CCE60220

Perangkat Bergerak (TKOM)

Fakultas Ilmu Komputer Universitas Brawijaya

Agenda Perkuliahan

1. ~~Intro dan overview perkuliahan~~
2. ~~Sejarah dan perkembangan teknologi perangkat bergerak~~
3. ~~Komponen perangkat keras dan perangkat lunak~~
4. ~~Pengenalan dan instalasi android studio serta aplikasi sederhana~~
5. ~~Intent dan passing data pada Android Studio~~
6. ~~Android Studio: Sensor reading~~
7. ~~Android Studio: Storage & shared preference~~
8. **==========UTS**
9. ~~Pengenalan dan aplikasi sederhana dengan MIT AppInventor~~
10. ~~Appinventor: variable, conditional, tinyDB, file~~
11. ~~appInventor: sensor reading & persiapan project~~
12. ~~Appinventor: Akuisisi gambar dan suara~~
13. Appinventor: komunikasi bluetooth, Wifi to control device (http get)
14. Appinventor: basic animation
15. Presentasi kelompok
16. **==========UAS**

Using Bluetooth

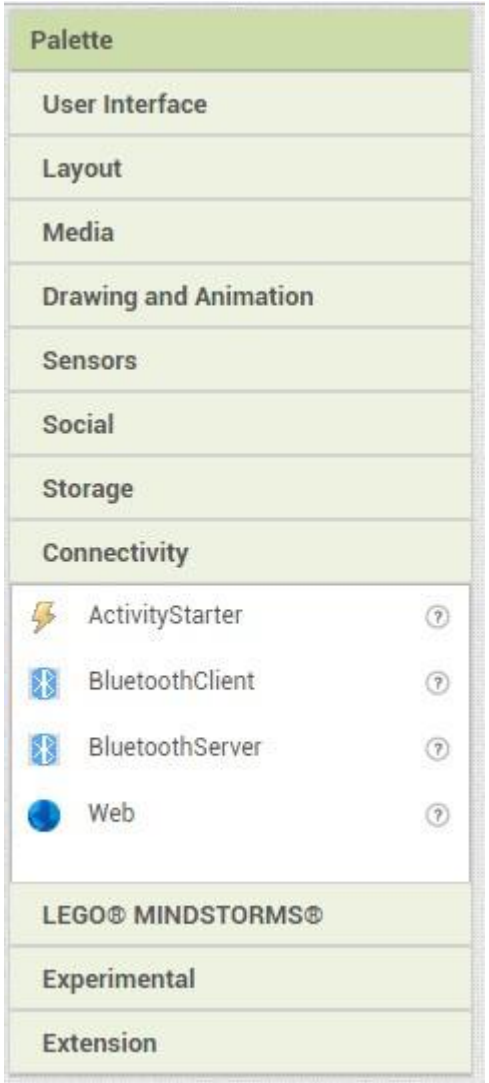
Bluetooth

~~Bluetooth sender~~

Bluetooth Server side √

~~Bluetooth receiver~~

Bluetooth client side √



BluetoothServer

Properties

- Available: boolean, Tell whether Bluetooth is available on the Android device.
- CharacterEncoding: text, The character encoding to use when sending and receiving text.
- DelimiterByte: number, The delimiter byte to use when passing a negative number for the numberOfBytes parameter when calling ReceiveText, ReceiveSignedBytes, or ReceiveUnsignedBytes.
- Enabled: boolean, Tell whether Bluetooth is enabled.
- HighByteFirst: boolean, Whether 2 and 4 byte numbers should be sent and received with the high (or most significant) byte first. Check the documentation for the device with which your app will be communicating for the appropriate setting. This is also known as big-endian.
- IsAccepting: boolean, Tell whether this BluetoothServer component is accepting an incoming connection.
- IsConnected: boolean, Tell whether a Bluetooth connection has been made.

Events

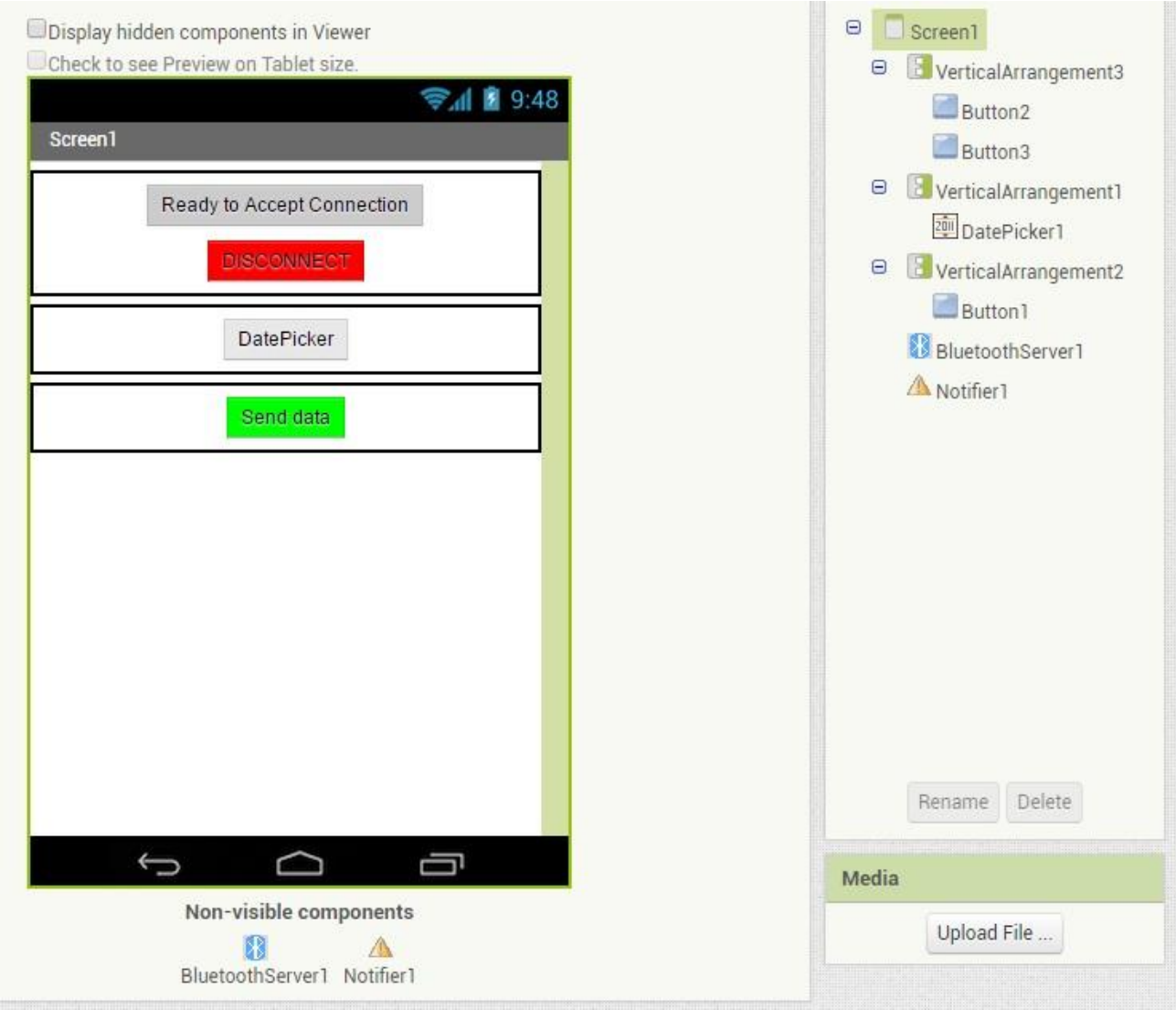
- ConnectionAccepted(): Indicates that a bluetooth connection has been accepted.

