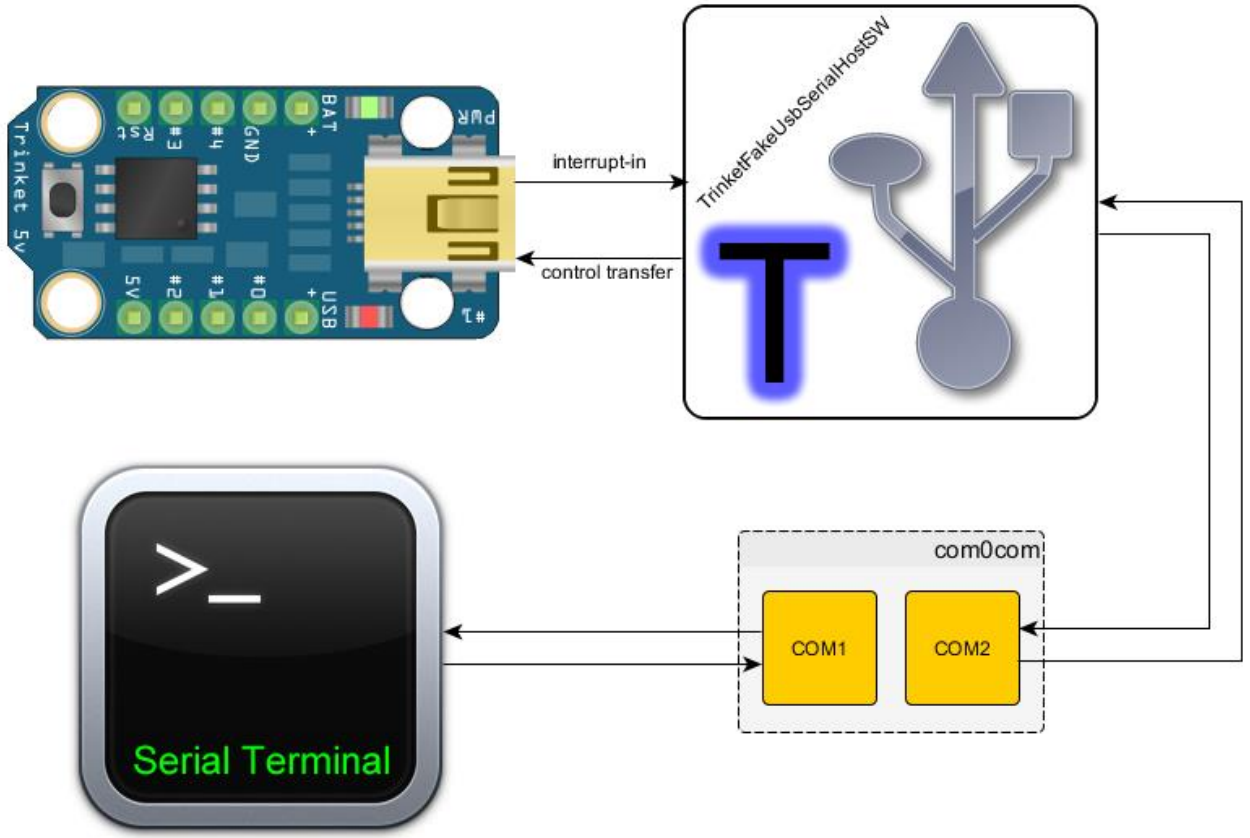
Simulation

Serial communication

Components Diagram



Components

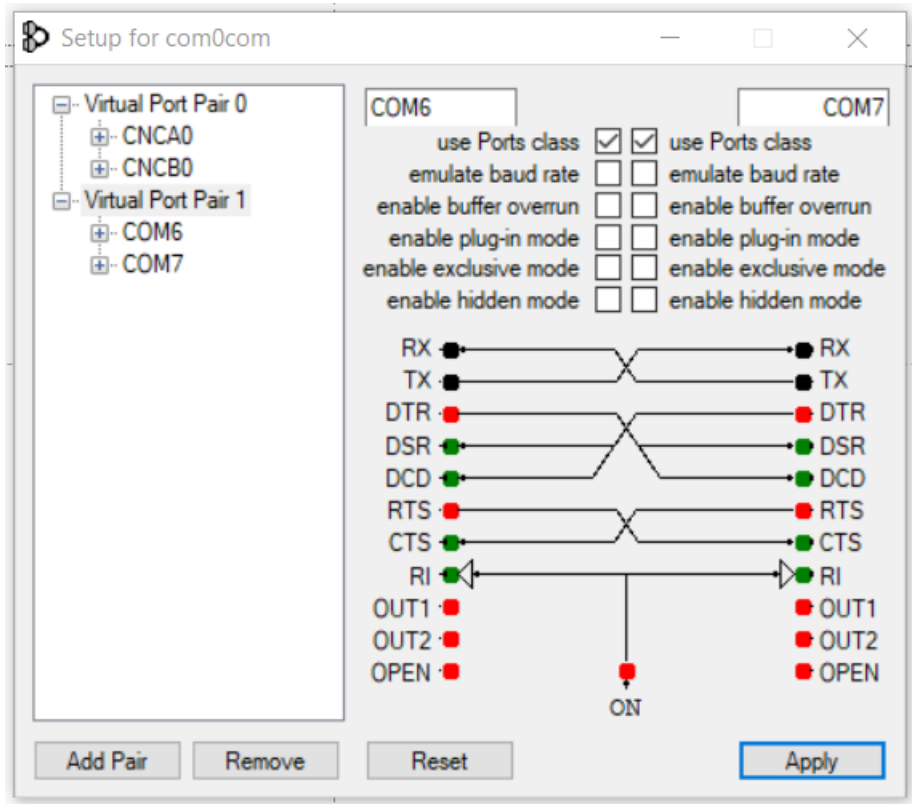
- **com0com**, which emulates the two fake serial ports (only required on Windows)
- Some sort of serial terminal (Arduino IDE, Hyperterminal, Teraterm, RealTerm, Putty, etc)

Installation

1. **Pyserial library for Serial communication**
   - pip install pyserial
2. **Hercules SETUP utility**
   - https://www.hw-group.com/software/hercules-setup-utility
3. **Virtual Serial port Driver**
   - https://www.fabulatech.com/virtual-serial-port-kit.html
   - https://sourceforge.net/projects/com0com/

