Demo APP for MicroLifeDeviceSDK (Android)

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Chapter1 Development Environment

1.1 The supported SDK version is as follow:

```
compileSdkVersion 26
buildToolsVersion '26.0.3'

defaultConfig {
    minSdkVersion 19
    targetSdkVersion 26
    versionCode 1
    versionName "1.3"
}
```

1.2 Add the library “sdk-release.arr” into the “libs” directory.

1.3 In the “build.gradle”, add the description as bellows.

```
compile(name:'sdk-release', ext:'aar')
compile(name:'scaleblesdk-v1.4.0', ext:'aar')
```

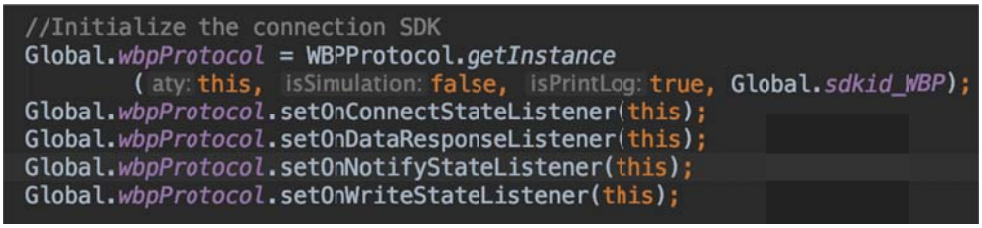
Chapter2 Entry Point and Bluetooth LE Protocol

The “ChoseActivity” is the entry point of the sample application. The “WBPTestActivity” is dedicated to the device WatchBP Home A (Bluetooth LE).

```
<activity
    android:name=".BPMTestActivity"
    android:screenOrientation="portrait"
    android:windowSoftInputMode="stateHidden" />
<activity
    android:name=".WeightTestActivity"
    android:screenOrientation="portrait"
    android:windowSoftInputMode="stateHidden" />
<activity
    android:name=".BtTestActivity"
    android:screenOrientation="portrait" />
<activity
    android:name=".WBPTestActivity"
    android:screenOrientation="portrait" />
<activity
    android:name=".ChoseActivity"
    android:screenOrientation="portrait">
    <intent-filter>
        <action android:name="android.intent.action.MAIN" />
        <category android:name="android.intent.category.LAUNCHER" />
    </intent-filter>
</activity>

<activity android:name=".ConnectionActivity">
```

2.1 Initialize the instance “wbpProtocol”. This is to fulfill Bluetooth LE features and connection sequence.



```
//Initialize the connection SDK
Global.wbpProtocol = WBPProtocol.getInstance
        ( aty: this,  isSimulation: false,  isPrintLog: true, Global.sdkid_WBP);
Global.wbpProtocol.setOnConnectStateListener(this);
Global.wbpProtocol.setOnDataResponseListener(this);
Global.wbpProtocol.setOnNotifyStateListener(this);
Global.wbpProtocol.setOnWriteStateListener(this);
```

2.1.1 The “setOnConnectStateListener()” is to get the connection status of device.

2.1.1 The “setOnDataResponseListener()” is to get the response from device.

2.1.2 The “setOnNotifyStateListener()” is to get the data which is response from device.

2.1.3 The “setOnWriteStateListener()” is to get the data which is sent to device.

2.2 The “isEnableBt()” or “ isSupportBluetooth() is to check if the smartphone’s Bluetooth is enabled or not. The “isSupportBluetooth()” will prompt a warning message to inform user to turn on Bluetooth if it is disabled.

