Manual for the NB-IoT technology emulator

In the virtual machine (VMware: xIoT_21)

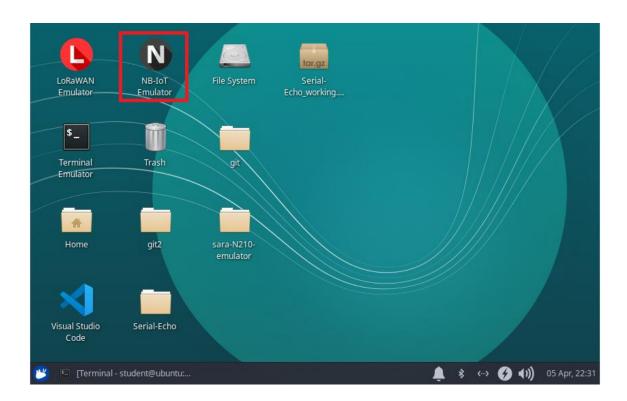
Using the Terminal Emulator, create a folder .e.g. on Desktop, and clone the git repository:

```
cd Desktop
mkdir git
cd git
git clone https://github.com/BUTResearch/sara-N210-emulator
cd sara-N210-emulator
```

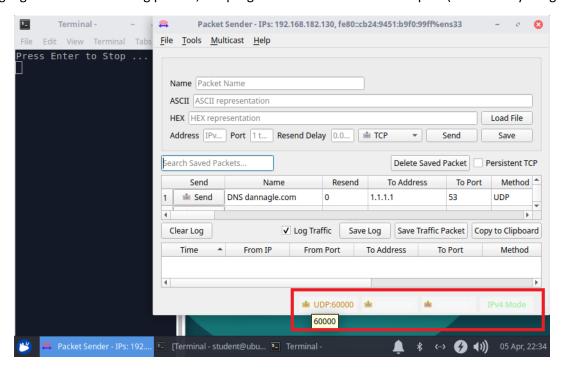
Then assign the correct rules to the install.sh file using the **chmod** command and run the install.sh script. The **install.sh** script will create a desktop emulator launch icon:

```
sudo chmod 755 install.sh
./install.sh
```

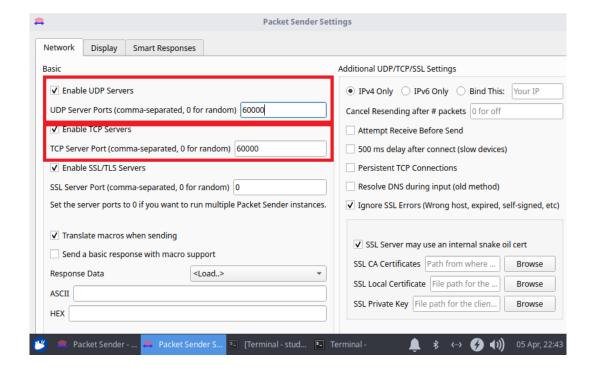
Run the **NB-IoT Emulator** program:



The two windows will show up. The **emulator's console** and **Packet Sender**. The **Packet Sender** program will be used for sending and receiving a packets (as a server-side for the modem emulator). As highlighted in the following picture, the program listens on the selected port (or randomly assigned).



To change the port number for UDP (or TCP) receive (depending on what type of communication will be used), go to the **File->Settings** and set the ports for the UDP (or TCP) separately. Then click **OK**. The program then listens to the selected ports.



If everything went OK, after sending a UDP datagram from the **custom application** using the NB-IoT emulator, the **Packet Sender** should show the received datagram.

Example of successful command sequence of sending UDP payload that is received by the **Packet Sender** (modem response in blue color):

```
// Enable URC (Unsolicited Result Code) messages that informs about the
// connection state (0: disconnected, 1: connected)
AT+CSCON=1
OK
// Enable the modem full function
AT+CFUN=1
OK
// Set the Access point name (APN) e.g. "ep.inet.gdsp"
AT+CGDCONT=1, "IP", "ep.inet.gdsp", 0, 0
OK
// Register to the network operator that has a number 23003 (Vodafone CZ)
AT+COPS=1,2,"23003"
OK
// Waiting till the modem sends: +CSCON: 1 (Means: connected), that might
// take a few seconds
+CSCON: 1
// Create the socket
AT+NSOCR="DGRAM", 17, 60002, 1
+CSCON: 1,1
OK
// Send packet using the 0. socket, dest. addr: 127.0.0.1 address,
// port: 60000, payload: 0xAABB
AT+NSOST=0,"127.0.0.1",60000,2,"AABB"
OK
0,2
OK
```

Received UPD datagram in the Packet Sender:

