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과목명 : IOT시스템응용

담당교수 : 봉진숙

학번 : 20170660

학과 : 컴퓨터공학과

이름 : 김동현

**REPORT**

**1. Android\_echo\_server.c**

코드)

#include <stdio.h>

#include <string.h>

#include <sys/socket.h>

#include <arpa/inet.h>

#include <unistd.h>

#define PORT 9000

int main(void){

int s\_socket, c\_socket;

struct sockaddr\_in s\_addr, c\_addr;

int n;

int len;

char rcvBuffer[BUFSIZ];

s\_socket = socket(PF\_INET, SOCK\_STREAM, IPPROTO\_TCP);

memset(&s\_addr, 0, sizeof(s\_addr));

s\_addr.sin\_addr.s\_addr = htonl(INADDR\_ANY);

s\_addr.sin\_family = AF\_INET;

s\_addr.sin\_port = htons(PORT);

if(bind(s\_socket, (struct sockaddr\*)&s\_addr, sizeof(s\_addr)) == -1){

printf("Can not Bind!!!\n");

return -1;

}

if(listen(s\_socket, 5) == -1) {

printf("Listen Fail!!!\n");

return -1;

}

printf("Echo Server started...\n");

while(1){

len = sizeof(c\_addr);

c\_socket = accept(s\_socket, (struct sockaddr\*)&c\_addr, &len);

printf("Connected IP : %s\n", inet\_ntoa(c\_addr.sin\_addr));

while((n = read(c\_socket, rcvBuffer, sizeof(rcvBuffer))) > 0){

rcvBuffer[n] = '\0';

printf("%s", rcvBuffer);

write(c\_socket, rcvBuffer, n);

}

close(c\_socket);

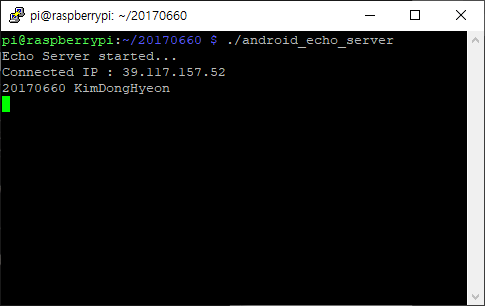
}

close(s\_socket);

return 0;

}

실행 결과)



**2. Android\_echo\_client**

코드) MainActivity.java

package com.dong.android\_echo\_client;  
  
import androidx.appcompat.app.AppCompatActivity;  
  
import android.os.Bundle;  
import android.os.Handler;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.TextView;  
  
import java.io.BufferedReader;  
import java.io.IOException;  
import java.io.InputStream;  
import java.io.InputStreamReader;  
import java.io.OutputStream;  
import java.io.PrintWriter;  
import java.net.Socket;  
  
public class MainActivity extends AppCompatActivity {  
 Socket socket;  
 OutputStream os;  
 InputStream is;  
 BufferedReader in;  
 PrintWriter out;  
  
 ConnectThread thread;  
  
 Button button01, button02;  
 EditText input01, input02;  
 TextView text01;  
 String msg;  
  
 Handler handler = new Handler();  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 input01 = (EditText) findViewById(R.id.*input01*);  
 input02 = (EditText) findViewById(R.id.*input02*);  
 text01 = (TextView) findViewById(R.id.*text01*);  
 button01 = (Button) findViewById(R.id.*button01*);  
 button02 = (Button) findViewById(R.id.*button02*);  
 button02.setEnabled(false);  
  
 button01.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 String addr = input01.getText().toString().trim();  
  
 thread = new ConnectThread(addr);  
 thread.start();  
  
 button01.setEnabled(false);  
 button02.setEnabled(true);  
 }  
 });  
  
 button02.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View view) {  
 msg = input02.getText().toString().trim();  
  
 new Thread() {  
 public void run() {  
 out.println(msg);  
 out.flush();  
 thread.readServer();  
 }  
 }.start();  
  
 if(msg.equals("bye")) {  
 thread.setStop();  
 button01.setEnabled(true);  
 button02.setEnabled(false);  
 }  
 input02.setText("");  
 }  
 });  
 }  
  
 class ConnectThread extends Thread {  
 String hostname;  
  
 public ConnectThread(String addr) {  
 hostname = addr;  
 }  
  
 public void run() {  
 try {  
 int port = 9000;  
 socket = new Socket(hostname, port);  
 os = socket.getOutputStream();  
 is = socket.getInputStream();  
 in = new BufferedReader(new InputStreamReader(is));  
 out = new PrintWriter(os);  
 } catch (IOException e) {  
 e.printStackTrace();  
 try {  
 socket.close();  
 } catch (IOException ioException) {  
 ioException.printStackTrace();  
 }  
 }  
 }  
  
 public void readServer() {  
 try {  
 String msg1 = in.readLine();  
 handler.post(new Runnable() {  
 @Override  
 public void run() {  
 text01.setText("서버에서 받은 내용: " + msg1);  
 }  
 });  
 } catch (IOException e) {  
 e.printStackTrace();  
 }  
 }  
  
 public void setStop() {  
 if(socket.isConnected()) {  
 try {  
 socket.close();  
 } catch (IOException e) {  
 e.printStackTrace();  
 }  
 }  
 }  
 }  
}

코드) activity\_main.xml

<?xml version="1.0" encoding="utf-8"?>  
<LinearLayout 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"  
 android:orientation="vertical"  
 tools:context=".MainActivity">  
  
 <TextView  
 android:id="@+id/textView"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_gravity="center"  
 android:text="버튼을 누르면 소켓 연결합니다." />  
  
 <Button  
 android:id="@+id/button01"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_gravity="center"  
 android:layout\_marginTop="20dp"  
 android:text="소켓 연결하기"  
 android:textSize="20sp"  
 android:textStyle="bold" />  
  
 <EditText  
 android:id="@+id/input01"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="48dp"  
 android:layout\_gravity="center"  
 android:layout\_marginTop="20dp"  
 android:ems="10"  
 android:gravity="center"  
 android:hint="연결할 소켓 서버 IP"  
 android:inputType="textPersonName"  
 android:text="58.148.65.53"  
 android:textSize="16sp"  
 android:textStyle="bold" />  
  
 <EditText  
 android:id="@+id/input02"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_gravity="center"  
 android:layout\_marginTop="20dp"  
 android:ems="10"  
 android:gravity="center"  
 android:hint="메시지 입력"  
 android:inputType="textPersonName"  
 android:textSize="20sp"  
 android:textStyle="bold" />  
  
 <Button  
 android:id="@+id/button02"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_gravity="center"  
 android:layout\_marginTop="20dp"  
 android:text="서버로 전송"  
 android:textSize="20sp"  
 android:textStyle="bold" />  
  
 <TextView  
 android:id="@+id/text01"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_gravity="center"  
 android:layout\_marginTop="20dp"  
 android:hint="서버로부터 온 메시지" />  
</LinearLayout>

실행 결과)