Chapter3 WatchBP APIs

3.1. Instance of Bluetooth LE Protocol：

3.1.1. Interface：

	public static * Protocol getInstance(Activity aty, boolean isSimulation, boolean isPrintLog, String sdkid)
Definition	Initialize Bluetooth LE Protocol for WatchBP Home A device
Parameter	Activity aty：name of activity or this boolean isSimulation： is simulator or device boolean isPrintLog：is printing log or not。 String sdkid：SDK ID of designated device

	`//Initialize the connection SDK`
	`Global.bpmProtocol = BPMProtocol.getInstance`
	`( aty: this, isSimulation: false, isPrintLog: true, Global.sdkid);`

3.2. Connection State and Result：

3.2.1. Interface：

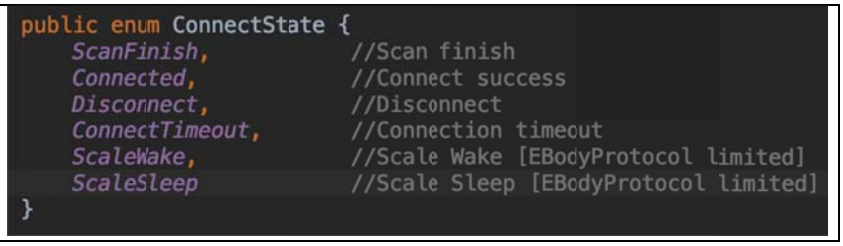
	public void setOnConnectStateListener(OnConnectStateListener l)
Definition	The “setOnConnectStateListener()” is to get the connection status of device.

3.2.2. Delegate：

	void onBtStateChanged(boolean isEnable)
Definition	The “onBtStateChanged()” is to monitor the state of Enabled or Disabled.

	void onScanResult(String mac, String name, int rssi)
Definition	This is to get Bluetooth information of devices which discovered in the vicinity.
Parameter	macAddress: MAC of device name: device name RSSI: RSSI

	void onConnectionState(ConnectState state)
Definition	The “onConnectionState()” is to monitor the status of connection.

Parameter	

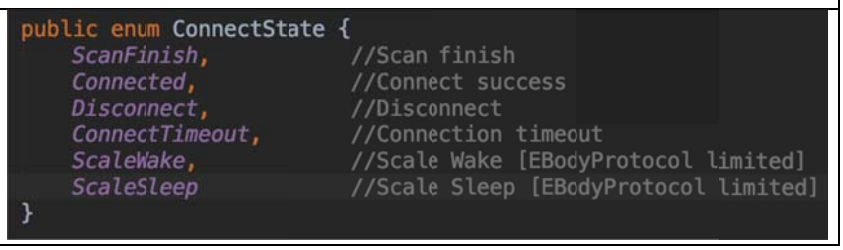
3.3. Device scanning or discovery：

3.3.1. Interface：

	public void startScan(int timeout)
Definition	The “startScan()” is for device scanning or discovery. The result will be shown with the “onScanResult”.
Parameter	int timeout

	public void stopScan()
Definition	Terminate the scanning process.

3.3.2. Delegate：

	void onConnectionState(ConnectState state)
Definition	The “onConnectionState()” is to monitor the status of scanning.
Parameter	

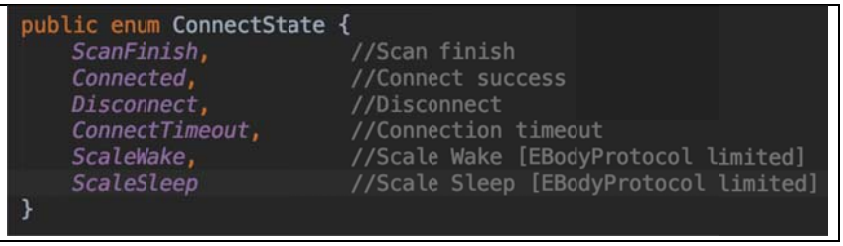
3.4. Connection：

3.4.1. Interface：

	public void connect(String macAddress)
Definition	Connect to device with MAC address.
Parameter	macAddress: MAC of device

3.4.2. Delegate：

	void onConnectionState(ConnectState state)
Definition	The “onConnectionState()” is to monitor the status of connection.

