

## ANDROID APP FOR V2V COMMUNICATION USER DOCUMENT

### WINDOWS:

#### SOURCE CODE:

- Download and install Git Bash
- Open Command prompt.

#### PUTTY

- Download and install latest version of Putty

### ANDROID STUDIO:

Download and install Android studio from <https://developer.android.com/studio>

- Open/import “My Application” project.

### UBUNTU:

Download and install Android Studio.

- Open the folder and extract the files.
- Open bin folder and open in terminal.
- Terminal command: ./studio.sh.
- Open/import the cloned project.

Open minicom through terminal.

### TO CHANGE THE MAC ADDRESS AND UUIDS:

Open MainActivity.kt file:

MyApplication>app>src>main>java>com>example>myapplication>MainActivity

```
35     private val POLLING_INTERVAL = 10 //Reading time interval
36
37     val targetMacAddress = "00:1E:C0:3E:1B:3C" //For scanning using macAddress
38     private val SUUID = "6e400001-b5a3-f393-e0a9-e50e24dccA9e" // Replace with the OBU service UUID
39     private val CUUID = "6e400002-b5a3-f393-e0a9-e50e24dccA9e" // Replace with the OBU characteristic UUID
```

- **To alter the time interval(millisecond) in which the data is read from the OBU,**  
Change the value assigned to polling interval variable.
- **To connect it to some other OBU,**  
Change the MAC address, service UUID and characteristic UUID

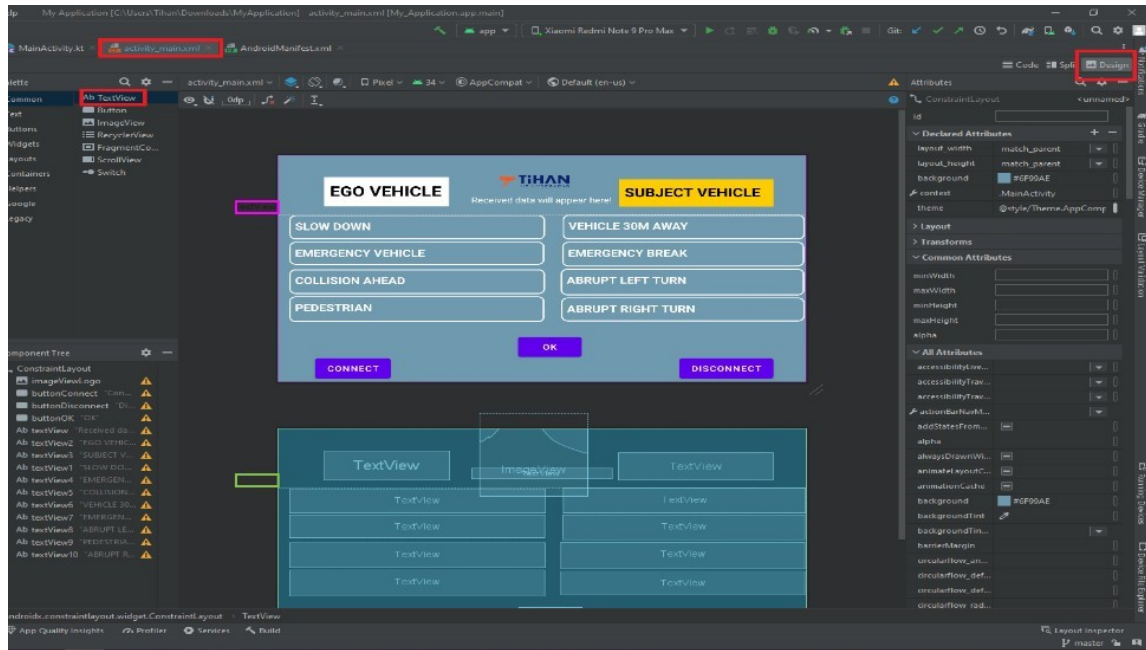
## TO ADD TEXTVIEW:

Open activity\_main.xml:

