

IBM ASSIGNMENT -1

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Smart Home Automation System Using IoT:

Code:

```
#include<Servo.h>
#include<LiquidCrystal.h>
LiquidCrystal lcd(A1,10,9,6,5,3);
float value;
int tmp = A0;
const int pingPin = 7;
int servoPin = 8;
```

```
Servo servo1;
void setup()
{
  Serial.begin(9600);
  servo1.attach(servoPin);
  lcd.begin(16, 2);
  pinMode(2,INPUT);
  pinMode(4,OUTPUT);
  pinMode(11,OUTPUT);
  //pinMode(10,INPUT);
  //pinMode(2,OUTPUT);
  //pinMode(8,OUTPUT);
  //pinMode(9,output);
  //pinMode(11,OUTPUT);
  //pinMode(13,OUTPUT);
  //pinMode(14,OUTPUT);
```

```
pinMode(12,OUTPUT);
pinMode(13,OUTPUT);
pinMode(A0,INPUT);
digitalWrite(2,LOW);
digitalWrite(11,HIGH);
//digitalWrite(5,OUTPUT);
digitalWrite(3,OUTPUT);
digitalWrite(7,OUTPUT);
digitalWrite(11,OUTPUT);
digitalWrite(13,OUTPUT);
//digitalWrite(A0,OUTPUT);
}
```

```
void loop()
```

```
{
```

```
    long duration, inches, cm;
```

```
    pinMode(pingPin, OUTPUT);
```

```
    digitalWrite(pingPin, LOW);
```

```
    delayMicroseconds(2);
```

```
    digitalWrite(pingPin, HIGH);
```

```
    delayMicroseconds(5);
```

```
    digitalWrite(pingPin, LOW);
```

```
    pinMode(pingPin, INPUT);
```

```
    duration = pulseIn(pingPin, HIGH);
```

```
    inches = microsecondsToInches(duration);
```

```
    cm = microsecondsToCentimeters(duration);
```

```
servo1.write(0);
```

```
if(cm < 40)
```

```
{
```

```
    servo1.write(90);
```

```
    lcd.setCursor(0,1);
```

```
    lcd.print("Door:OPEN");
```

```
}
```

```
else
```

```
{
```

```
    servo1.write(0);
```

```
    lcd.setCursor(0,1);
```

```
    lcd.print("Door:CLOSED");
```

```
}
```

```
int pir = digitalRead(2);
```

```
if(pir == HIGH)
```

```
{
```

```
    digitalWrite(4,HIGH);
```

```
    lcd.setCursor(10,0);
```

```
    lcd.print("LED:ON");
```

```
    // delay(500);
```

```
}
```

```
else if(pir == LOW)
```

```
    lcd.setCursor(12,0);
```

```
    lcd.print("OFF");
```

```
{
```

```
    digitalWrite(4,LOW);  
}
```

```
value = analogRead(tmp)*0.004882814;  
value = (value - 0.5) * 100.0;  
lcd.setCursor(0,0);  
    lcd.print("Tmp:");  
    lcd.print(value);  
    delay(1000);
```

```
Serial.println("temperature");  
Serial.println(value);
```

```
if(value > 20)  
{  
    digitalWrite(12,HIGH);  
    digitalWrite(13,LOW);  
}  
else  
{  
    digitalWrite(12,LOW);  
    digitalWrite(13,LOW);  
}  
lcd.clear();  
}
```

```
long microsecondsToInches(long microseconds) {  
    return microseconds / 74 / 2;  
}
```

```
long microsecondsToCentimeters(long microseconds) {
```

```
return microseconds / 29 / 2;  
}
```