

Assignment -1
Home Automation

Assignment Date	15 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();
}

}

```

