SPRINT-1

PROJECT	**INDUSTRY-SPECIFIC INTELLIGENT FIRE MANAGEMENT SYSTEM**
TEAM ID	**PNT2022TMID10108**

PROGRAM

```
#include "DHTesp.h"
#include <cstdlib>
#include <time.h> const
int DHT_PIN = 15;
 bool is_exhaust_fan_on = false;
bool is_sprinkler_on = false;

float temperature = 0;
 int gas_ppm = 0;
int flame = 0;
int flow = 0;

String flame_status = "";
String accident_status = "";
String sprinkler_status = "";

DHTesp dhtSensor;
void setup() {
  Serial.begin(99900);
```

```
  /**** sensor pin setups ****/
dhtSensor.setup(DHT_PIN, DHTesp::DHT22); //if real gas
sensor is used make sure the senor is heated up for
acurate readings
/*
    - Here random values for readings and stdout were used to show the
working of the devices as physical or simulated devices are not available.
  */
} void loop()
{

  TempAndHumidity data = dhtSensor.getTempAndHumidity();

  //setting a random seed
srand(time(0));

  //initial  variable    activities  like  declaring   ,
assigning   temperature = data.temperature;gas_ppm = rand()%1000;
int flamereading = rand()%1024;flame =
map(flamereading,0,1024,0,1024);     int flamerange =
map(flamereading,0,1024,0,3);  int   flow  =
((rand()%100)>50?1:0);

  //set a flame status based on how close it is.....
  switch (flamerange) { case 2:// A fire closer
  than 1.5 feet away.    flame_status = "Close
  Fire";    break; case 1:     // A fire between
  1-3 feet away.
    flame_status = "Distant Fire";
```

```
  break; case 0:   // No fire
  detected.
flame_status = "No Fire";     break;
  }
  //toggle the fan according to gas in ppm in the room
if(gas_ppm > 100){ is_exhaust_fan_on = true;
  }
else{     is_exhaust_fan_on =
false;
  }

  //find the accident status 'cause fake alert may be caused by some mischief activities
if(temperature < 40 && flamerange ==2){     accident_status = "need auditing";
is_sprinkler_on = false;
  }   else if(temperature < 40 && flamerange
==0){ accident_status = "nothing found";
is_sprinkler_on = false;
  } else if(temperature > 50 && flamerange ==
 1){ is_sprinkler_on =
    true;
  accident_status = "moderate";
  } else if(temperature > 55 && flamerange
  == 2){    is_sprinkler_on = true;
  accident_status = "severe";
  }else{    is_sprinkler_on =
false;accident_status =
"nil";
  }
```

```
  //send the sprinkler status
if(is_sprinkler_on){     if(flow){
sprinkler_status = "working";
    }     else{       sprinkler_status
= "not working";
    } }     else if(is_sprinkler_on ==
false){     sprinkler_status = "now it
shouldn't";
  }   else{     sprinkler_status =
"something's wrong";
  }

  //Obivously the output.It is like json format 'cause it will help us for future sprints
 String out = "{\n\t\"senor_values\":{"; out+="\n\t\t\"gas_ppm\":"+String(gas_ppm)+",";
  out+="\n\t\t\"temperature\":"+String(temperature,2)+",";
  out+="\n\t\t\"flame\":"+String(flame)+","; out+="\n\t\t\"flow\":"+String(flow)+",\n\t}";
  out+="\n\t\"output\":{";
  out+="\n\t\t\"is_exhaust_fan_on\":"+String((is_exhaust_fan_on)?"true":"false")+",";
  out+="\n\t\t\"is_sprinkler_on\":"+String((is_sprinkler_on)?"true":"false")+",";
  out+="\n\t}"; out+="\n\t\"messages\":{";
  out+="\n\t\t\"fire_status\":"+flame_status+",";
out+="\n\t\t\"flow_status\":"+sprinkler_status+",";
out+="\n\t\t\"accident_status\":"+accident_status+",";
out+="\n\t}";      out+="\n}"; Serial.println(out);

  delay(1000);
}
```