SPRINT-1

PROJECT	**INDUSTRY-SPECIFIC INTELLIGENT FIRE MANAGEMENT SYSTEM**
TEAM ID	**PNT2022TMID11818**

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);
}
```