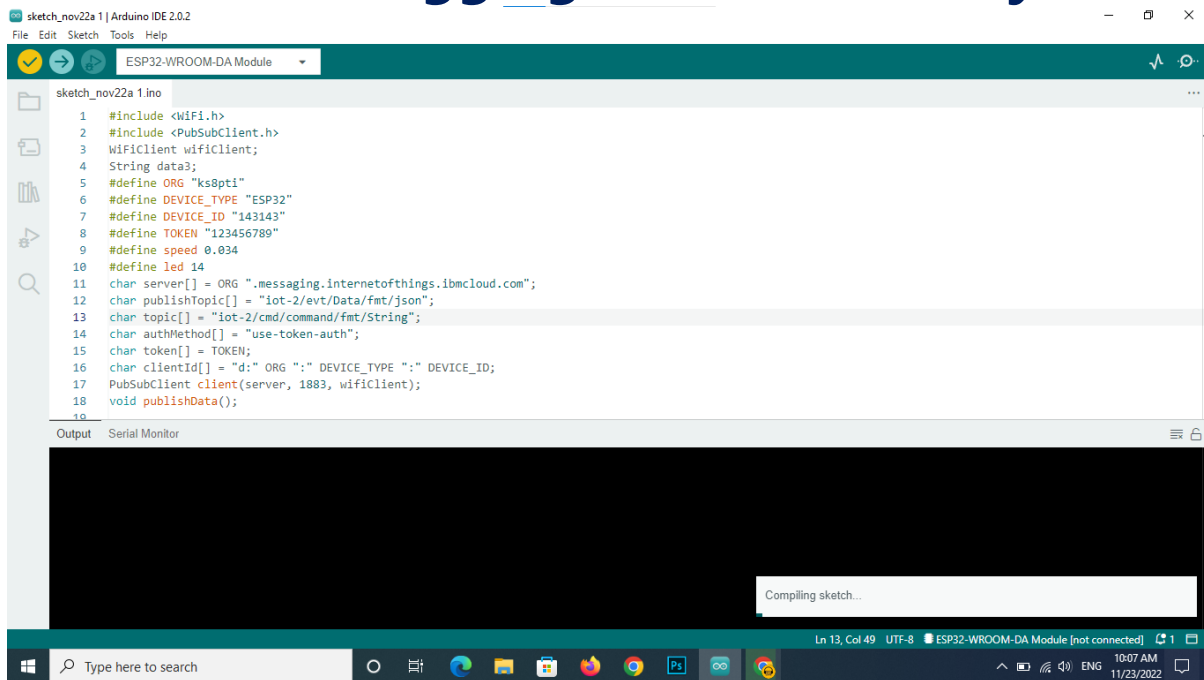


# Coding and Solution

Team ID	PNT2022TMID47935
Project Name	Real-time river water quality monitoring and control system

