Assignment -1
Home Automation

Assignment Date	19 September 2022
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Maximum Marks	2 Marks

Question-1:

Home Automation using TinkerCAD (Minimum 2 sensors)

Solution:

```
#include <LiquidCrystal.h>

LiquidCrystal lcd(12, 11, 5, 4, 3, 2);

float temp;
int tempPin = A1;
int relayPin = 8;
int ledPin = 13;
int pirPin = 7;
int pirStat = 0;
#define fan 9

void setup(){
  pinMode(ledPin, OUTPUT);
  pinMode(pirPin, INPUT);
  Serial.begin(9600);
  pinMode(fan, OUTPUT);
  pinMode(relayPin, OUTPUT);

  lcd.begin(16, 3);

  lcd.setCursor(1, 1);
  lcd.print("The Fantastic Four");
```

```
   delay(1000);
   lcd.clear();
   lcd.setCursor(3,0);
   lcd.print("Smart Power saving iot");
   delay(1000);
   lcd.clear();
   lcd.print("Lets Get Started");
   delay(2000);
   lcd.clear();
   lcd.print("AUTO TEMPERATURE");
   delay(2000);
   lcd.clear();

}
void poweronRelay()
 {
   digitalWrite(relayPin, HIGH);
   lcd.print("Fan ON");
   delay(2000);
   lcd.clear();
 }

void poweroffRelay()
 {
   digitalWrite(relayPin, LOW);
   analogWrite(fan,0);
   lcd.print("Fan OFF");
   delay(2000);
   lcd.clear();
 }
//only after signal is detected form pir sensor,
//the temp sensor will detect the temp and turn on the motor(fan)
```

```
void loop()
{
  pirStat = digitalRead(pirPin);
  if (pirStat == HIGH) {

    digitalWrite(ledPin, HIGH);
    Serial.println("person moved in");
    lcd.setCursor(3,0);
    lcd.print("Recording");
    lcd.setCursor(2, 1);
    lcd.print("Temperature..");
    delay(3000);
    lcd.clear();
    lcd.setCursor(0,2);
    temp = analogRead(tempPin);

    float voltage = temp * 5.0;
      voltage /= 1024.0;


      lcd.print(voltage); lcd.println(" volts");


      float temperatureC = (voltage - 0.5) * 100 ;

    lcd.setCursor(0, 0);
    lcd.print("Temperature = ");
    lcd.setCursor(2,1);
    //lcd.print(temp);
    lcd.print(temperatureC); lcd.println(" degrees C");
    delay(3000);
```

```
lcd.clear();

if(temperatureC >= 20)
{
  poweronRelay();
  if(temperatureC >= 20 && temperatureC <= 25)
  {
    analogWrite(fan,51);
    lcd.print("Fan Speed: 20% ");
    delay(2000);
    lcd.clear();
  }
else if(temperatureC <= 35)
  {
    analogWrite(fan,102);
    lcd.print("Fan Speed: 40% ");
    delay(2000);
    lcd.clear();
  }
 else if(temperatureC <= 40)
  {
    analogWrite(fan,153);
    lcd.print("Fan Speed: 60% ");
    delay(2000);
    lcd.clear();
  }
 else if(temperatureC <= 44)
  {
    analogWrite(fan,200);
    lcd.print("Fan Speed: 80% ");
    delay(2000);
    lcd.clear();
```

```
    }
   else if(temperatureC >= 45)
    {
      analogWrite(fan,255);
      lcd.print("Fan Speed: 100% ");
      delay(2000);
      lcd.clear();
    }
  }
   else if(temperatureC < 20)
   {
     poweroffRelay();
   }


  }
 else {
  digitalWrite(ledPin, LOW);
  Serial.println("person moved out");
  poweroffRelay();
}

}
```