BluetoothServer

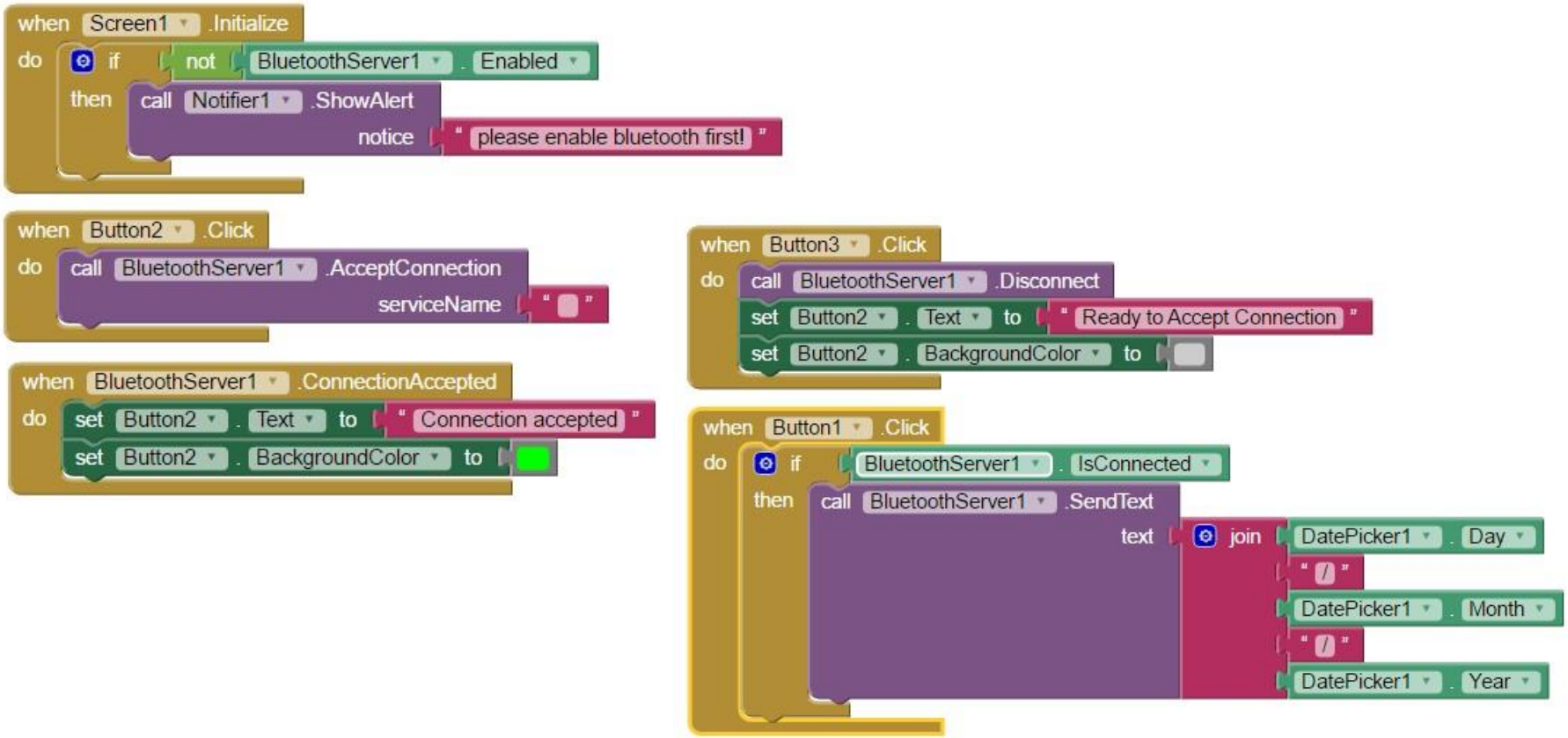
Methods

- AcceptConnection(text serviceName): Accept an incoming connection with the Serial Port Profile (SPP).
- AcceptConnectionWithUUID(text serviceName, text uuid): Accept an incoming connection with a specific UUID.
- number BytesAvailableToReceive(): Returns an estimate of the number of bytes that can be received without blocking
- Disconnect(): Disconnect from the connected Bluetooth device.
- number ReceiveSigned1ByteNumber(): Receive a signed 1-byte number from the connected Bluetooth device.
- number ReceiveSigned2ByteNumber(): Receive a signed 2-byte number from the connected Bluetooth device.
- number ReceiveSigned4ByteNumber(): Receive a signed 4-byte number from the connected Bluetooth device.
- list ReceiveSignedBytes(number numberOfBytes): Receive multiple signed byte values from the connected Bluetooth device. If numberOfBytes is less than 0, read until a delimiter byte value is received.
- text ReceiveText(number numberOfBytes): Receive text from the connected Bluetooth device. If numberOfBytes is less than 0, read until a delimiter byte value is received.
- number ReceiveUnsigned1ByteNumber(): Receive an unsigned 1-byte number from the connected Bluetooth device.
- number ReceiveUnsigned2ByteNumber(): Receive a unsigned 2-byte number from the connected Bluetooth device.
- number ReceiveUnsigned4ByteNumber(): Receive a unsigned 4-byte number from the connected Bluetooth device.
- list ReceiveUnsignedBytes(number numberOfBytes): Receive multiple unsigned byte values from the connected Bluetooth device. If numberOfBytes is less than 0, read until a delimiter byte value is received.
- Send1ByteNumber(text number): Send a 1-byte number to the connected Bluetooth device.
- Send2ByteNumber(text number): Send a 2-byte number to the connected Bluetooth device.
- Send4ByteNumber(text number): Send a 4-byte number to the connected Bluetooth device.
- SendBytes(list list): Send a list of byte values to the connected Bluetooth device.
- SendText(text text): Send text to the connected Bluetooth device.
- StopAccepting(): Stop accepting an incoming connection.

