



WIZnet Academy 2017

아두이노 RC카(2)



WIZnet page

<http://wiznetacademy.com/>

<http://wiznet.io/>

<http://wizwiki.net>

<http://wiznetian.com/>



통신이란?

통신이란?

≫ 통신을 영어로 하면?





통신이란?

>> 통신을 영어로 하면?

“Communication”
“커뮤니케이션”

영어사전

[communication](#) 미국·영국 [kəˌmjʊːnɪˈkeɪʃn]  영국식  ★★ [다른 뜻\(1건\)](#) | [예문보기](#)

1. 의사소통, 연락 2. 통신 (수단들) 3. (편지·전화 등의) 연락, 전언



통신이란?

>> HOW?



“Protocol”
“프로토콜”

컴퓨터간에 정보를 주고받을 때의
통신 방법에 대한 규칙과 약속

통신이란?

>> 통신의 종류



유선 통신



무선 통신

무선통신이란?

≫ 무선통신에는 어떠한 것들이 있을까?



무선통신이란?

≫ 무선통신에는 어떠한 것들이 있을까?



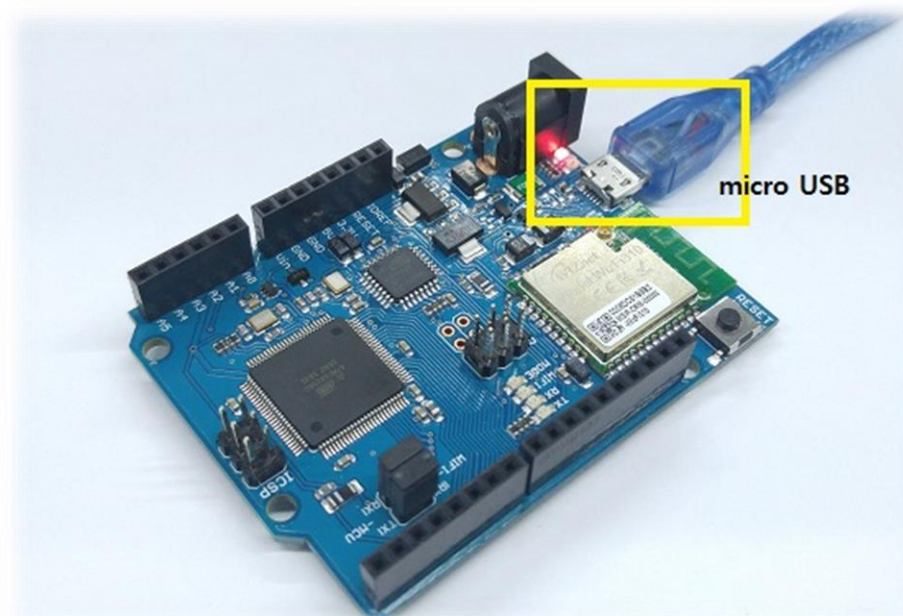


아두이노 WiFi

아두이노와 스마트폰 연결하기

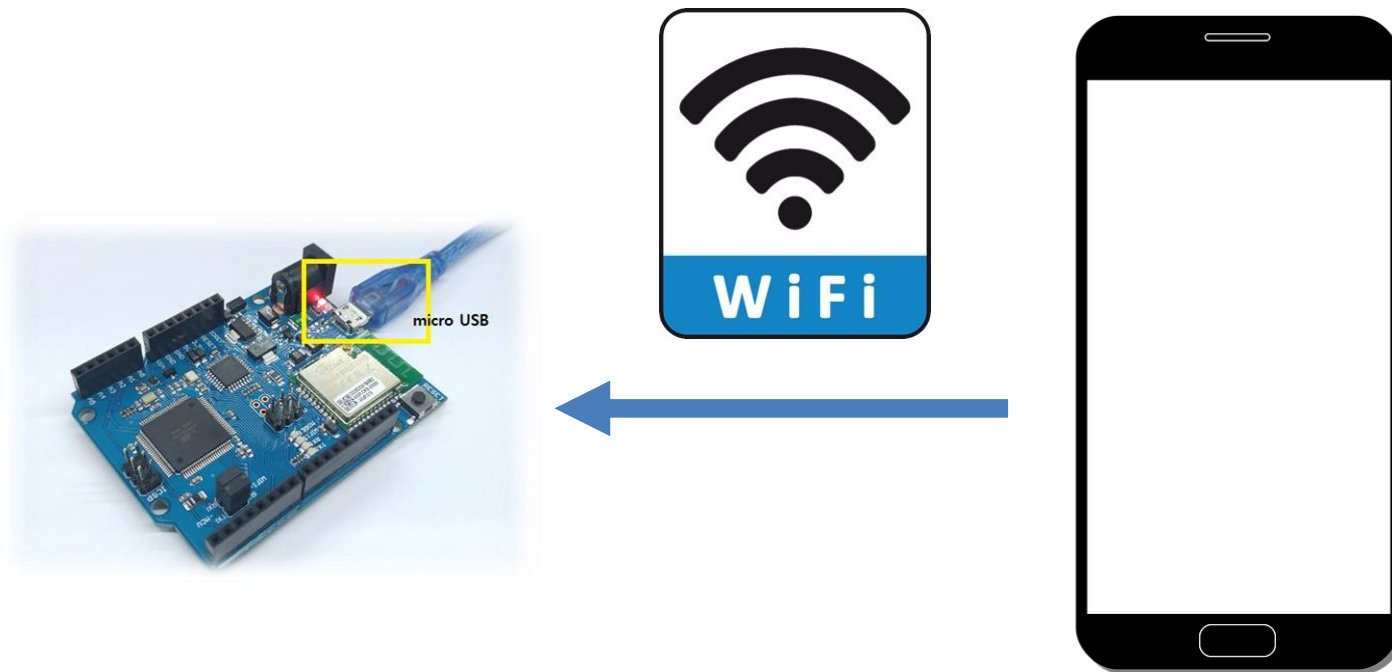
아두이노 WiFi

>> WizArduino MEGA WIFI



아두이노 WiFi

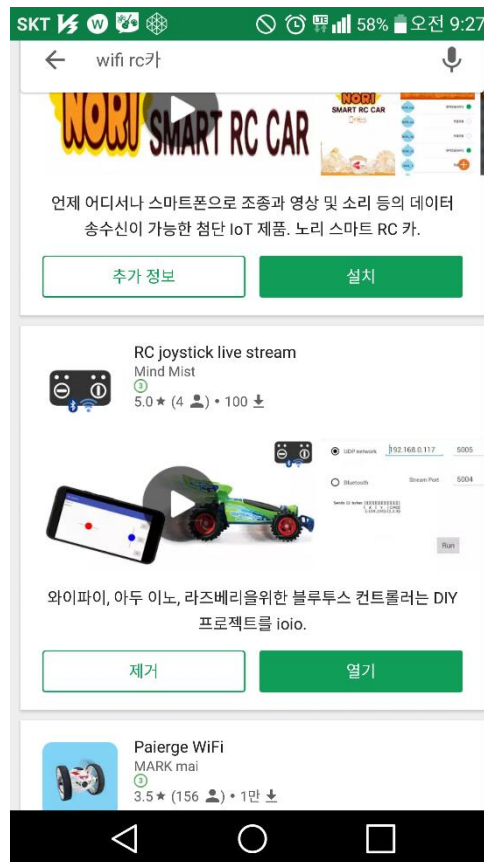
>> 실습 개요



- 안드로이드 앱을 이용하여 아두이노에 데이터를 전송
- 시리얼 모니터로 데이터를 확인

아두이노 WiFi

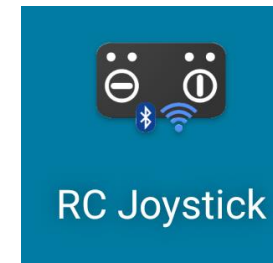
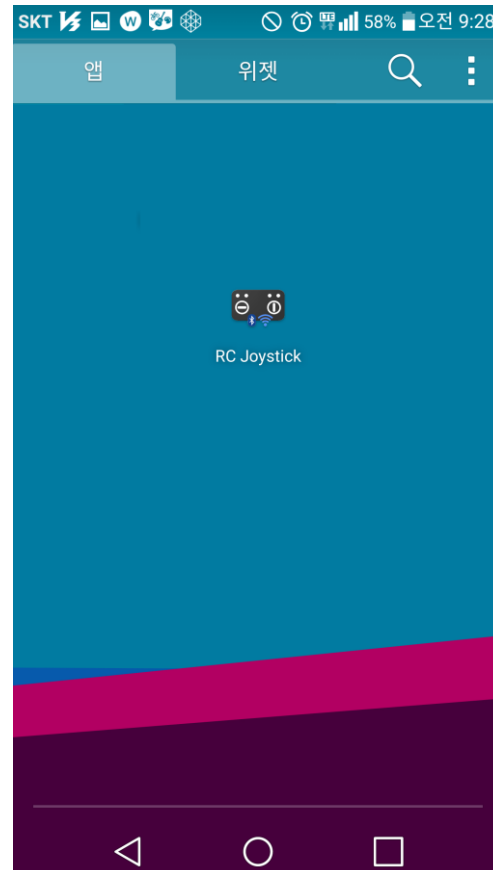
>> 안드로이드 앱 설치



