it here: ")
os.system("exit")

filename = raw_input("Name of file to be sent: ")
```

os.system("bluetooth-sendto --device=%s %s", (devicemacaddress, filename))

Measure RSSI and Transmission Power:

- Received Signal Strength Indicator (RSSI) is a relative numerical scale that measures the quality of signals received by the client device
    - Range of scale varies from company to company, higher RSSI means stronger signal
- Transmit power can be thought of as “bluetooth volume”
    - Higher transit power means the signal can be heard over longer distances, but your device will consume more power to produce this long-distance signal