BluetoothServer



BluetoothServer



Bluetooth Client

Properties

- AddressesAndNames: The addresses and names of paired Bluetooth devices
- Available: Whether Bluetooth is available on the device
- CharacterEncoding
- DelimiterByte
- Enabled: Whether Bluetooth is enabled
- HighByteFirst
- IsConnected
- Secure: Whether to invoke SSP (Simple Secure Pairing), which is supported on devices with Bluetooth v2.1 or higher. When working with embedded Bluetooth devices, this property may need to be set to False. For Android 2.0-2.2, this property setting will be ignored.

Events

Bluetooth Client

Methods

- number BytesAvailableToReceive(): Returns an estimate of the number of bytes that can be received without blocking
- boolean Connect(text address): Connect to the Bluetooth device with the specified address and the Serial Port Profile (SPP). Returns true if the connection was successful.
- boolean ConnectWithUUID(text address, text uuid): Connect to the Bluetooth device with the specified address and UUID. Returns true if the connection was successful.
- Disconnect(): Disconnect from the connected Bluetooth device.
- boolean IsDevicePaired(text address): Checks whether the Bluetooth device with the specified address is paired.
- number ReceiveSigned1ByteNumber(): Receive a signed 1-byte number from the connected Bluetooth device.
- number ReceiveSigned2ByteNumber(): Receive a signed 2-byte number from the connected Bluetooth device.
- number ReceiveSigned4ByteNumber(): Receive a signed 4-byte number from the connected Bluetooth device.
- list ReceiveSignedBytes(number numberOfBytes): Receive multiple signed byte values from the connected Bluetooth device. If numberOfBytes is less than 0, read until a delimiter byte value is received.
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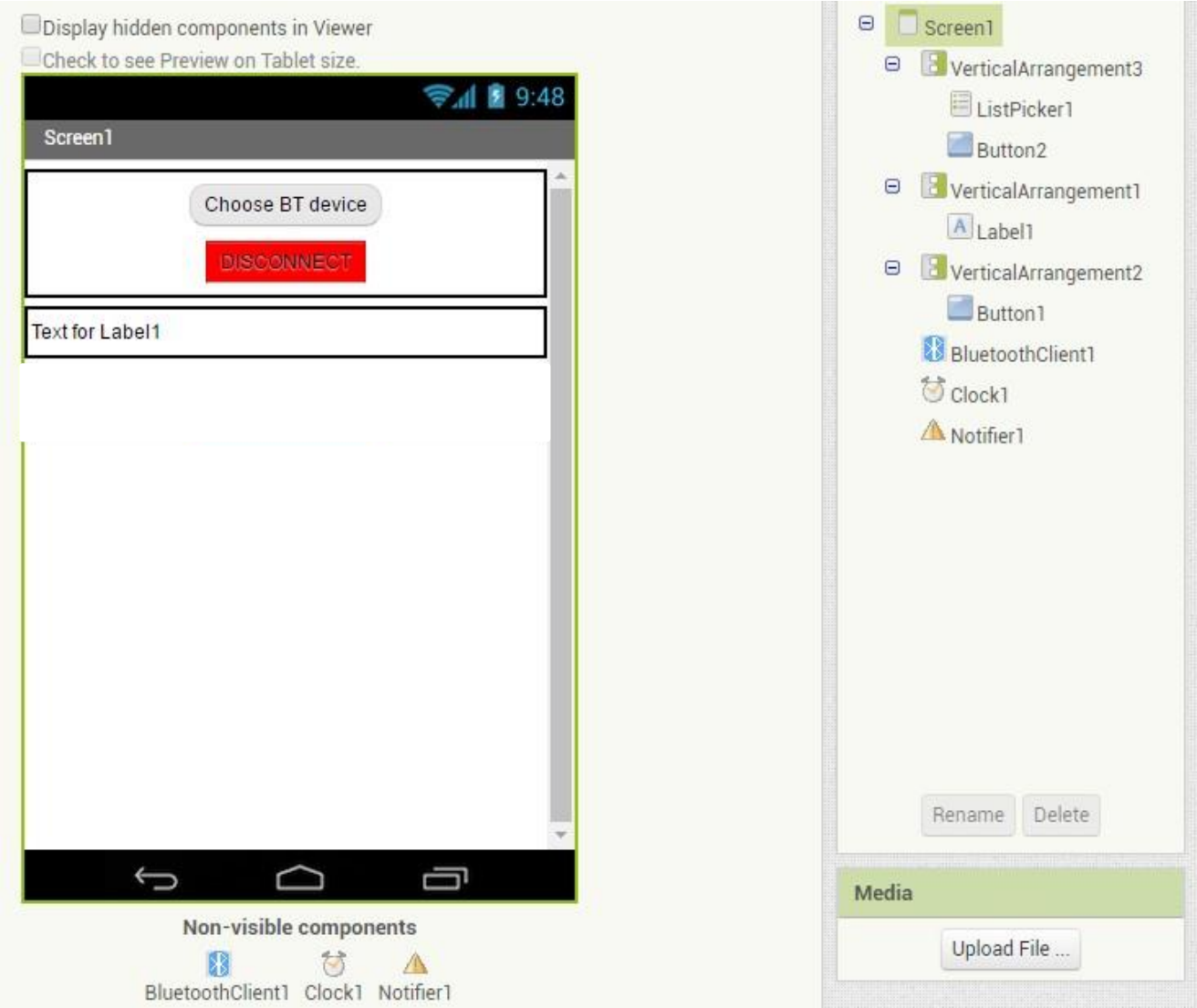
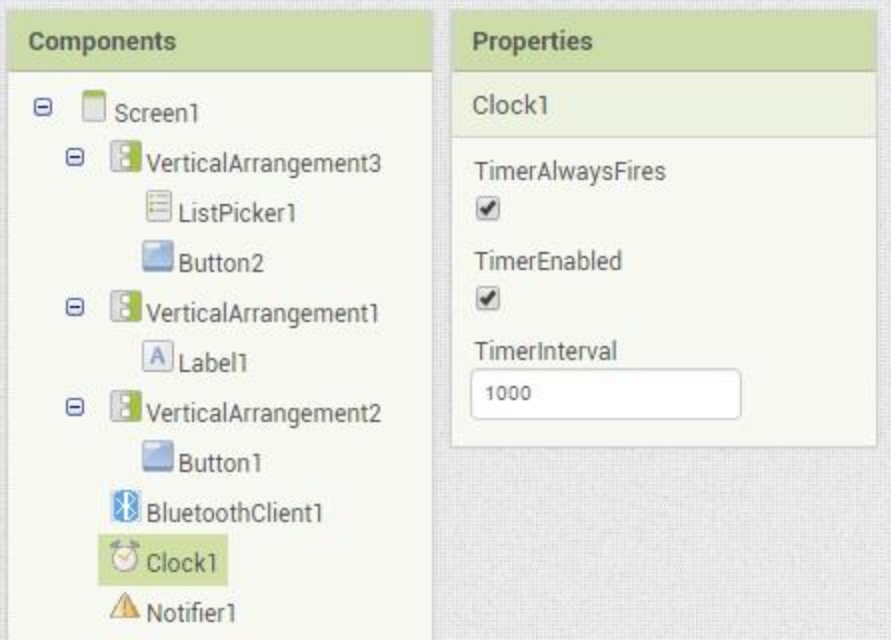
- Send4ByteNumber(text number): Send a 4-byte number to the connected Bluetooth device.
- SendBytes(list list): Send a list of byte values to the connected Bluetooth device.
- SendText(text text): Send text to the connected Bluetooth device.