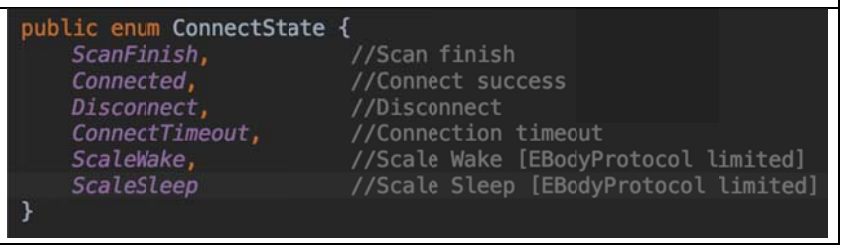
Parameter	

3.5. Bonding：

3.5.1. Interface：

	public void bond(String macAddress)
Definition	Binding specified device by MAC
Parameter	macAddress: MAC of device

3.5.2. Delegate：

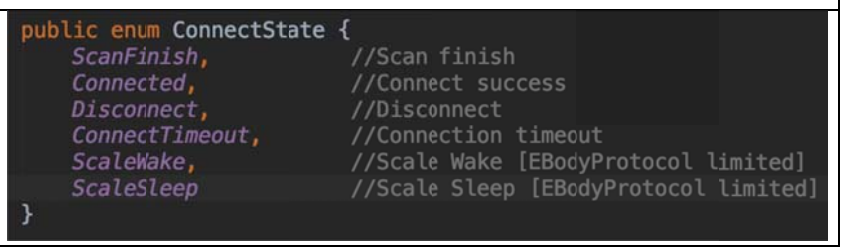
	void onConnectionState(ConnectState state)
Definition	The “onConnectionState()” is to monitor the status of connection.
Parameter	

3.6. Disconnection：

3.6.1. Interface：

	public void disconnect()
Definition	Disconnect device.

3.6.2. Delegate：

	void onConnectionState(ConnectState state)
Definition	The “onConnectionState()” is to monitor the status of disconnection.
Parameter	

3.7. Read usual mode history data from BPM：

3.7.1. Interface：

	public void readUsualModeHistoryData()
Definition	Read usual mode history data from BPM

3.7.2. Delegate：

	void onResponseReadUsualModeHistory(DRecord dRecord,boolean isNullData)
Parameter	data：usual mode history data isNullData：is Null Data

3.8. Read diagnostic mode history data from BPM：

3.8.1. Interface：

	public void readDiagnosticModeHistoryData()
Definition	Read diagnostic mode history data from BPM

3.8.2. Delegate：

	void onResponseReadDiagnosticModeHistory(DiagnosticDRecord dRecord,boolean isNullData)
Parameter	dRecord：diagnostic mode history data isNullData：is Null Data

3.9. Clear selected mode history data of the BPM：

3.9.1. Interface：

	public void clearHistoryData(boolean clearUsualMode,boolean clearDiagnosticlMode,boolean clearNocturnalMode)
Definition	Clear selected mode history data of the BPM
Parameter	clearUsualMode：clear Usual Mode clearDiagnosticlMode：clear Diagnosticl Mode clearNocturnalMode：clear Nocturnal Mode

3.9.2. Delegate：

	void onResponseClearSelectedModeHistory(boolean isSuccess)
Parameter	isSuccess：True or False

3.10. Clear current mode history data of the BPM：

3.10.1. Interface：

	public void clearCurrentModeHistoryData()
Definition	Clear current mode history data of the BPM

3.10.2. Delegate：

	void onResponseClearSelectedModeHistory(boolean isSuccess)
Parameter	isSuccess：True or False

3.11. Disconnect the Bluetooth with BPM：

3.11.1. Interface：

	public void disconnectWBP()
Definition	Disconnect the Bluetooth with BPM

3.11.2. Delegate：

	void onConnectionState(ConnectState state)
Definition	The “onConnectionState()” is to monitor the status of connection with WBP device.