Com0com Tool

- COM6 – Hercule
- COM7 - Program

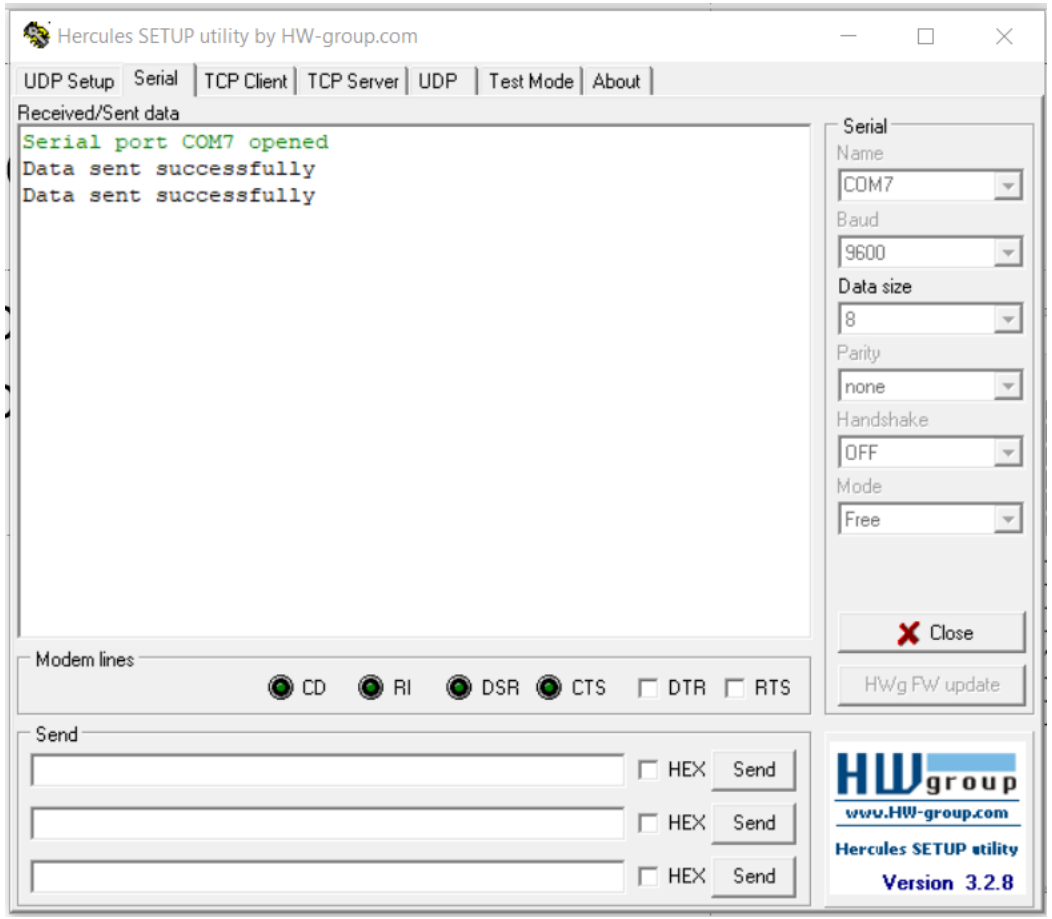


Code

```
import serial
ser = 0
def InitSerial():
    global ser
    ser = serial.Serial()
    ser.baudrate = 9600
    ser.port = "COM6"  # Port Name You want to

    ser.timeout = 10
    ser.open()
```

Hercule


Hercules SETUP utility by HW-group.com
UDP Setup
Serial
TCP Client
TCP Server
UDP
Test Mode
About
Received/Sent data
Serial port COM7 opened
Data sent successfully
Data sent successfully
Serial
Name
COM7
Baud
9600
Data size
8
Parity
none
Handshake
OFF
Mode
Free
Close
HWg FW update
Modem lines
CD
RI
DSR
CTS
DTR
RTS
Send
HEX
Send
HEX
Send
HEX
Send
HW group
www.HW-group.com
Hercules SETUP utility
Version 3.2.8

Functions

- Define getPort function
- Define readSerial function
- Define writeData function

Code

```
import serial.tools.list_ports
def getPort():
    ports = serial.tools.list_ports.comports()
    N = len(ports)
    commPort = "None"
    for i in range(0, N):
        port = ports[i]
        strPort = str(port)
        if "USB Serial Device" in strPort:
            splitPort = strPort.split(" ")
            commPort = (splitPort[0])
    return commPort
```

```
ser = serial.Serial( port=getPort(), baudrate=115200)
```

```
mess = ""
def processData(data):
    data = data.replace("!", "")
    data = data.replace("#", "")
    splitData = data.split(":")
    print(splitData)
    if splitData[1] == "TEMP":
        client.publish("bbc-temp", splitData[2])
```

```
mess = ""
def readSerial():
    bytesToRead = ser.inWaiting()
    if (bytesToRead > 0):
        global mess
        mess = mess + ser.read(bytesToRead).decode("UTF-8")
        while ("#" in mess) and ("!" in mess):
            start = mess.find("!")
            end = mess.find("#")
            processData(mess[start:end + 1])
            if (end == len(mess)):
                mess = ""
            else:
                mess = mess[end+1:]
```

Write to device

```
def writeData2Hercule(data):
    ser.write((str(data) + "#").encode())
```

Exercises

1. Send a message from application by using serial port terminal to Hercules SETUP utility
2. Send a message from Hercules SETUP utility by using serial port terminal to application
3. Send a message !1:T:39.5## from Hercules SETUP utility by using the serial port terminal to adafruit server and show temperature up on Dashboard is 39.5
4. Send a message !1:H:80##!1:T:29.5## from Hercules SETUP utility by using serial port terminal to adafruit server and show up temperature and Humity on Dashboard is 29.5, 80

Exercsies

1. Install Android Studio on Windows, referent here
2. Design an simple UI on android, see Develop a UI with Views
3. Learn firebase