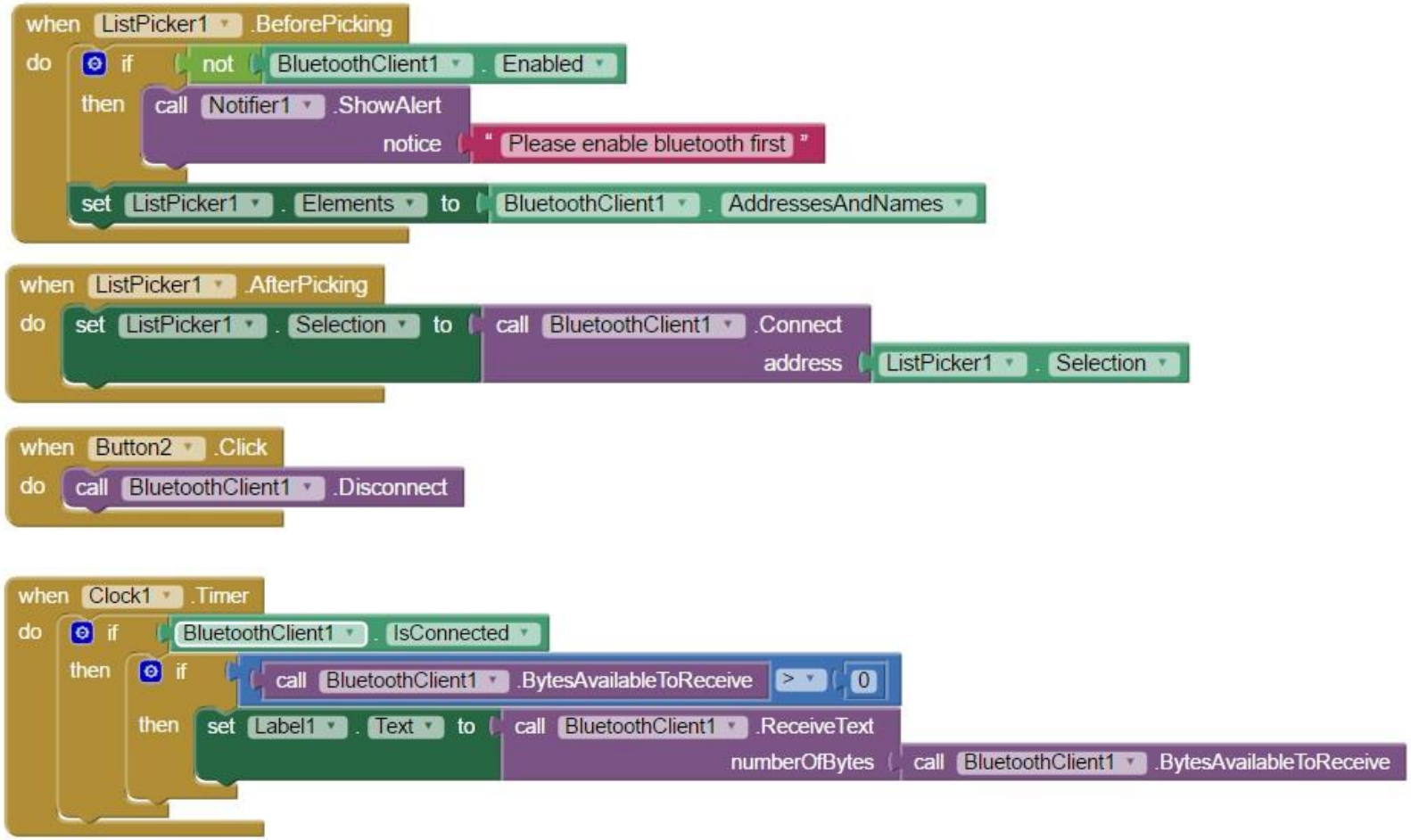
Bluetooth Client



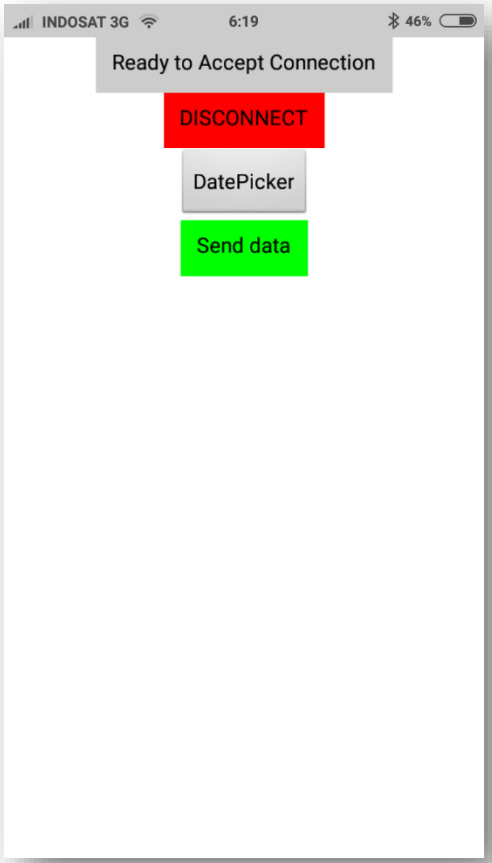
Bluetooth Client

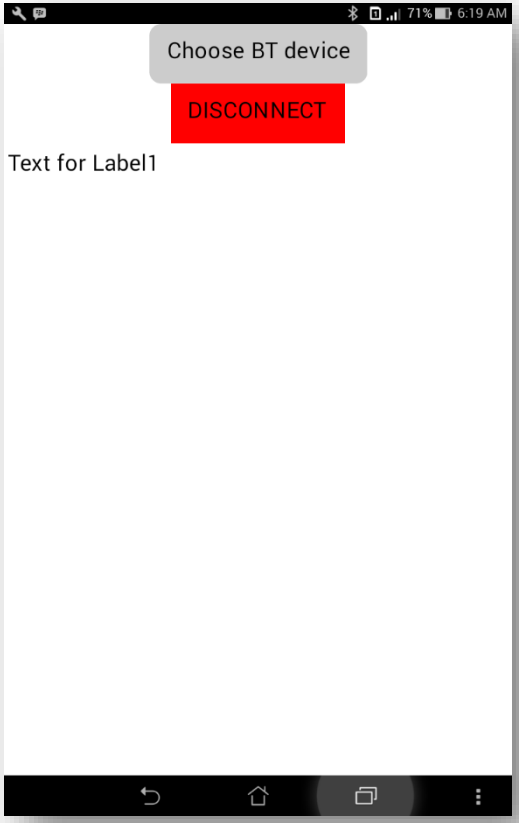


Bluetooth Client



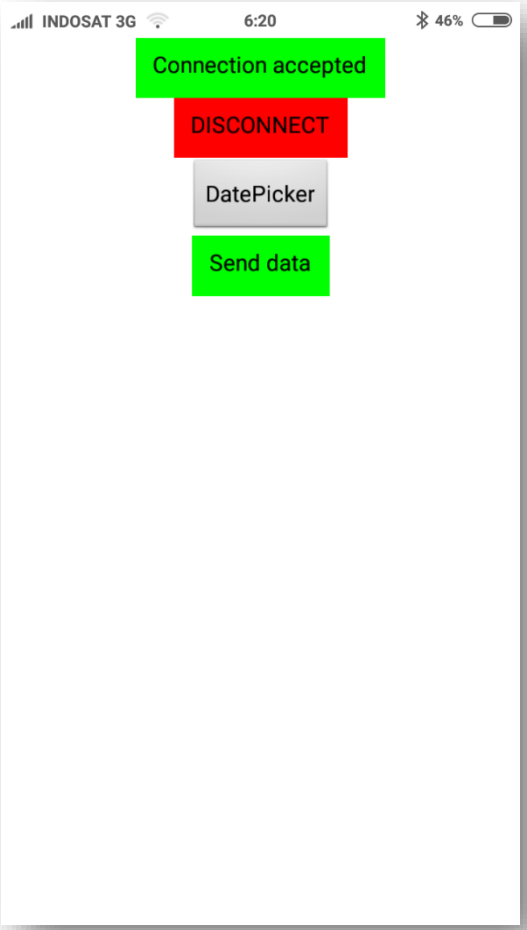
Result

