ESP32 TCP Server for Phone Control with RoboRemo

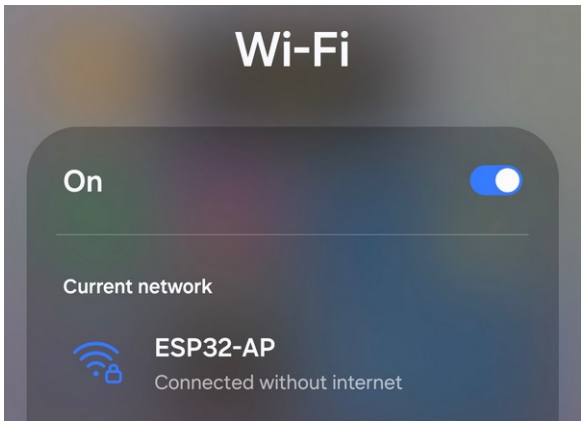
Step 1. Upload code to your ESP32 board.

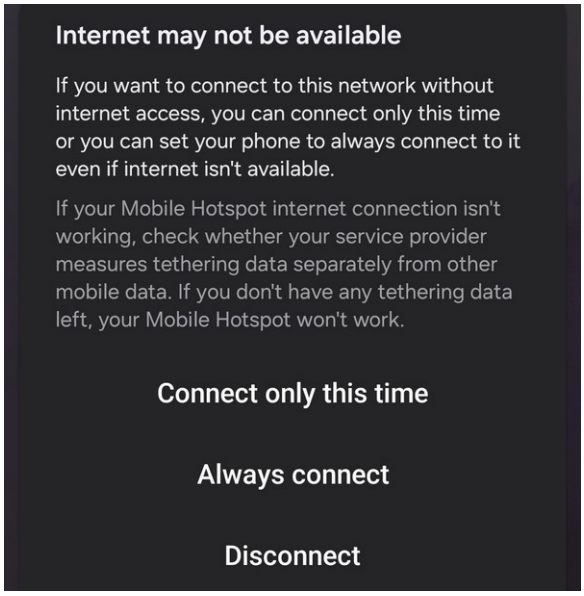
```
#include <WiFi.h>

// Your ESP32 will create its own Access Point (AP)
const char* ssid = "ESP32-AP";
const char* password = "123456789";

// TCP server port, ESP32 will listen to this port, client (RoboRemo) will connect to it
const uint16_t port = 12345;

WiFiServer server(port);

void setup() {
  Serial.begin(115200);
  delay(1000);

  // Configure as WiFi AP
  WiFi.softAP(ssid, password);
  IPAddress IP = WiFi.softAPIP();
  Serial.print("AP IP address: ");
  Serial.println(IP);

  // Start TCP server
  server.begin();
  Serial.print("TCP server started, listening on port ");
  Serial.println(port);
}

void loop() {
  WiFiClient client = server.accept();
  if(client) {
    Serial.println("Client connected");
    while (client.connected()) {
      if (client.available()) {
        String command = client.readStringUntil('\n');
        command.trim();
        Serial.println("Received: " + command);
        // Example: toggle an onboard LED or parse commands
        // For now, just echo back
        client.println("Received: " + command);
      }
    }
    client.stop();
    Serial.println("Client disconnected");
  }
}
```

Step 2. Open Serial Monitor

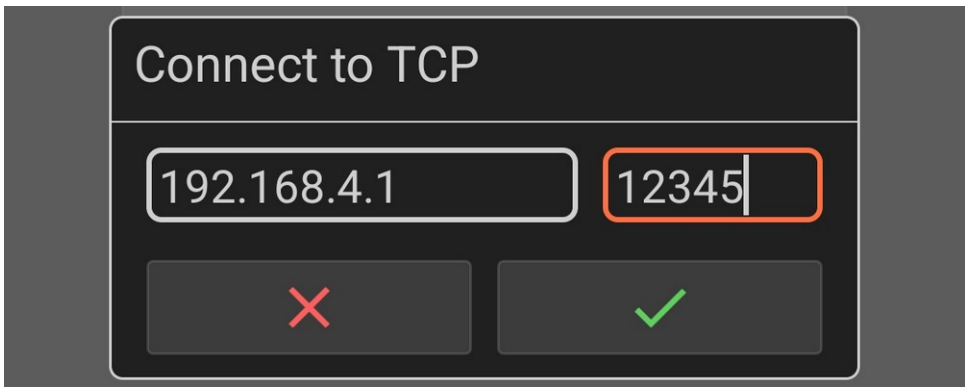
Step 3. Reset the ESP32 by pressing the reset button on the board

Step 4. Connect phone to the WiFi Access Point that the ESP32 is running (see access point name and password in the ESP32 code). Confirm that you want to connect even without internet (The ESP32 will not provide Internet connection, only local WiFi network).