- Play 스토어에서 “Wifi rc카” 검색
- RC Joystick live stream 다운로드

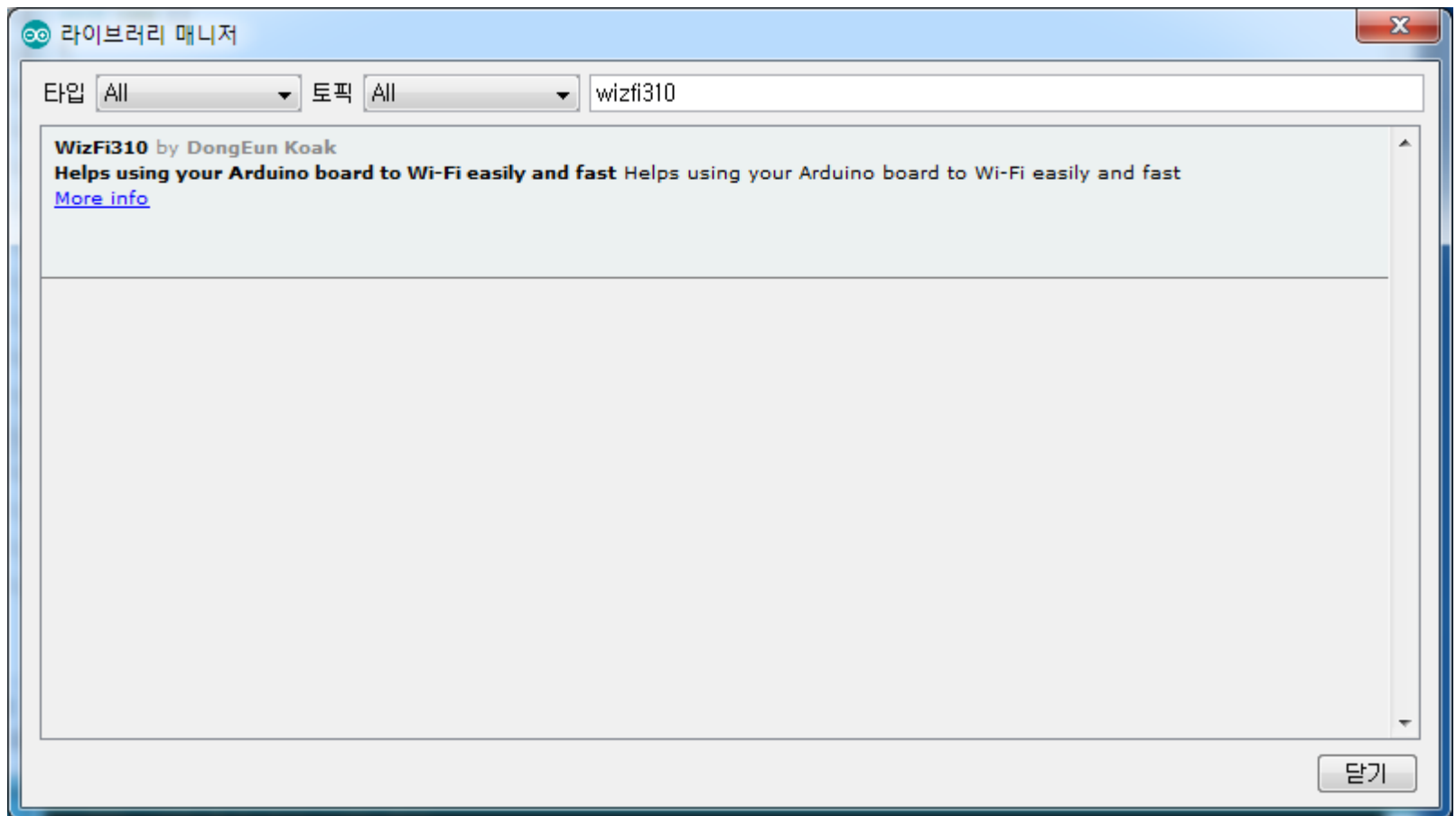
아두이노 WiFi

>> 안드로이드 앱 설치



아두이노 WiFi

» WizFi 310 라이브러리 다운로드



아두이노 WiFi

>> 조이스틱 코드

```
#include "WizFi310.h"
#include "WizFi310Udp.h"

#define SERIAL_DEBUG Serial
#define SERIAL_WIFI Serial3
#define LOCAL_PORT 5000

WiFiUDP Udp;

/* WiFi */
char ssid[] = "Your WiFi ID"; // your network SSID (name)
char pass[] = "Your WiFi Password"; // your network password
int status = WL_IDLE_STATUS; // the Wifi radio's status

uint8_t packet_buf[12];

typedef struct _JoyStick
{
    int x;
    int y;
} JoyStick;

JoyStick Joy;

uint8_t button;

void setup()
{
    SERIAL_DEBUG.begin(115200);
    initWizFi310();
}

void loop ()
{
    static uint32_t t_time;
    static int rcv_packet_size;
    rcv_packet_size |= Udp.parsePacket();

    if(rcv_packet_size >= 12)
    {
        rcv_packet_size -= 12;
        Udp.read(packet_buf, 12);
        parseRcvPacket(packet_buf);
        t_time = millis();
    }
}
```

아두이노 WiFi

>> 조이스틱 코드

```

void parseRecvPacket(uint8_t* packet_buf)
{
    button = packet_buf[11];
    SERIAL_DEBUG.println(button);
}

void initWizFi310()
{
    SERIAL_WIFI.begin(115200);
    WiFi.init(&SERIAL_WIFI);

    // check for the presence of the shield
    if (WiFi.status() == WL_NO_SHIELD)
    {
        SERIAL_DEBUG.println("[WIFI] WiFi shield not present");
        // don't continue
        while (true);
    }

    SERIAL_DEBUG.print("Attempting to start AP : ");
    SERIAL_DEBUG.println(ssid);

    IPAddress localIp(192, 168, 0, 2);
    WiFi.configAP(localIp);

    status = WiFi.beginAP(ssid, 10, pass, WIZ_TYPE_WPA2_MIXED);

    Udp.begin(LOCAL_PORT);
    SERIAL_DEBUG.println("Server started");
    Udp.beginPacket("0.0.0.0", LOCAL_PORT);