Parameter	`public enum ConnectState {`
	`  ScanFinish,  //Scan finish`
	`  Connected,  //Connect success`
	`  Disconnect,  //Disconnect`
	`  ConnectTimeout,  //Connection timeout`
	`  ScaleWake,  //Scale Wake [EBodyProtocol limited]`
	`  ScaleSleep  //Scale Sleep [EBodyProtocol limited]`
	`}`

3.12. Write device Time to BPM：

3.12.1. Interface：

	public void writeDeviceTime()
Definition	Write device Time to BPM

3.12.2. Delegate：

	void onResponseWriteDeviceTime(boolean isSuccess)
Parameter	isSuccess：True or False

3.13. Write a new user ID to BPM：

3.13.1. Interface：

	public void writeUserID(String ID)
Definition	Write a new user ID to BPM

Parameter	ID：User ID。

3.13.2. Delegate：

	void onResponseWriteUserID(boolean isSuccess)
Parameter	isSuccess：True or False

3.14. Read nocturnal mode setting：

3.14.1. Interface：

	public void readNocturnalModeSetting()
Definition	readNocturnalModeSetting

3.14.2. Delegate：

	void onResponseReadNocturnalModeSetting(DeviceInfo deviceInfo)
Parameter	deviceInfo：nocturnal mode setting

3.15. Change nocturnal mode setting ：

3.15.1. Interface：

	public void changeNocturnalModeSetting(boolean open,int year,int month,int day,int hour)
Definition	Change nocturnal mode setting Note: This command requires matching hardware to set. You can use "readDeviceIDAndInfo(MicroLifeDeviceInfo.openNocturnalMode)" to check if the device supports it.
Parameter	open：Nocturnal ON/OFF year：year month：month day：day hour：hour

3.15.2. Delegate：

	void onResponseChangeNocturnalModeSetting(boolean isSuccess)
Definition	Change nocturnal mode setting Note: This command requires matching hardware to set. You can use "readDeviceIDAndInfo(MicroLifeDeviceInfo.openNocturnalMode)" to check if the device supports it.
Parameter	isSuccess：True or False

3.16. Erase all of device measure & error times：

3.16.1. Interface：

	public void eraseAllOfDeviceMeasureAndErrorTimes()
Definition	Erase all of device measure & error times

3.16.2. Delegate：

	void onResponseEraseAllOfDeviceMeasureAndErrorTimes(boolean isSuccess)
Parameter	isSuccess：True or False

3.17. Read device ID and info from BPM：

3.17.1. Interface：

	public void readDeviceIDAndInfo()
Definition	Read device ID and info from BPM

3.17.2. Delegate：

	void onResponseReadDeviceInfo(DeviceInfo deviceInfo)
Parameter	deviceInfo：device ID and info

3.18. Read device Time from BPM：

3.18.1. Interface：

	public void readDeviceTime()
Definition	Read device Time from BPM

3.18.2. Delegate：

	void onResponseReadDeviceTime(DeviceInfo deviceInfo)
Parameter	deviceInfo：device Time

3.19. Read user ID and version data from BPM：

3.19.1. Interface：

	public void readUserAndVersionData()
Definition	Read user ID and version data from BPM

3.19.2. Delegate：

	void onResponseReadUserAndVersionData(User user, VersionData versionData)
Parameter	user：user ID verData：version data

3.20. Read Nocturnal mode history data from BPM：

3.20.1. Interface：

	public void readNocturnalModeHistoryData()
Definition	Read Nocturnal mode history data from BPM

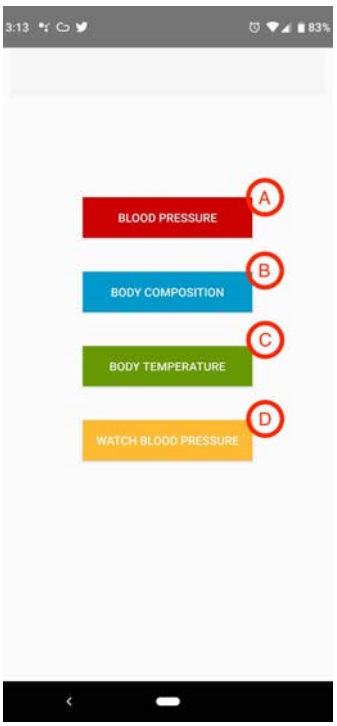
3.20.2. Delegate：

	void onResponseReadNocturnalPatternHistory(NocturnalModeDRecord dRecord,boolean isNullData)
Parameter	dRecord：Nocturnal pattern history data isNullData：is Null Data

Chapter4 User Interface of Demo App

4.1. Getting Started：

Start the app and then select the button “WATCH Blood Pressure ” / “D” to communicate with the designate device WatchBP Home A.