## Debugging and Traceability

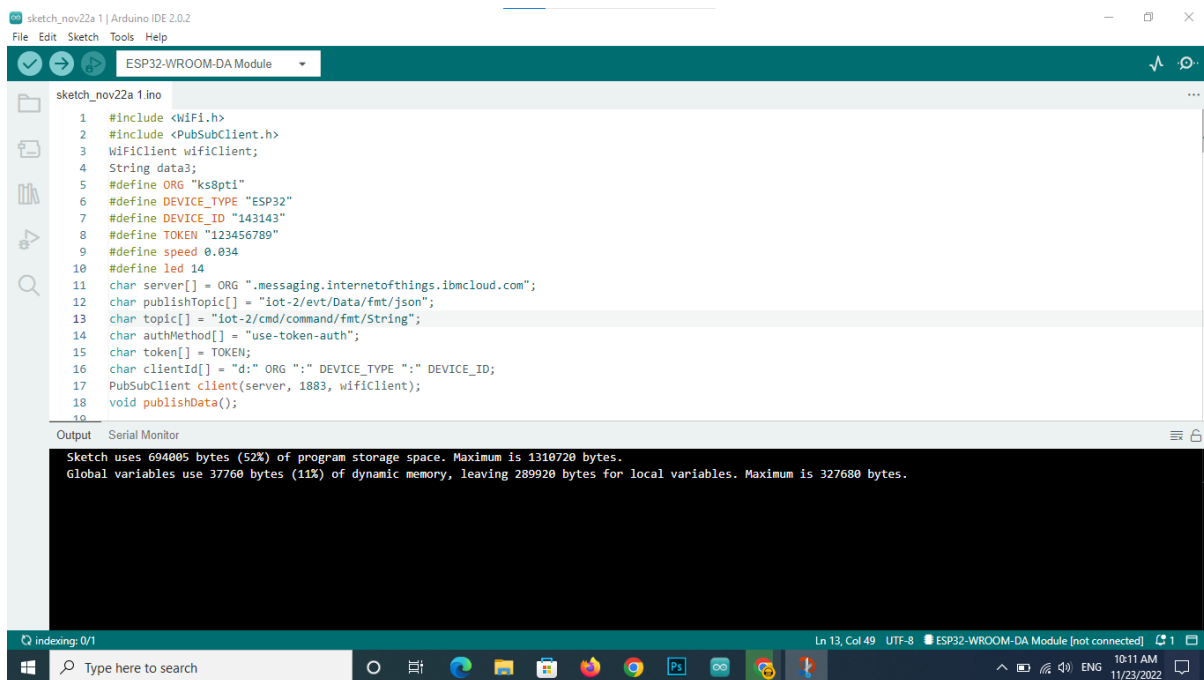


The screenshot shows the Arduino IDE interface with the file 'sketch\_nov22a 1.ino' open. The code is for an ESP32-WROOM-DA module and includes headers for WiFi and PubSubClient. It defines various constants like ORG, DEVICE\_TYPE, DEVICE\_ID, TOKEN, and speed. The main logic involves connecting to an MQTT server, publishing data to a specific topic, and handling authentication. The bottom panel shows the 'Output' tab with the message 'Compiling sketch...'.

```
1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 WiFiClient wifiClient;
4 String data;
5 #define ORG "ks8pt1"
6 #define DEVICE_TYPE "ESP32"
7 #define DEVICE_ID "143143"
8 #define TOKEN "123456789"
9 #define speed 0.034
10 #define led 14
11 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
12 char publishTopic[] = "iot-2/evt/Data/fmt/json";
13 char topic[] = "iot-2/cmd/command/fmt/String";
14 char authMethod[] = "use-token-auth";
15 char token[] = TOKEN;
16 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
17 PubSubClient client(server, 1883, wifiClient);
18 void publishData();
19
20
```

Output Serial Monitor

Compiling sketch...



The screenshot shows the same Arduino IDE interface, but the 'Output' tab now displays memory usage information after the sketch has been compiled successfully. The code is identical to the previous screenshot.

```
1 #include <WiFi.h>
2 #include <PubSubClient.h>
3 WiFiClient wifiClient;
4 String data;
5 #define ORG "ks8pt1"
6 #define DEVICE_TYPE "ESP32"
7 #define DEVICE_ID "143143"
8 #define TOKEN "123456789"
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11 char server[] = ORG ".messaging.internetofthings.ibmcloud.com";
12 char publishTopic[] = "iot-2/evt/Data/fmt/json";
13 char topic[] = "iot-2/cmd/command/fmt/String";
14 char authMethod[] = "use-token-auth";
15 char token[] = TOKEN;
16 char clientId[] = "d:" ORG ":" DEVICE_TYPE ":" DEVICE_ID;
17 PubSubClient client(server, 1883, wifiClient);
18 void publishData();
19
20
```

Output Serial Monitor

Sketch uses 694005 bytes (52%) of program storage space. Maximum is 1310720 bytes.  
Global variables use 37760 bytes (11%) of dynamic memory, leaving 289920 bytes for local variables. Maximum is 327680 bytes.

**We are debug everything through the Arduino IDE**