```

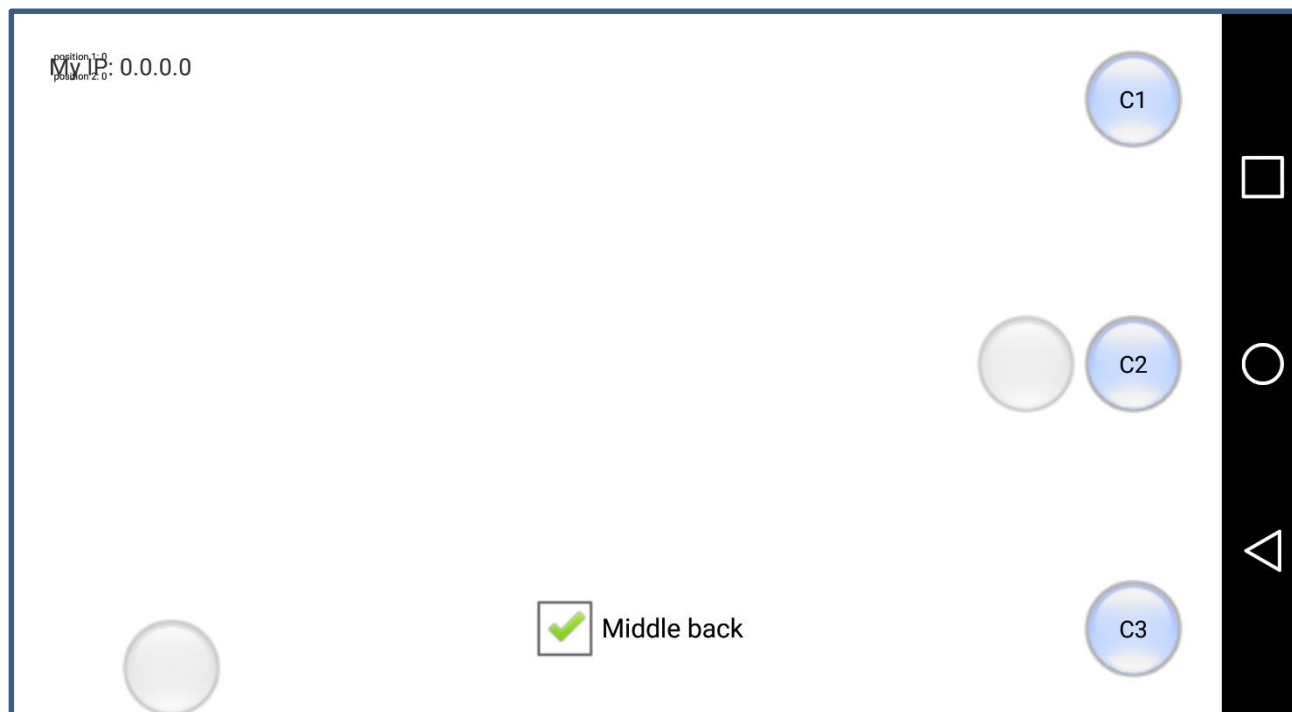

아두이노 WiFi

» 안드로이드 앱 실행

The image shows a mobile application interface for a network client. At the top, there is a status bar with the text 'SKT TALK' and various icons including a signal strength indicator, a battery icon, and the time '오전 9:28'. Below the status bar is a dark blue header with a 'RUN' button. The main interface has a white background. On the left, there are two radio buttons: 'UDP network' (selected) and 'Bluetooth'. To the right of the 'UDP network' radio button, there are two input fields: 'IP Address' with the value '192.168.0.2' and 'Port' with the value '5000'. To the right of the 'Bluetooth' radio button, there is a 'Stream Port' input field with the value '5000'. At the bottom, there is a text area showing 'Sends 12 bytes: [XXXXXXXXXX]' and a list of coordinates: 'x y [CMD] {-150.150} {1.2.3}'. On the right side of the screen, there is a vertical black bar with three white icons: a square, a circle, and a triangle.