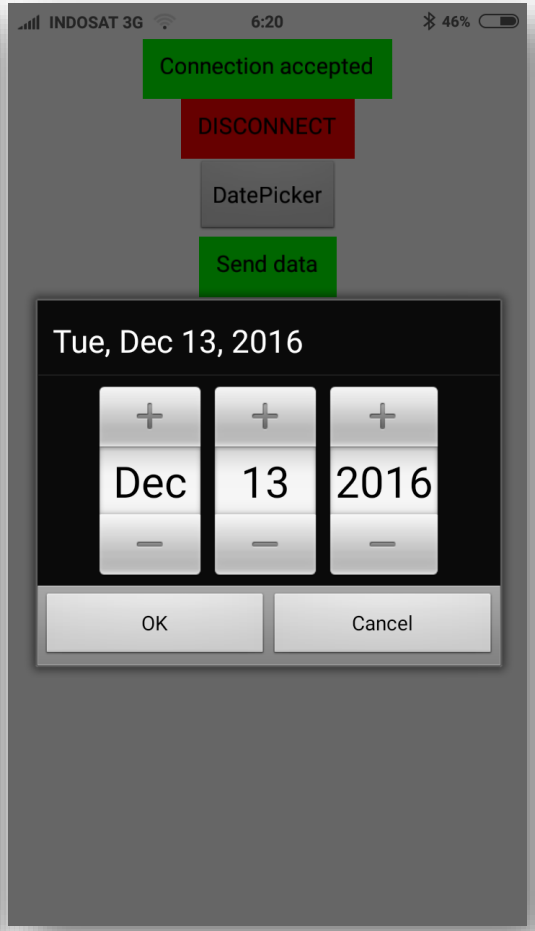


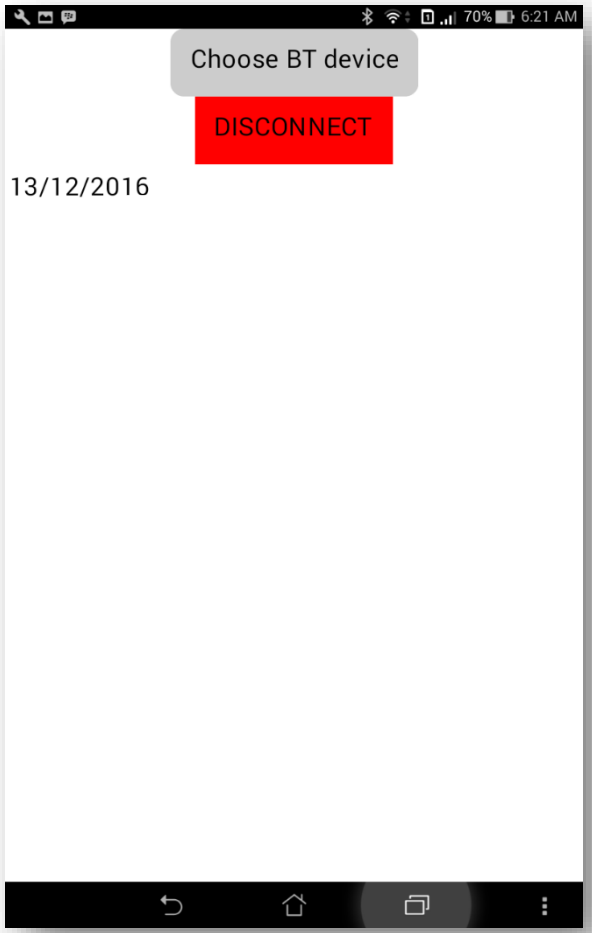


Server side

Client side



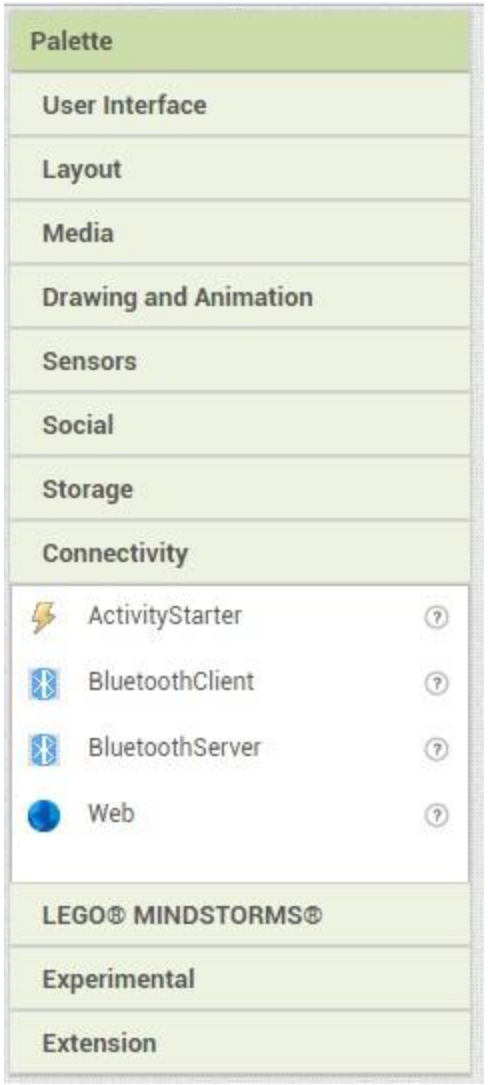




Server side

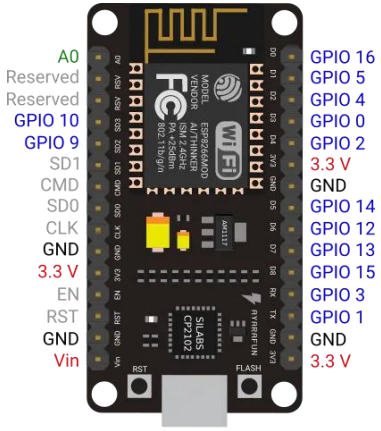
Client side

Using Wifi to control device (http get)

