PROJECT IMPLEMENTAION:

1.First select the type of the microcontroller board.

2.In this project we are using Arduino Mega 2560 and the we are using Arduino IDE environment.

i. To install the board. Go to Tools→Boards→Boards Manager→Arduino AVR Boards →Arduino Mega 2560

3.The libraries that are necessary for our project are :

i. Arduino_FreeRTOS.h , To install Arduino_FreeRTOS.h ,go to Sketch→Include Library→Manage Library→type the library name →select the library →select install.

ii. TinyGPS++.h

To install TinyGPS++.h ,go to Sketch→Include Library→Manage Library→type the library name →select the library →select install.

4. Sure, here are the setup instructions for connecting your sensors and devices, listed in points:

a. Gas Sensor:

- Analog Output (Aout): Connect to analog pin A2.
- Digital Output (Dout): Connect to digital pin 5.

b. Temperature Sensor:

- Analog Output (Aout): Connect to analog pin A0.

c. Heart Rate Sensor:

- Analog Output (Aout): Connect to analog pin A1.

d. GPS Module:

- Receive (Rx) Pin: Connect to digital pin 3.
- Transmit (Tx) Pin: Connect to digital pin 4.

e. Buzzer:

- Input/Output Pin: Connect to digital pin 8.

Ensure power and ground connections as follows:

- Connect the Vout (positive voltage) of your sensors to the 5V pin on your microcontroller or power supply.

- Connect the GND (ground) of your sensors to the ground (GND) pin or terminal on your system.

5.Now next we go to the coding part where we

- First thresholds are defined for abnormal conditions: heart rate (200), temperature (40°C), and gas (500).
- Task Handling -the **Highest priority(4)** is given to Heart rate monitoring ,next priority(3) is given to Temperature monitoring ,next given to Gas sensor (2) and the last priority is given to Location(1).
- Initial setup includes starting communication and setting up the buzzer for alarm.
- Heart Rate Task:

- Checks heart rate from A1.

- If it's over 200, it turns on the buzzer.

- Location Task:

- Placeholder for reading GPS data.

- Temperature Task:

- Measures temperature from A0.

- If it's over 40°C, it prioritizes the location task.

- Gas Sensor Task:

- Checks gas levels from digital pin 5.

- If it's dangerous (over 500), it prioritizes the location task.

6.After the coding part is done ,we compile the code ,this is done by selecting verify .

7.Now select the board and the type of the COM .This can be done by going Tools→Boards and port selction by going to Tools→Port→COM.

8.Now upload the code to the board.