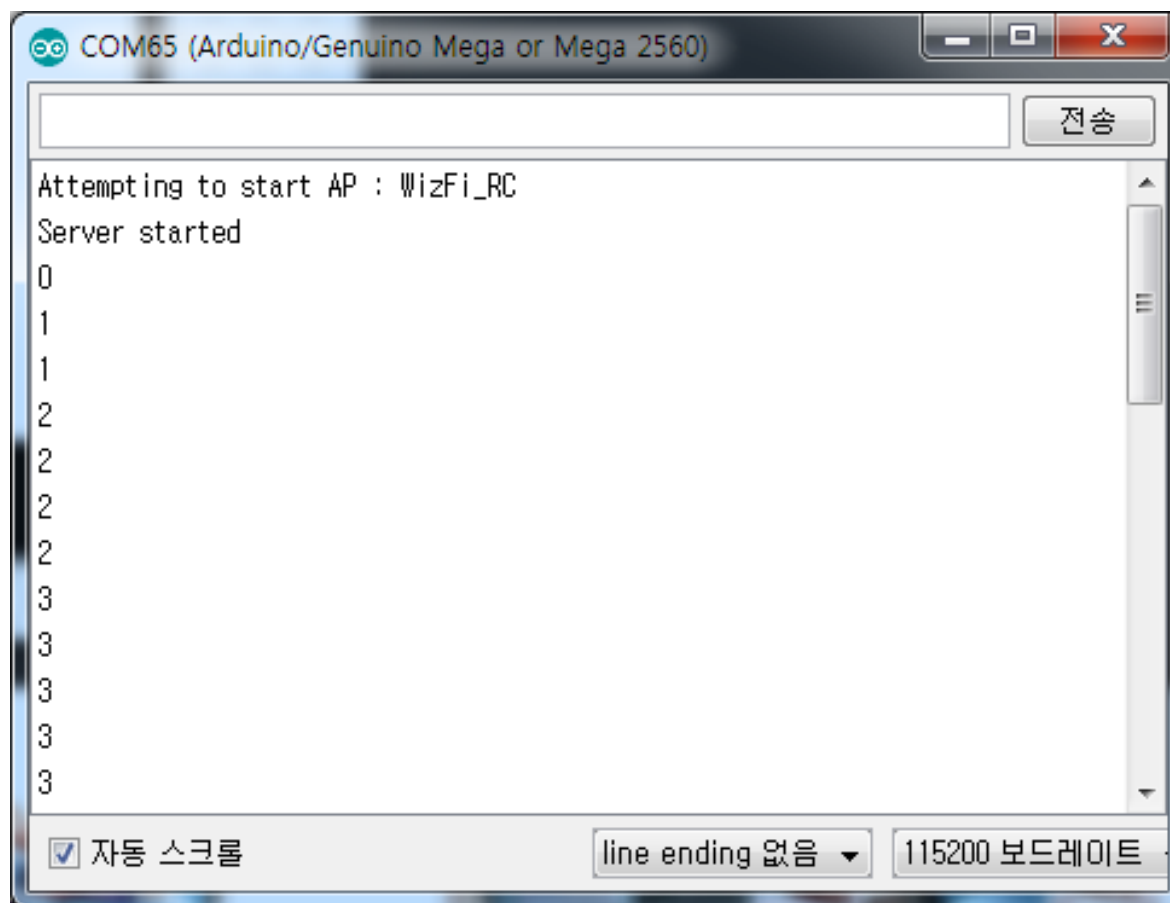
아두이노 WiFi

>> 안드로이드 앱 실행



아두이노 WiFi

>> 조이스틱 코드 동작 확인



The screenshot shows the Arduino IDE serial monitor window for COM65 (Arduino/Genuino Mega or Mega 2560). The window displays the following text:

```
Attempting to start AP : WizFi_RC  
Server started  
0  
1  
1  
2  
2  
2  
2  
3  
3  
3  
3  
3
```

The window also includes a "전송" (Send) button at the top right and a status bar at the bottom with the following options:

- ☒ 자동 스크롤 (Auto Scroll)
- line ending 없음 (No line ending)
- 115200 보드레이트 (115200 Baud rate)