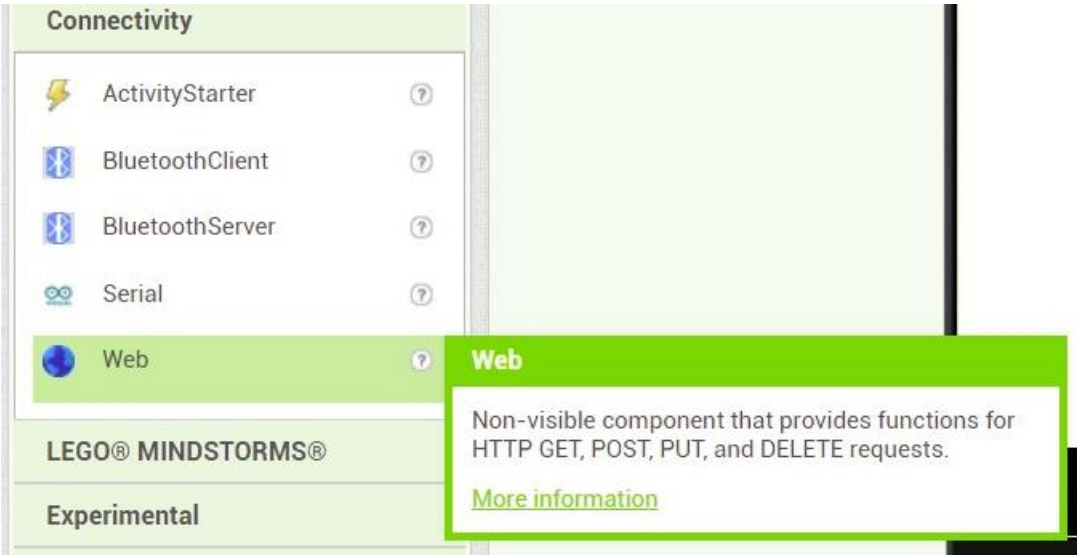


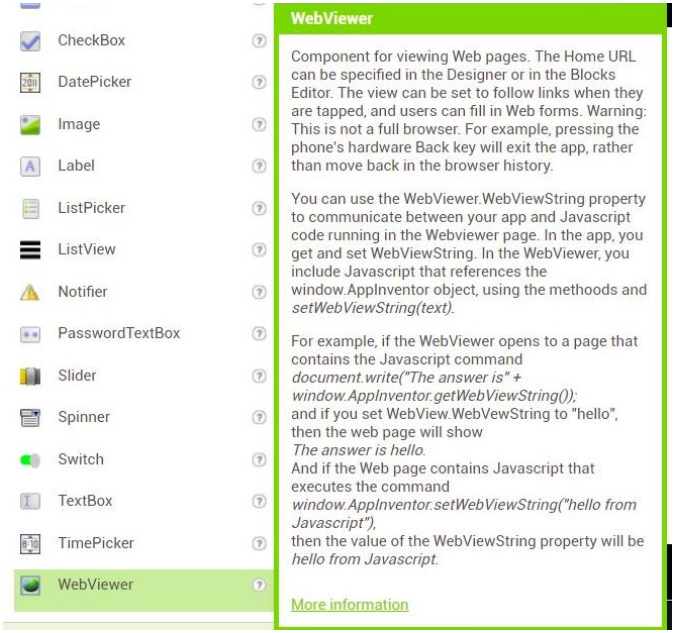
Both wifi-connected

command



Alternative: http get





Use web (connectivity) not webviewer

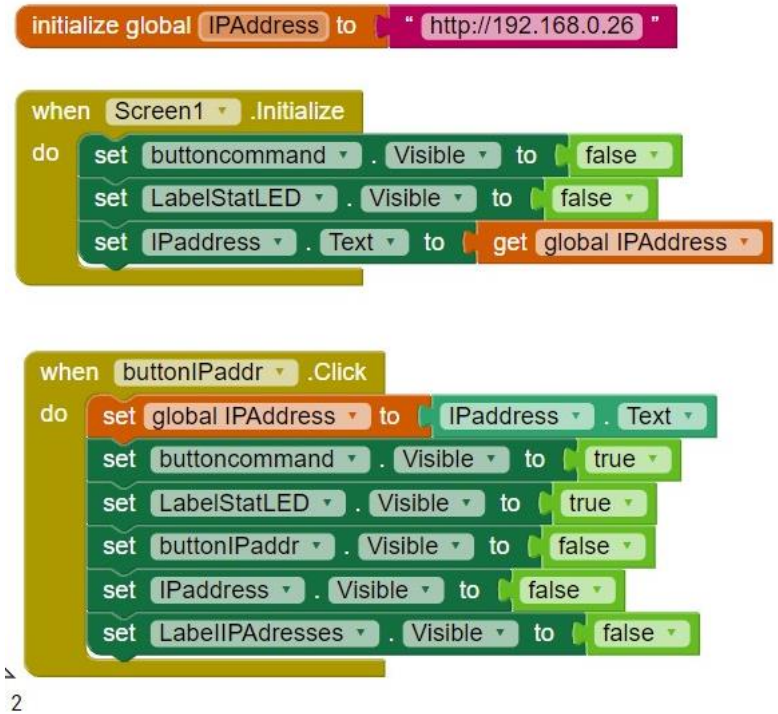

9:48
Enter Server IP address
Press to send IP address
OFF
The LED is off
Non-visible components
Web1

