TCP Client and Server

1. CLIENT

* Manifest

*<?*xml version="1.0" encoding="utf-8"*?>*<manifest xmlns:android="http://schemas.android.com/apk/res/android"  
 package="com.example.tcpclient">  
  
 <uses-permission android:name="android.permission.INTERNET"></uses-permission>  
 <application  
 android:allowBackup="true"  
 android:icon="@mipmap/ic\_launcher"  
 android:label="@string/app\_name"  
 android:roundIcon="@mipmap/ic\_launcher\_round"  
 android:supportsRtl="true"  
 android:theme="@style/AppTheme">  
 <activity android:name=".MainActivity">  
 <intent-filter>  
 <action android:name="android.intent.action.MAIN" />  
  
 <category android:name="android.intent.category.LAUNCHER" />  
 </intent-filter>  
 </activity>  
 </application>  
  
</manifest>

* layout(text)

*<?*xml version="1.0" encoding="utf-8"*?>*<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 tools:context=".MainActivity">  
  
 <TextView  
 android:id="@+id/clientChat"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignParentTop="true"  
 android:layout\_centerHorizontal="true"  
 android:text="TCP Client"  
 android:textAppearance="?android:attr/textAppearanceLarge" />  
  
 <EditText  
 android:id="@+id/editDSTIP"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_below="@+id/clientChat"  
 android:layout\_alignParentStart="true"  
 android:layout\_alignParentLeft="true"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentRight="true"  
 android:layout\_marginTop="36dp"  
 android:hint="Enter Server IP address:" />  
  
 <EditText  
 android:id="@+id/editMsg"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_below="@+id/editDSTIP"  
 android:layout\_alignParentStart="true"  
 android:layout\_alignParentLeft="true"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentRight="true"  
 android:hint="Enter your message:" />  
  
 <Button  
 android:id="@+id/buttonSend"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_below="@+id/editMsg"  
 android:layout\_alignParentStart="true"  
 android:layout\_alignParentLeft="true"  
 android:layout\_alignParentEnd="true"  
 android:layout\_alignParentRight="true"  
 android:text="SEND MESSAGE!" />  
  
 <TextView  
 android:id="@+id/TextResponse"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignParentStart="true"  
 android:layout\_alignParentLeft="true"  
 android:layout\_centerVertical="true"  
 android:text="Echo message from Server" />  
  
  
</RelativeLayout>

* dimens.xml

*<?*xml version="1.0" encoding="utf-8"*?>*<resources>  
 *<!-- Default screen margins, per the Android Design guidelines. -->* <dimen name="activity\_horizontal\_margin">16dp</dimen>  
 <dimen name="activity\_vertical\_margin">16dp</dimen>  
  
  
</resources>

* java (MainActivity)

package com.example.tcpclient;  
  
import androidx.appcompat.app.AppCompatActivity;  
  
import android.os.Bundle;  
import java.io.BufferedInputStream;  
import java.io.BufferedOutputStream;  
import java.io.DataInputStream;  
import java.io.DataOutputStream;  
import java.io.IOException;  
import java.net.InetAddress;  
import java.net.Socket;  
import java.net.SocketException;  
import android.util.Log;  
import android.view.View;  
import android.view.View.OnClickListener;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.TextView;  
  
public class MainActivity extends AppCompatActivity {  
 private TextView TextResponse;  
 private EditText editDSTIP, editMsg;  
 private Button buttonSend;  
 private int severPort = 18888;  
 private Socket clientSocket;  
 private String MessageInput;  
 private DataOutputStream dos;  
 private DataInputStream dis;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
 editDSTIP = (EditText)findViewById(R.id.*editDSTIP*);  
 editMsg = (EditText)findViewById(R.id.*editMsg*);  
 buttonSend = (Button)findViewById(R.id.*buttonSend*);  
 TextResponse = (TextView)findViewById(R.id.*TextResponse*);  
 buttonSend.setOnClickListener(startSend);  
 }  
  
 private final OnClickListener startSend = new OnClickListener() {  
 @Override  
 public void onClick(View arg0) {  
 Log.*d*("VR", "Click OK");  
 startTCP\_Client();  
 }  
 };  
  
 public void startTCP\_Client() {  
 Thread startClientThread = new Thread (new Runnable() {  
 @Override  
 public void run() {  
 try {  
 final InetAddress destIPAddress = InetAddress.*getByName*(editDSTIP.getText().toString());  
 clientSocket = new Socket (destIPAddress,severPort);  
 Log.*d*("VS", "Socket Created");  
 MessageInput = editMsg.getText().toString();  
 dos = new DataOutputStream(new BufferedOutputStream(clientSocket.getOutputStream()));  
 dis = new DataInputStream(new BufferedInputStream(clientSocket.getInputStream()));  
 dos.writeUTF(MessageInput);  
 dos.flush();  
  
 final String echoMsg = dis.readUTF();  
 MainActivity.this.runOnUiThread(new Runnable() {  
 @Override  
 public void run() {  
 TextResponse.setText(echoMsg);  
 }  
 });  
 Log.*d*("VR", "Packet Send");  
 } catch (SocketException e) {  
 Log.*e*("VR", "Sender SocketException");  
 } catch (IOException e) {  
*// TODO Auto-generated catch block* e.printStackTrace();  
 }  
 }  
 });  
 startClientThread.start();  
 }  
}

1. SERVER

* Manifest

*<?*xml version="1.0" encoding="utf-8"*?>*<manifest xmlns:android="http://schemas.android.com/apk/res/android"  
 package="com.example.tcpserver">  
 <uses-permission android:name="android.permission.INTERNET"></uses-permission>  
 <application  
 android:allowBackup="true"  
 android:icon="@mipmap/ic\_launcher"  
 android:label="@string/app\_name"  
 android:roundIcon="@mipmap/ic\_launcher\_round"  
 android:supportsRtl="true"  
 android:theme="@style/AppTheme">  
 <activity android:name=".MainActivity">  
 <intent-filter>  
 <action android:name="android.intent.action.MAIN" />  
  