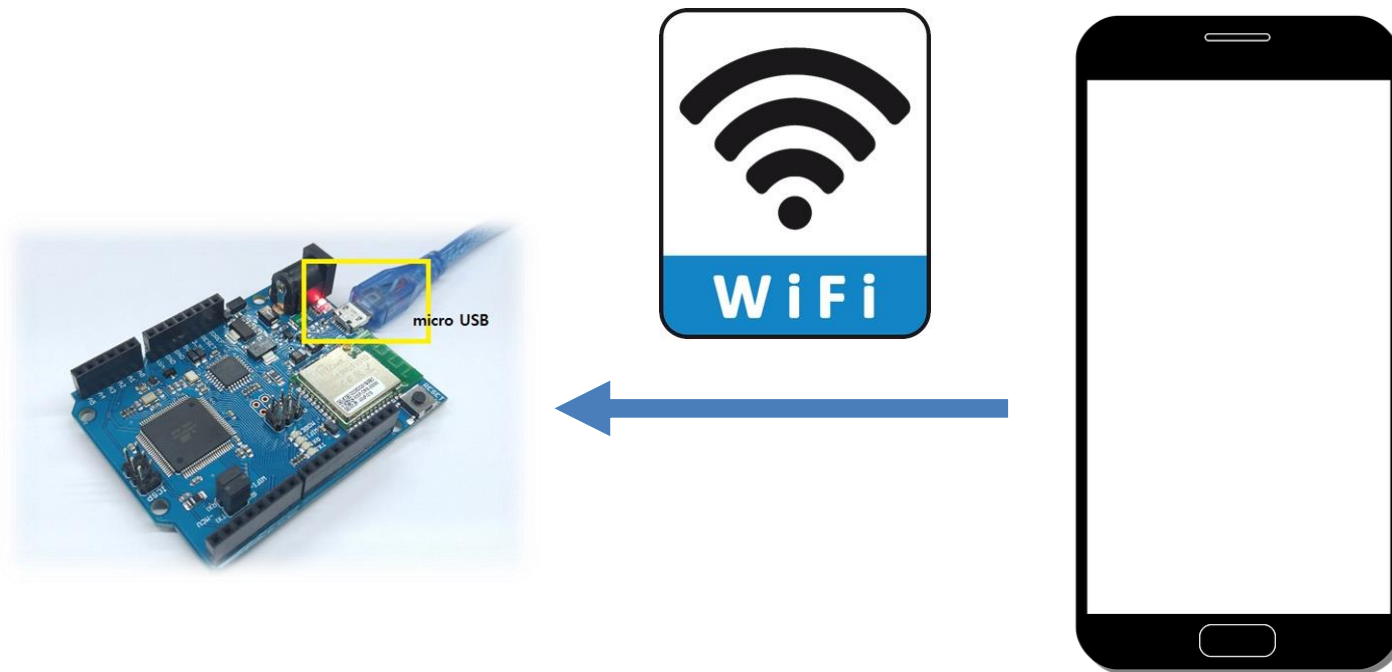


원격으로 제어

Buzzer 제어

아두이노 WiFi

>> 실습 개요



-어플리케이션의 C0, C1, C2를 눌렀을 때 Buzzer에서 소리 발생

아두이노 WiFi

>> 조이스틱 코드

```
#include "WizFi310.h"
#include "WizFi310Udp.h"

#define SERIAL_DEBUG Serial
#define SERIAL_WIFI Serial3
#define LOCAL_PORT 5000

#define BUZZER_PIN A0

WiFiUDP Udp;

/* WiFi */
char ssid[] = "        "; // your network SSID (name)
char pass[] = "        "; // your network password
int status = WL_IDLE_STATUS; // the Wifi radio's status

uint8_t packet_buf[12];

typedef struct _JoyStick
{
    int x;
    int y;
} JoyStick;

JoyStick Joy;
```

```
uint8_t button;

void setup()
{
    SERIAL_DEBUG.begin(115200);
    initWizFi310();
    pinMode(BUZZER_PIN, OUTPUT);
}

void loop ()
{
    static uint32_t t_time;
    static int rcv_packet_size;
    rcv_packet_size |= Udp.parsePacket();

    if(rcv_packet_size >= 12)
    {
        rcv_packet_size -= 12;
        Udp.read(packet_buf, 12);
        parseRcvPacket(packet_buf);
        t_time = millis();
    }
}
```