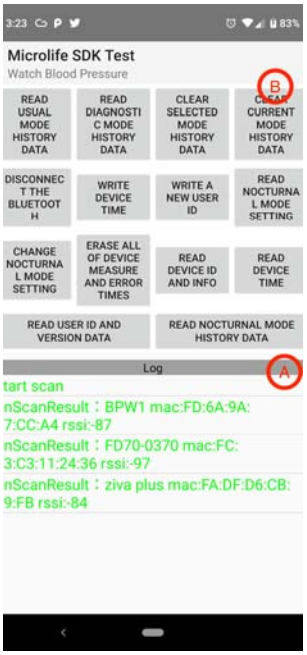


4.2. Operation Sequence：

4.2.1. The scanning (discovery) is automatically run to discover devices in the vicinity.

4.2.2. If a device is bonded, it will be connected accordingly. If not, the “bindingDevice” can be used to run bonding process.

4.3. Operating Interface and Sequence：



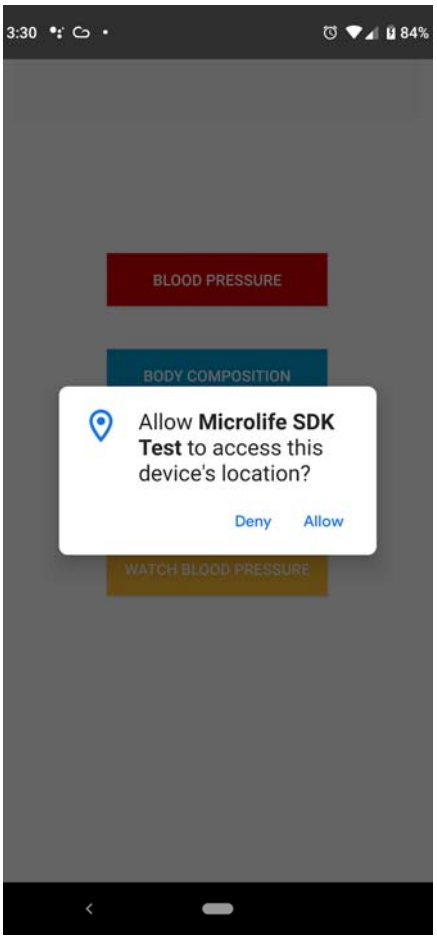
4.3.1. Region A：The log window is used to display information about communication handshake between App and device.

4.3.2. Region B：This part is to communicate with the device WatchBP Home A by different functions / commands such as data transferring, synchronization and so on.

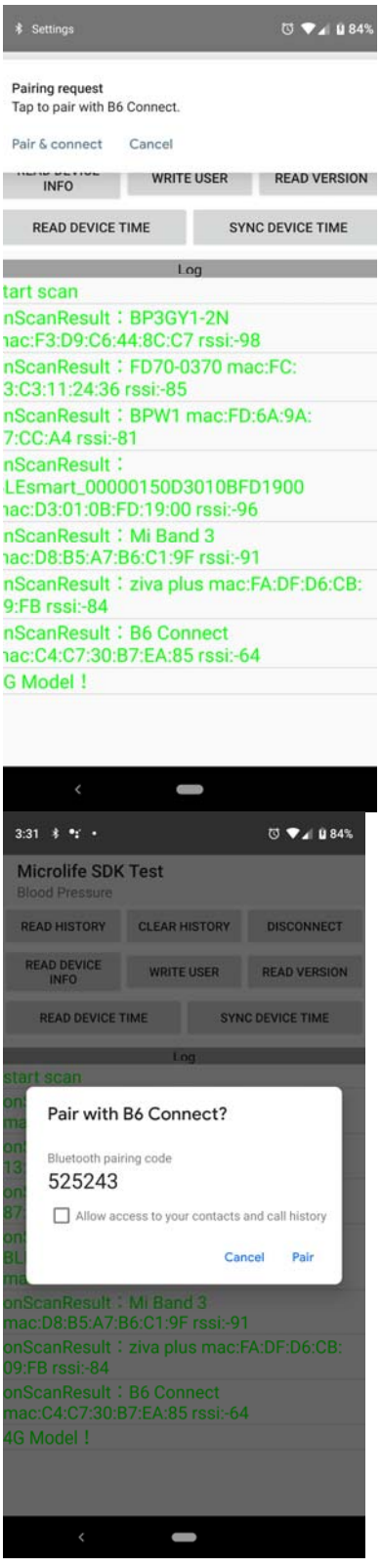
4.3.3. Refer to “WBPTestActivity” from the demo application (sample code) to get more detailed.

