Project Development Phase

Sprint 1

Assignment Date	29 October 2022
Team ID	PNT2022TMID35665
Project Name	Project - Industry-specific intelligent fire management system

Link: https://wokwi.com/projects/322410731508073042

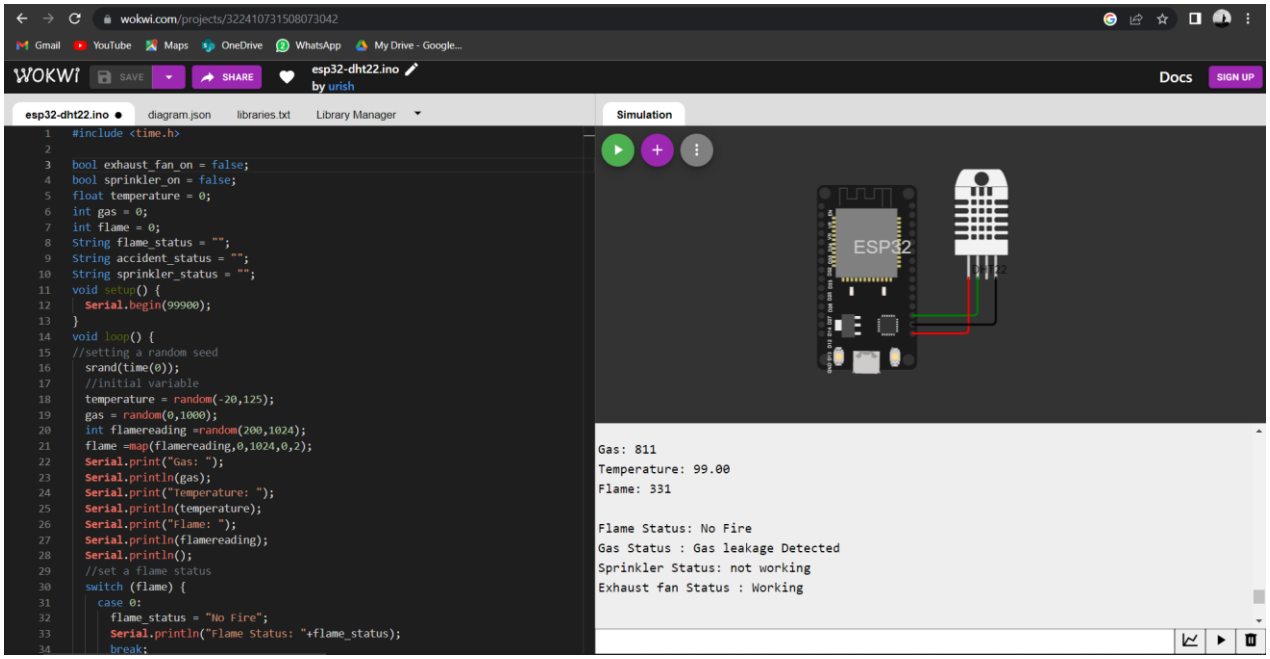
CODE:

```
#include <time.h>


bool exhaust_fan_on = false;

bool sprinkler_on = false;

float temperature = 0;

int gas = 0;

int flame = 0;

String flame_status = "";

String accident_status = "";

String sprinkler_status = "";

void setup() {

  Serial.begin(99900);

}

void loop() {

//setting a random seed

  srand(time(0));

  //initial variable

  temperature = random(-20,125);

  gas = random(0,1000);

  int flamereading =random(200,1024);
```

```
flame =map(flamereading,0,1024,0,2);
Serial.print("Gas: ");
Serial.println(gas);
Serial.print("Temperature: ");
Serial.println(temperature);
Serial.print("Flame: ");
Serial.println(flamereading);
Serial.println();
//set a flame status
switch (flame) {
  case 0:
    flame_status = "No Fire";
    Serial.println("Flame Status: "+flame_status);
    break;
  case 1:
    flame_status = "Fire is Detected";
    Serial.println("Flame Status: "+flame_status);
    break;
}
//Gas Detection
if(gas > 100){
  Serial.println("Gas Status : Gas leakage Detected");
}
else{
  exhaust_fan_on = false;
  Serial.println("Gas Status : No Gas leakage Detected");
}
//send the sprinkler status
if(flame){
```

```
  sprinkler_status ="working";
  Serial.println("Sprinkler Status: " + sprinkler_status);
 }
 else{
  sprinkler_status = "not working";
  Serial.println("Sprinkler Status: "+sprinkler_status);
 }
 //toggle the fan according to gas
 if(gas > 100){
  exhaust_fan_on = true;
  Serial.println("Exhaust fan Status : Working");
 }
 else{
  exhaust_fan_on = false;
  Serial.println("Exhaust fan Status: Not Working");
 }
 Serial.println();
 Serial.println();
 Serial.println("_____");
 Serial.println();
 Serial.println();
 delay(2000);
}
```

OUTPUT:




```
Gas: 811
Temperature: 99.00
Flame: 331

Flame Status: No Fire
Gas Status : Gas leakage Detected
Sprinkler Status: not working
Exhaust fan Status : Working



_____________________________________________


Gas: 37
Temperature: 69.00
Flame: 375

Flame Status: No Fire
Gas Status : No Gas leakage Detected
Sprinkler Status: not working
Exhaust fan Status: Not Working
```

TEST CASE:

S.No.	Input	Output	Result
1.	Gas:399 Temperature:12.00 Flame:452	Flame Status: No Fire Gas Status: Gas leakage Detected Sprinkler: not working Exhaust fan: Working Status Logged: Done	Passed
2.	Gas: 51 Temperature: 3.00 Flame: 848	Flame Status: Fire is Detected Gas Status: No Gas leakage Detected Sprinkler: working Exhaust fan: Not Working Status Logged: Done	Passed
3.	Gas: 158 Temperature: 102.00 Flame: 786	Flame Status: Fire is Detected Gas Status: Gas leakage Detected Sprinkler: working Exhaust fan: Working Status Logged: Done	Passed
4.	Gas: 587 Temperature: 110.00 Flame: 604	Flame Status: Fire is Detected Gas Status: Gas leakage Detected Sprinkler: working Exhaust fan: Working Status Logged: Done	Passed
5.	Gas: 283 Temperature: 10.00 Flame: 987	Flame Status: Fire is Detected Gas Status: Gas leakage Detected Sprinkler: working Exhaust fan: Working Status Logged: Done	Passed