아두이노 WiFi

>> 조이스틱 코드

```
void parseRecvPacket(uint8_t* packet_buf)
{
    button = packet_buf[11];
    SERIAL_DEBUG.printIn(button);

    if(button == 1)
    {
        tone(A0, 1047, 333);
    }
    else if(button == 2)
    {
        tone(A0, 1319, 333);
    }
    else if(button == 3)
    {
        tone(A0, 1568, 333);
    }
    delay(333);
}
```

```
void initWizFi310()
{
    SERIAL_WIFI.begin(115200);
    WiFi.init(&SERIAL_WIFI);

    // check for the presence of the shield
    if (WiFi.status() == WL_NO_SHIELD)
    {
        SERIAL_DEBUG.printIn("[WiFi] WiFi shield not present");
        // don't continue
        while (true);
    }

    SERIAL_DEBUG.print("Attempting to start AP : ");
    SERIAL_DEBUG.printIn(ssid);

    IPAddress localIp(192, 168, 0, 2);
    WiFi.configAP(localIp);

    status = WiFi.beginAP(ssid, 10, pass, WIZ_TYPE_WPA2_MIXED);

    UDP.begin(LOCAL_PORT);
    SERIAL_DEBUG.printIn("Server started");
    UDP.beginPacket("0.0.0.0", LOCAL_PORT);

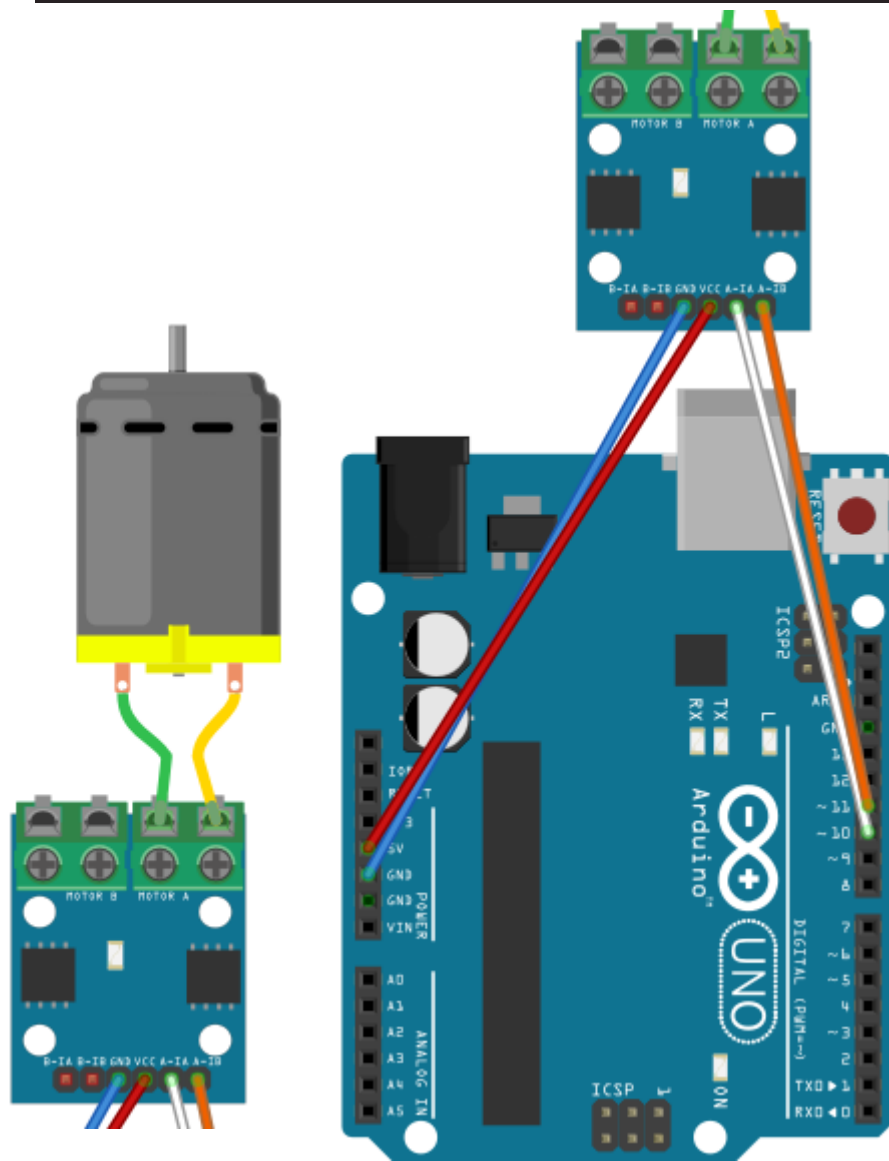
}
```