Chapter5 Functionality of Demo App

5.1. Bluetooth authorization：

	1. Request for Bluetooth permission.

5.2. Pairing / Bonding：



1. There is a message to confirm the pairing bonding procedure between device and cellphone if they haven't bonded yet.

2. Once the procedure is done, choose any function/ command to do communication with WatchBP Home A device.

3. The green part is from "onScanResult".

5.3. Command: Write a new user ID to BPM

1. The command “Write a new user ID” is to write a new user ID to device.

2.WRITE :writeUserID：029331549LQ

The ID “029331549LQ” is made up of ASCII code.

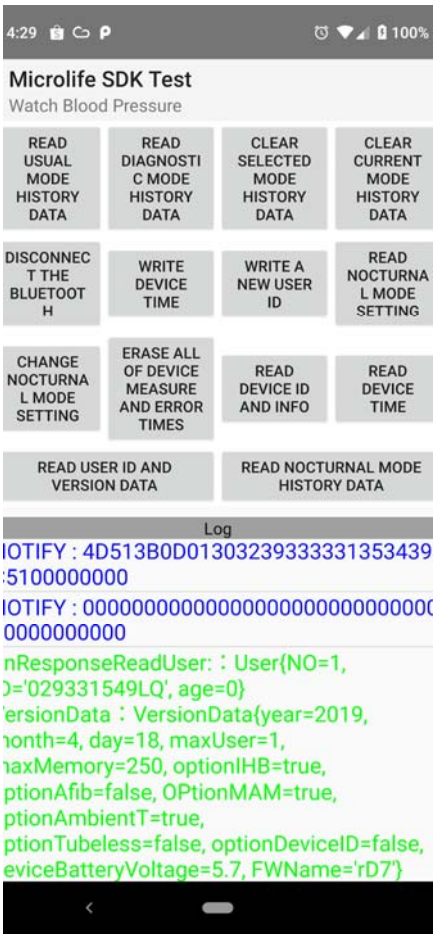
3.onResponseWriteUserID：true：

This means that the writing/ sending procedure is successful.

4. It can be verifued by utilizing the command “Read user ID and version data”.

5. The red part is the command and communication protocol that is sent to device. The blue part is the raw data from device via Bluetooth. The green part is from “onResponseWriteUserID” which is decoded from the raw data.

5.4. Command: Read user ID and version data from BPM



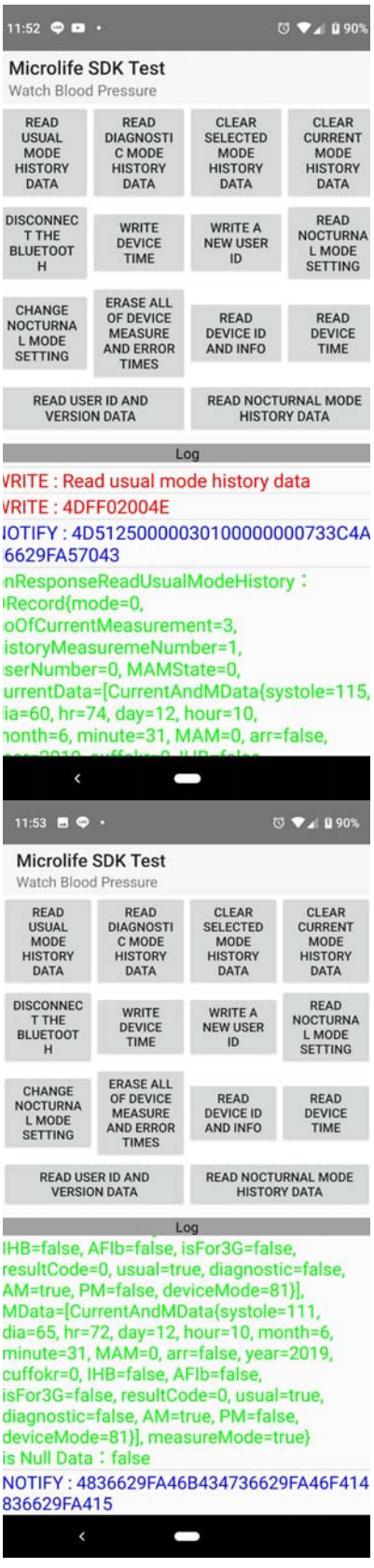
1. The command “Read user ID and version data” is to get user ID and device information as below.