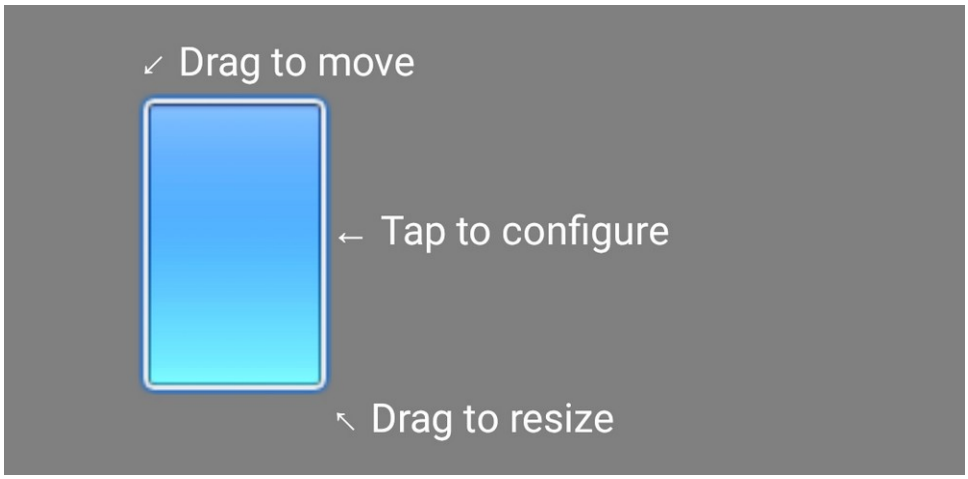


Step 5. Open RoboRemo and tap Menu → CONNECT → Internet (TCP) → [+], enter IP address and port and tap OK.



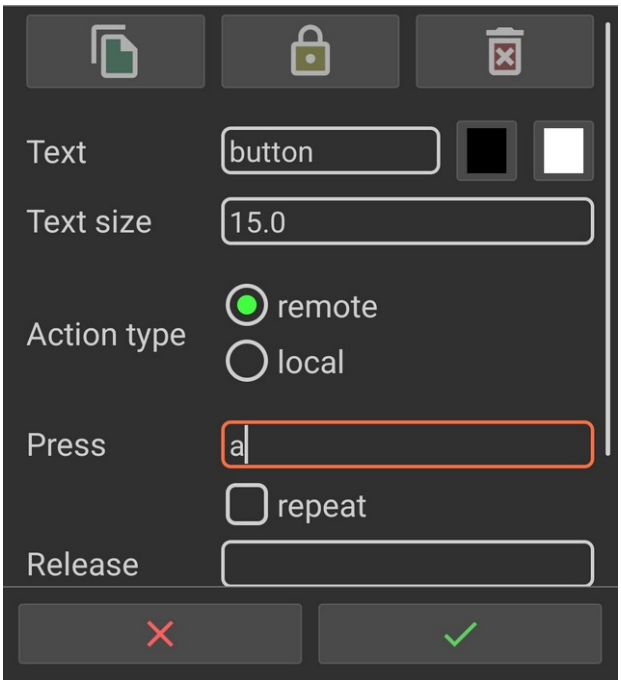
Step 6. Tap Menu → EDIT UI

Step 7. Tap on blank space → add Text log. The Text log will appear on screen and you can drag and resize it.



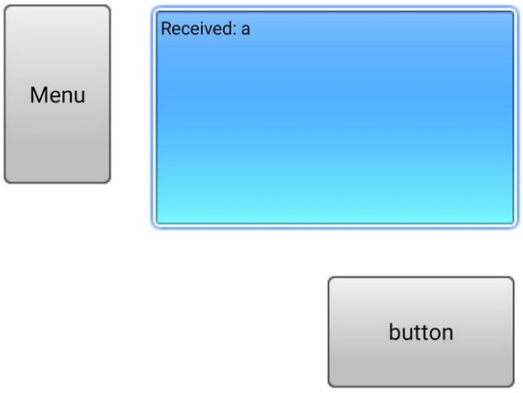
Step 8. Tap on blank space → add Button

Step 9. Tap on the new button to configure → Press → type “a” → OK
(the button will send “a” when pressed)



Step 10. Tap Menu → EXIT THE EDITOR

Step 11. Press the button → RoboRemo will send “a\n” to the ESP32. ESP32 will send “Received: a\n” to the Serial Port and it will appear in the Serial Monitor. ESP32 will also send “Received: a\n” back via the TCP connection and “Received: a” will appear in the Text log in RoboRemo interface.



Further development:
ESP32 code can be extended to parse commands from multiple control items in RoboRemo (buttons, sliders, joystick, accelerometer, etc.)
RoboRemo interface can be extended to include multiple indicators, each with its own ID, then ESP32 can send values prefixed by the IDs and update those indicators.

RoboRemo app – free demo version:
https://play.google.com/store/apps/details?id=com.hardcodedjoy.roboremofree

RoboRemo User Manual:
https://roboremo.app/roboremo_app_manual.pdf

This project on GitHub:
https://github.com/hardcodedjoy/esp32-tcp-server-demo