원격으로 제어

모터 제어

복습



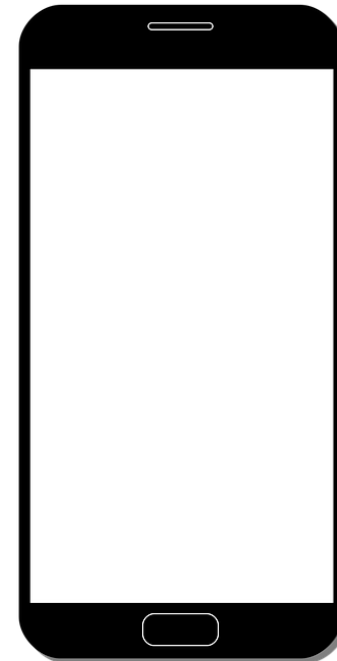
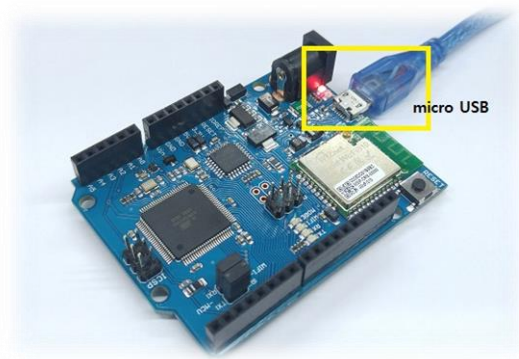
```

1 #define motorA 10
2 #define motorB 11
3
4 void setup() {
5     // put your setup code here, to run once:
6
7     pinMode(motorA, OUTPUT);
8     pinMode(motorB, OUTPUT);
9
10 }
11
12 void loop() {
13     // put your main code here, to run repeatedly:
14
15     analogWrite(motorA, 255);
16     analogWrite(motorB, 0);
17     delay(2000);
18
19     analogWrite(motorA, 0);
20     analogWrite(motorB, 0);
21     delay(2000);
22
23     analogWrite(motorA, 0);
24     analogWrite(motorB, 120);
25     delay(2000);
26
27     analogWrite(motorA, 255);
28     analogWrite(motorB, 255);
29     delay(2000);
30 }

```

아두이노 WiFi

>> 실습 개요



- 어플리케이션의 C0를 누르면 정지
- C1을 누르면 동작
- C2를 누르면 C1보다 더 빠르게 같은 방향으로 동작



Thank you