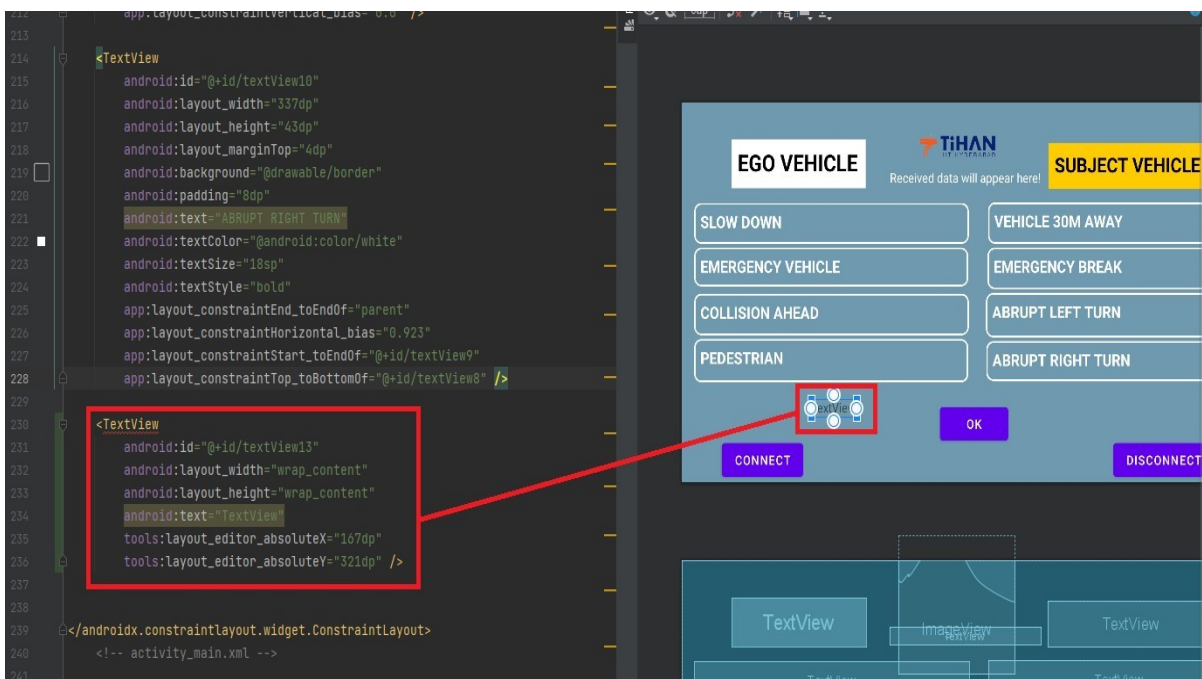
MyApplication>app>src>main>res>layout>activity\_main

Click on the top right corner to open Design.

Click on TextView from the palette, drag it to the screen and place it in the required position.



The textview with its ID will be automatically added to the activity\_main.xml code.