2.onResponseReadUser: : User{NO=1, ID='029331549LQ', age=0}
VersionData : VersionData{year=2019, month=4, day=18, maxUser=1, maxMemory=250, optionIHB=true, optionAfib=false, OPtionMAM=true, optionAmbientT=true, optionTubeless=false, optionDeviceID=false, deviceBatteryVoltage=5.7, FWName='rD7'}

3.ID = user ID

4.VersionData = Device information

5.5. Command: Read usual mode history data from BPM



1. This is to get usual mode history data.

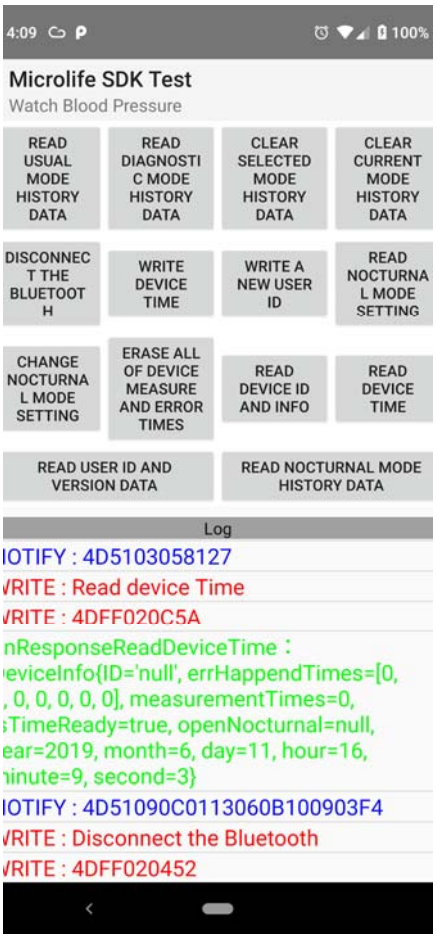
2.onResponseReadUsualModeHistory：DRecord{mode=0, noOfCurrentMeasurement=3, historyMeasuremeNumber=1, userNumber=0, MAMState=0, currentData=[CurrentAndMData{systole=115, dia=60, hr=74, day=12, hour=10, month=6, minute=31, MAM=0, arr=false, year=2019, cuffokr=0, IHB=false, AFIb=true, isFor3G=false, resultCode=0, usual=true, diagnostic=false, AM=true, PM=false, deviceMode=81}, CurrentAndMData{...}, CurrentAndMData{...}], MData=[CurrentAndMData{systole=111, dia=65, hr=72, day=12, hour=10, month=6, minute=31, MAM=0, arr=false, year=2019, cuffokr=0, IHB=false, AFIb=false, isFor3G=false, resultCode=0, usual=true, diagnostic=false, AM=true, PM=false, deviceMode=81}], measureMode=true}

3. MData = The history measurement times store in memory.

4. currentData = The current measurement times store in

	memory.

5.6. Command: Disconnect the Bluetooth

	1. Disconnect the Bluetooth 2. The command is “4DFF020452” and it is sent to device. 3. The result is able to observe by the “onConnectionState(ConnectState state)” and its status can be found by the “ConnectState = Disconnect”.