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PROJECT REPORT

WiFi Signal Strength Monitor

Problem Statement:

The proposed **WiFi Signal Strength Monitor** aims to design and develop a device using a microcontroller (such as ESP8266/ESP32) that connects to a WiFi network and measures signal strength in real time. The system will analyze RSSI values and indicate whether the signal is strong, moderate, or weak. This helps users identify optimal router placement, troubleshoot connectivity issues, and improve network performance.

Components Required

Hardware Components:

1. ESP32 Development Board
2. USB Cable (Micro USB) – To connect NodeMCU to laptop
3. Laptop / PC – For programming and monitoring
4. WiFi Router / Hotspot – To provide internet/network connection

Software Components:

1. Arduino IDE – To write and upload code
2. ESP32 Board Package
3. WiFi Library (WiFi.h)

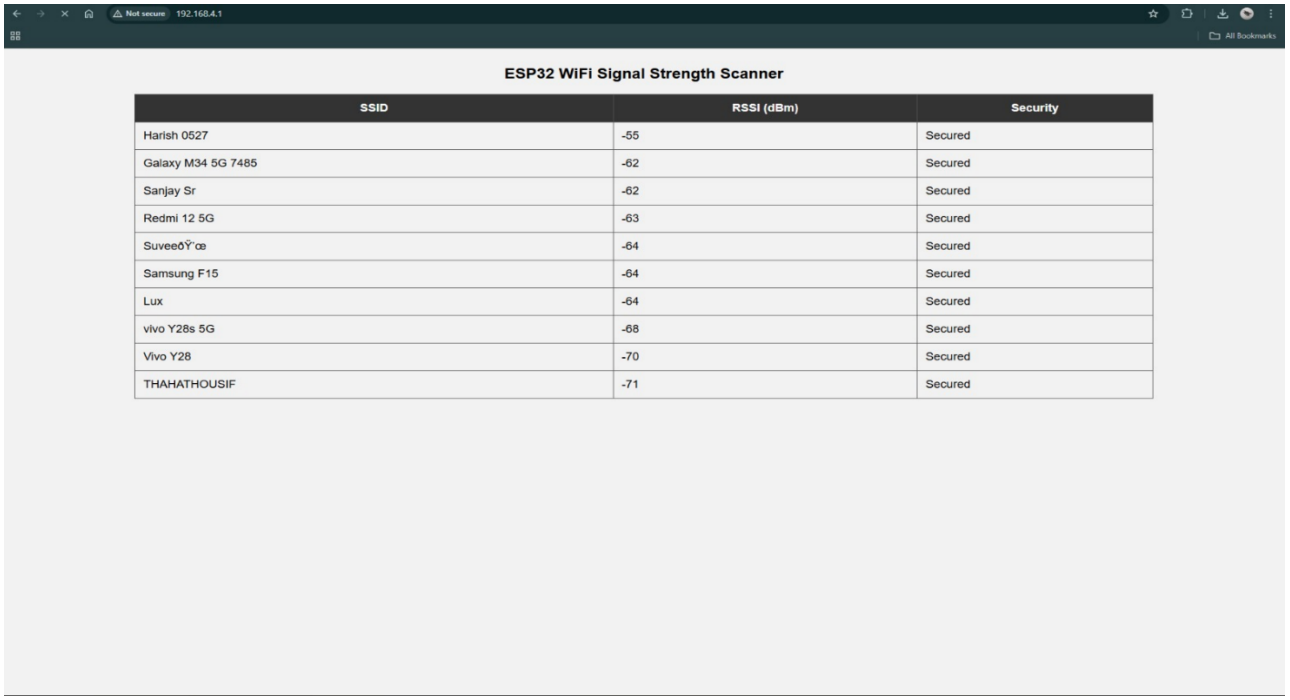
Program

```
#include <WiFi.h>
#include <WebServer.h>

WebServer server(80);

// Access Point credentials
const char* ap_ssid = "ESP32_Scanner";
const char* ap_password = "12345678";

// Generate webpage with WiFi scan results
String generatePage() {
  String page = "<html><head>";
  page += "<meta http-equiv='refresh' content='3'>";
  page += "<style>";
  page += "body{font-family:Arial;background:#f2f2f2;text-align:center;padding-top:20px;}";
  page += "table{margin:auto;border-collapse:collapse;width:80%;}";
  page += "th,td{padding:12px;border:1px solid #555;font-size:18px;}";
  page += "th{background:#333;color:white;}";
  page += "</style></head><body>";
  page += "<h2>ESP32 WiFi Signal Strength Scanner</h2>";

  int n = WiFi.scanNetworks();

  if (n == 0) {
    page += "<p>No networks found.</p>";
  } else {
    page += "<table>";
    page += "<tr><th>SSID</th><th>RSSI (dBm)</th><th>Security</th></tr>";
    for (int i = 0; i < n; ++i) {
      page += "<tr>";
      page += "<td>" + WiFi.SSID(i) + "</td>";
      page += "<td>" + String(WiFi.RSSI(i)) + "</td>";

      // Security type
```

```
      wifi_auth_mode_t auth = WiFi.encryptionType(i);
      String sec = (auth == WIFI_AUTH_OPEN) ? "Open" : "Secured";
      page += "<td>" + sec + "</td>";

      page += "</tr>";
    }
    page += "</table>";
  }

  page += "</body></html>";
  return page;
}

void handleRoot() {
  server.send(200, "text/html", generatePage());
}

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

  // Create Access Point
  WiFi.softAP(ap_ssid, ap_password);
  Serial.println("Access Point Started");
  Serial.print("SSID: ");
  Serial.println(ap_ssid);
  Serial.print("Password: ");
  Serial.println(ap_password);
  Serial.print("AP IP Address: ");
  Serial.println(WiFi.softAPIP());

  server.on("/", handleRoot);
  server.begin();
}

void loop() {
```

```
  server.handleClient();
}
```

Output :



SSID	RSSI (dBm)	Security
Harish 0527	-55	Secured
Galaxy M34 5G 7485	-62	Secured
Sanjay Sr	-62	Secured
Redmi 12 5G	-63	Secured
SuveeoŸ`œ	-64	Secured
Samsung F15	-64	Secured
Lux	-64	Secured
vivo Y28s 5G	-68	Secured
Vivo Y28	-70	Secured
THAHATHOUSIF	-71	Secured

Result

The WiFi Signal Strength Monitor was successfully designed and implemented using the ESP32 development board. The system was able to connect to the specified WiFi network and continuously measure the signal strength in terms of RSSI (Received Signal Strength Indicator)values.