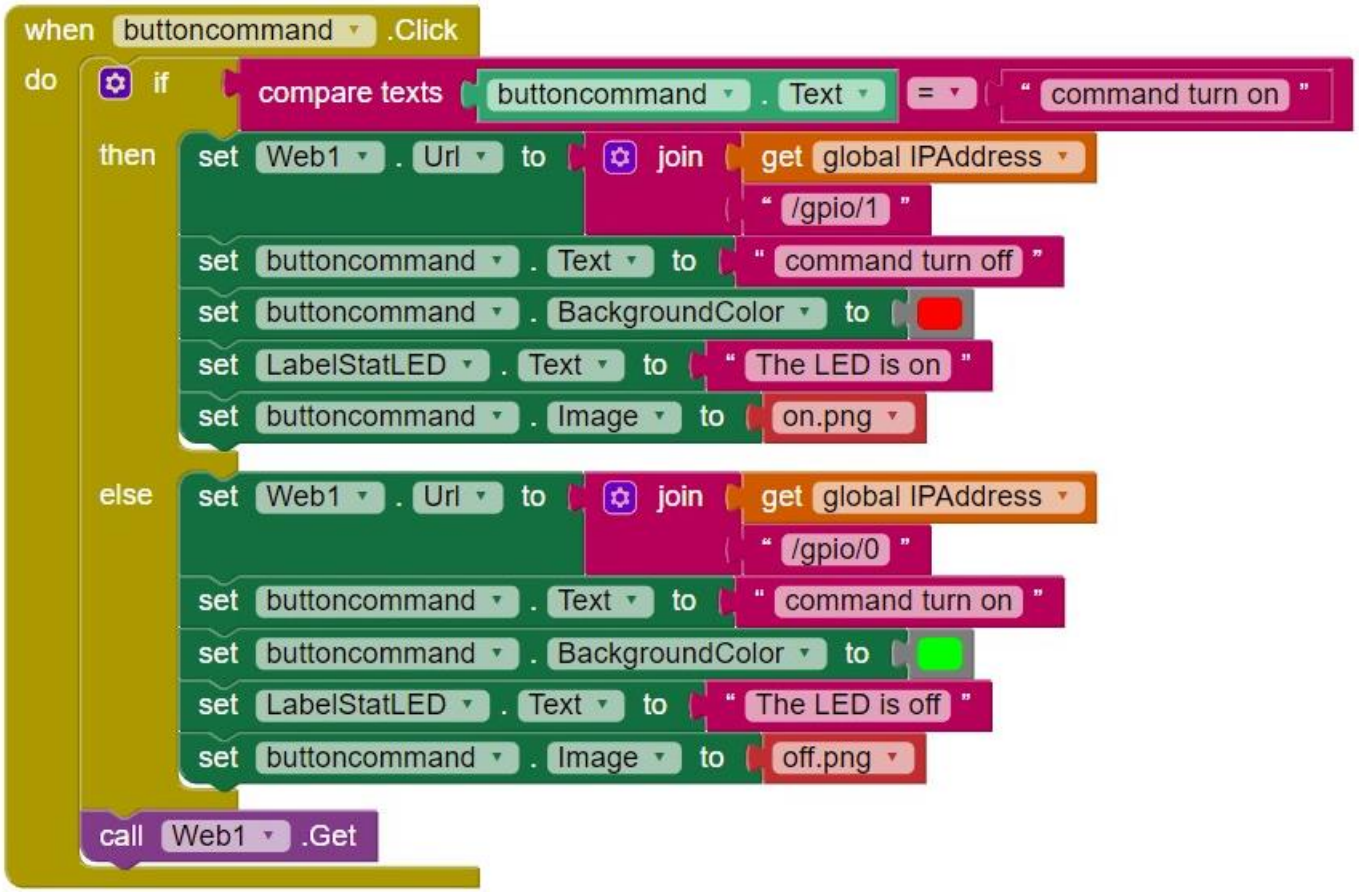

Components
Screen1
LabelIPAdresses
IPaddress
buttonIPaddr
buttoncommand
LabelStatLED
Web1

Note:

Kode berikut belum diuji coba, namun secara teori semestinya bisa bekerja mungkin dengan beberapa penyesuaian


Components
Screen1
LabelIPAdresses
IPaddress
buttonIPaddr
buttoncommand
LabelStatLED
Web1


initialize global IPAddress to " http://192.168.0.26 "
when Screen1 .Initialize
do set buttoncommand . Visible to false
set LabelStatLED . Visible to false
set IPaddress . Text to get global IPAddress
when buttonIPaddr .Click
do set global IPAddress to IPaddress . Text
set buttoncommand . Visible to true
set LabelStatLED . Visible to true
set buttonIPaddr . Visible to false
set IPaddress . Visible to false
set LabelIPAdresses . Visible to false
2


when buttoncommand .Click
do if compare texts buttoncommand . Text = " command turn on "
then set Web1 . Url to join get global IPAddress
" /gpio/1 "
set buttoncommand . Text to " command turn off "
set buttoncommand . BackgroundColor to
set LabelStatLED . Text to " The LED is on "
set buttoncommand . Image to on.png
else set Web1 . Url to join get global IPAddress
" /gpio/0 "
set buttoncommand . Text to " command turn on "
set buttoncommand . BackgroundColor to
set LabelStatLED . Text to " The LED is off "
set buttoncommand . Image to off.png
call Web1 .Get

```
#include <ESP8266WiFi.h>

#ifndef STASSID
#define STASSID "namassid"
#define STAPSK  "passwordssid"
#endif

const char* ssid = STASSID;
const char* password = STAPSK;

// Create an instance of the server
// specify the port to listen on as an argument
WiFiServer server(80);
```

```
void setup() {
  Serial.begin(115200);

  // prepare LED
  pinMode(LED_BUILTIN, OUTPUT);
  digitalWrite(LED_BUILTIN, 0);

  // Connect to WiFi network
  Serial.println();
  Serial.println();
  Serial.print(F("connecting to "));
  Serial.println(ssid);

  WiFi.mode(WIFI_STA);
  WiFi.begin(ssid, password);

  while (WiFi.status() != WL_CONNECTED) {
    delay(500);
    Serial.print(F("."));
  }
  Serial.println();
  Serial.println(F("WiFi is connected"));

