BME 363 Biomedical Instrumentation Design Lab #5 Helper

Hardware – Connect Bluetooth Tx line to PIC Rx line (pin 26)

Android Software

1. Right click on res - drawable, select New – Vector Asset - Click on the Icon field and select an appropriate icon such as the up triangle (ic_change_history_black_24dp.xml)

2. In res – menu, cut and paste an item, and modify it to

```xml
<item
    android:id="@+id/action_uparrow"
    android:icon="@drawable/ic_change_history_black_24dp"
    android:title="Up Arrow"
    app:showAsAction="always"/>
```

3. In the MainActivity code – onOptionsItemSelected, add a case

```
case R.id.action_uparrow:                    // If it's the UpArrow icon, send "1" to the PIC.

    if(MainActivity.mSocket != null)     //make sure we are connected
    RxBluetooth.writeData(MainActivity.mSocket, 1);   //call writeData method
return true;
```

4. Add "static" to the global variable
   `private static BluetoothSocket mSocket;   // BluetoothSocket that contains ..........`

5. Add this to RxBluetooth import section: `import java.io.OutputStream;`

6. Add the following function to the RxBluetooth code

```java
private static OutputStream outStream; //out stream to send data

........

public static void writeData(BluetoothSocket socket, int data){
    try {
        outStream = socket.getOutputStream();
        outStream.write(data); //send data
    } catch (IOException e) {
        //TODO error handling
    }
}
```

PIC Software – Add the following section right after main() … while (1) {

```
if (enableBT && PIR1bits.RCIF) {          // Wait until USART got data
    temp = RCREG;                          // Read received data
    PIR1bits.RCIF = 0;                     // Reset RC flag
    if (temp == 1) {                       // 1 for increment
        if (function >= 10) function = 0;  // Set function range 0-10
        else function++;
    }
    if (function == 9) SetupADC(1);        // ECG comes from AN1 channel
        else SetupADC(0);                  // Others come from AN0 channel
    functionBT = function | 0xF0;          // function code for Android
    update = 1;                            // Signal main() to update LCD display
}
```

You can easily add a Down Arrow icon in the Android code to send a "2" to the PIC for decrementing the function mode. The code is similar to the above.