 <category android:name="android.intent.category.LAUNCHER" />  
 </intent-filter>  
 </activity>  
 </application>  
  
</manifest>

* layout(text)
* *<?*xml version="1.0" encoding="utf-8"*?>*<RelativeLayout xmlns:android="http://schemas.android.com/apk/res/android"  
   xmlns:app="http://schemas.android.com/apk/res-auto"  
   xmlns:tools="http://schemas.android.com/tools"  
   android:layout\_width="match\_parent"  
   android:layout\_height="match\_parent"  
   tools:context=".MainActivity">  
    
   <TextView  
   android:id="@+id/tcpServer"  
   android:layout\_width="wrap\_content"  
   android:layout\_height="wrap\_content"  
   android:layout\_alignParentTop="true"  
   android:layout\_centerHorizontal="true"  
   android:text="TCP Serverr"  
   android:textAppearance="?android:attr/textAppearanceLarge" />  
    
   <TextView  
   android:id="@+id/ServerIP"  
   android:layout\_width="wrap\_content"  
   android:layout\_height="wrap\_content"  
   android:layout\_below="@+id/tcpServer"  
   android:layout\_alignParentStart="true"  
   android:layout\_alignParentLeft="true"  
   android:layout\_alignParentEnd="true"  
   android:layout\_alignParentRight="true"  
   android:layout\_marginTop="36dp" />  
    
    
   <TextView  
   android:id="@+id/ClientMessage"  
   android:layout\_width="wrap\_content"  
   android:layout\_height="wrap\_content"  
   android:layout\_below="@+id/ServerIP"  
   android:layout\_alignEnd="@+id/ServerIP"  
   android:layout\_alignRight="@+id/ServerIP"  
   android:layout\_alignParentStart="true"  
   android:layout\_alignParentLeft="true"  
   android:text="Message from Client:" />  
    
  </RelativeLayout>
* dimens.xml

*<?*xml version="1.0" encoding="utf-8"*?>*<resources>  
  
 *<!-- Default screen margins, per the Android Design guidelines. -->* <dimen name="activity\_horizontal\_margin">16dp</dimen>  
 <dimen name="activity\_vertical\_margin">16dp</dimen>  
  
</resources>

* java (MainActivity)

package com.example.tcpserver;  
  
import androidx.appcompat.app.AppCompatActivity;  
  
import android.os.Bundle;  
import java.io.BufferedInputStream;  
import java.io.BufferedOutputStream;  
import java.io.DataInputStream;  
import java.io.DataOutputStream;  
import java.io.IOException;  
import java.net.InetAddress;  
import java.net.NetworkInterface;  
import java.net.ServerSocket;  
import java.net.Socket;  
import java.net.SocketException;  
import java.net.SocketTimeoutException;  
import java.util.Enumeration;  
import android.app.Activity;  
import android.util.Log;  
import android.widget.TextView;  
  
public class MainActivity extends AppCompatActivity {  
  
 private TextView ServerIP, ClientMessage;  
 private ServerSocket serverSocket;  
 private int serverPort = 18888;  
 private DataOutputStream dos;  
 private DataInputStream dis;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
 ServerIP = (TextView) findViewById(R.id.*ServerIP*);  
 ClientMessage = (TextView) findViewById(R.id.*ClientMessage*);  
 ServerIP.setText(getIpAddress());  
 Thread socketServerThread = new Thread(new socketServerThread());  
 socketServerThread.start();  
 }  
  
 private class socketServerThread extends Thread {  
 public void run(){  
 try {  
 serverSocket = new ServerSocket(serverPort);  
 while(true){  
 Socket socketAccept = serverSocket.accept();  
 Log.*d*("VS", "Socket Created");  
 dos = new DataOutputStream(new BufferedOutputStream(socketAccept.getOutputStream()));  
 dis = new DataInputStream(new BufferedInputStream(socketAccept.getInputStream()));  
 final String Msg = dis.readUTF();  
 MainActivity.this.runOnUiThread(new Runnable() {  
 @Override  
 public void run() {  
 ClientMessage.setText("Client Message Received:" + Msg);  
 }  
 });  
 dos.writeUTF(getIpAddress()+ " sends echo message "+ "'" + Msg + "'");  
 dos.flush();  
 }  
 }  
 catch (SocketTimeoutException e) {  
 }  
 catch (IOException e) {  
*// TODO Auto-generated catch block* e.printStackTrace();  
 }  
 }  
 }  
 private String getIpAddress() {  
 String ip = "";  
 try {  
 Enumeration<NetworkInterface> enumNetworkInterfaces = NetworkInterface.*getNetworkInterfaces*();  
 while (enumNetworkInterfaces.hasMoreElements()) {  
 NetworkInterface networkInterface = enumNetworkInterfaces.nextElement();  
 Enumeration<InetAddress> enumInetAddress = networkInterface.getInetAddresses();  
 while (enumInetAddress.hasMoreElements()) {  
 InetAddress inetAddress = enumInetAddress.nextElement();  
 if (inetAddress.isSiteLocalAddress()) {  
 ip += "IP address: " + inetAddress.getHostAddress() + "\n";  
 }  
 }  
 }  
 } catch (SocketException e) {  
*// TODO Auto-generated catch block* e.printStackTrace();  
 ip += "Something Wrong! " + e.toString() + "\n";  
 }  
 return ip;  
 }  
}