To apply it in the MainActivity.kt

```

My Application [C:\Users\Tihan\Downloads\MyApplication] - MainActivity.kt [My_Application.app.main]
MainActivity.kt x activity_main.xml x AndroidManifest.xml x
onCreate
38 private val SUUID = "6e400001-b5a3-f393-e0a9-e50e24dccA9e" // Replace with the OBU service
39 private val CUUID = "6e400002-b5a3-f393-e0a9-e50e24dccA9e" // Replace with the OBU character
40
41 //initialise UI
42 private lateinit var bluetoothAdapter: BluetoothAdapter
43 private lateinit var bluetoothGatt: BluetoothGatt
44 private lateinit var textView: TextView
45 private lateinit var textView1: TextView
46 private lateinit var textView2: TextView
47 private lateinit var textView3: TextView
48 private lateinit var textView4: TextView
49 private lateinit var textView5: TextView
50 private lateinit var textView6: TextView
51 private lateinit var textView7: TextView
52 private lateinit var textView8: TextView
53 private lateinit var textView9: TextView
54 private lateinit var textView10: TextView // Initialise textview like this
55 private lateinit var buttonConnect: Button // eg: private lateinit var textView11: TextView
56 private lateinit var buttonDisconnect: Button
57 private var lastHighlightedTextView: TextView? = null
58
59 @SuppressLint("MissingPermission")
60 override fun onCreate(savedInstanceState: Bundle?) {
61     setTheme(R.style.Theme_AppCompat)
62     super.onCreate(savedInstanceState)
63     setContentView(R.layout.activity_main)
64     textView = findViewById(R.id.textView)
65     textView1 = findViewById(R.id.textView1)
66     textView2 = findViewById(R.id.textView2)
67     textView3 = findViewById(R.id.textView3)
68     textView4 = findViewById(R.id.textView4)
69     textView5 = findViewById(R.id.textView5)
70     textView6 = findViewById(R.id.textView6)
71     textView7 = findViewById(R.id.textView7)
72     textView8 = findViewById(R.id.textView8)
73     textView9 = findViewById(R.id.textView9)
74     textView10 = findViewById(R.id.textView10) // Add this line for the corresponding textview
75     val buttonOK: Button = findViewById(R.id.buttonOK) // eg: textView11 = findViewById(R.id.textView11)
76
77     Log.d(TAG, "MainActivity.onCreate: $receivedData")
78     highlightTextView(receivedData)
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99     }
100    }
101
102    //highlight text
103    private fun highlightTextView(receivedData: String) {
104        // Reset the previous highlighted TextView, if any
105        lastHighlightedTextView?.setBackgroundResource(R.drawable.border)
106        // lastHighlightedTextView?.setBackgroundResource(0)
107        lastHighlightedTextView?.setTextColor(Color.WHITE)
108
109        // Get the corresponding TextView based on the received data
110        val textView = when (receivedData.toIntOrNull()) {
111            1 -> findViewById<TextView>(R.id.textView1)
112            2 -> findViewById<TextView>(R.id.textView2)
113            3 -> findViewById<TextView>(R.id.textView3)
114            4 -> findViewById<TextView>(R.id.textView4)
115            5 -> findViewById<TextView>(R.id.textView5)
116            6 -> findViewById<TextView>(R.id.textView6)
117            7 -> findViewById<TextView>(R.id.textView7)
118            8 -> findViewById<TextView>(R.id.textView8)
119            9 -> findViewById<TextView>(R.id.textView9)
120            10 -> findViewById<TextView>(R.id.textView10) // Assign another received value to highlight text
121            else -> null // eg: 9 -> findViewById<TextView>(R.id.textView11)
122        }
123        textView?.setBackgroundResource(R.drawable.border)
124        textView?.setTextColor(Color.WHITE)
125        lastHighlightedTextView = textView
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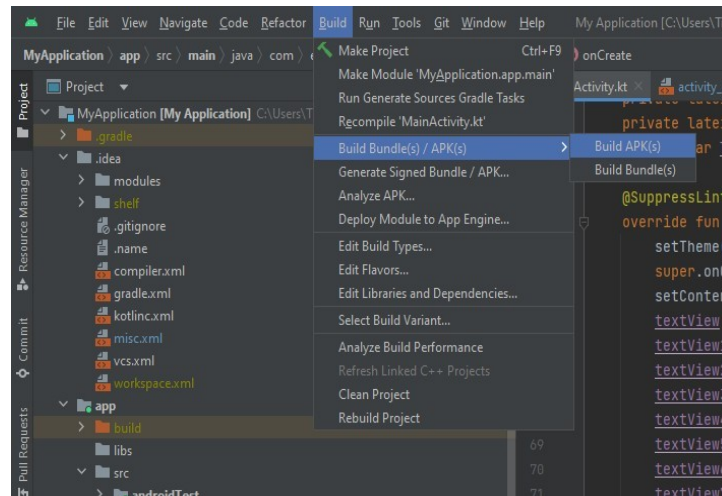
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## TO BUILD AN APK FILE:

Click on Build in the navigation bar.

Build>Build Bundle(s)/APK(s)>Build APK(s)

Locate it and copy the file to install it in our devices.



## To run the app instantly on the device,

- Enable developer options(settings>about phone>versions/build number-tap multiple times) in your mobile phone and turn on USB debugging and Install via USB options.
- Connect the mobile phone and the PC using USB cable.
- Android studio will automatically find the device. Click on Run.
- Install the app in your mobile.
- Check logcat in the Android studio for updates.



### Commands for DSRC OBU:

- ☐ + - Echo on/off
- a – advertise
- y – stop advertising
- k – end connection
- When it is connected, it displays,
- Write data – shw,001c,31

COM3 - PuTTY

```
Welcome to minicom 2.7

OPTIONS: I18n
Compiled on May 12 2022, 04:29:45.
Port /dev/ttyMXC3, 12:12:05

Press CTRL-A Z for help on special keys

Echo On
AOK
Connected
ConnParam: 0006,0000,01F4
ConnParam: 0024,0000,01F4
AOK,001c,31
AOK,001c,32
AOK,001c,37
AOK,001c,30
Connection End
```

### Commands for C-v2x OBU:

- ☐ +UUBTACLC:<connection\_handle>,0,<bd\_address> - Connected
- AT+UBTGSR- to set service uuid
- AT+UBTGCHA - to set characteristic uuid
- ☐ +UUBTGRR:0,32 – Read request(response)
- AT+UBTGRR=0,34 – Write command
- ☐ +UUBTACLD:0 - Disconnected

```
+UUBTACLC:0,0,7616DED2E303r
+UUBTGRR:0,32
AT+UBTGRR=0,34
OK
+UUBTACLD:0
```