  // Start the server
  server.begin();
  Serial.println(F("server is started"));

  // Print the IP address
  Serial.println(WiFi.localIP());
}
```

```
void loop() {
  // Check if a client has connected
  WiFiClient client = server.available();
  if (!client) {
    return;
  }
  Serial.println(F("new client"));

  client.setTimeout(5000); // default is 1000

  // Read the first line of the request
  String req = client.readStringUntil('\r');
  Serial.println(F("request: "));
  Serial.println(req);

  // Match the request
  int val;
  if (req.indexOf(F("/gpio/0")) != -1) {
    val = 0;
  } else if (req.indexOf(F("/gpio/1")) != -1) {
    val = 1;
  } else {
    Serial.println(F("invalid request"));
    val = digitalRead(LED_BUILTIN);
  }
  // Set LED according to the request
  digitalWrite(LED_BUILTIN, val);
  // read/ignore the rest of the request
  // do not client.flush(): it is for output only, see below
  while (client.available()) {
    // byte by byte is not very efficient
    client.read();
  }

  // Send the response to the client
  // it is OK for multiple small client.print/write,
  // because nagle algorithm will group them into one single packet
  client.print(F("HTTP/1.1 200 OK\r\nContent-Type: text/html\r\n\r\n<!DOCTYPE HTML>\r\n<html>\r\nGPIO is now "));
  client.print((val) ? F("high") : F("low"));
  client.print(F("<meta charset='utf-8'>"));
  client.print(F("<br><br><h1> Connecting to ESP8266 Wifi server to turn on the LED of the module </h1>"));
  client.print(F("<br><br>Click <a href='http://"));
  client.print(WiFi.localIP());
  client.print(F("/gpio/1'>here</a> to turn on the LED, or <a href='http://"));
  client.print(WiFi.localIP());
  client.print(F("/gpio/0'>here</a> to turn off the LED.</html>"));

  // The client will actually be *flushed* then disconnected
  // when the function returns and 'client' object is destroyed (out-of-scope)
  // flush = ensure written data are received by the other side
  Serial.println(F("Disconnecting from client"));
}
```

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