IOT ASSIGMENT-1

TOPIC: Home Automation with sensors,button and LED

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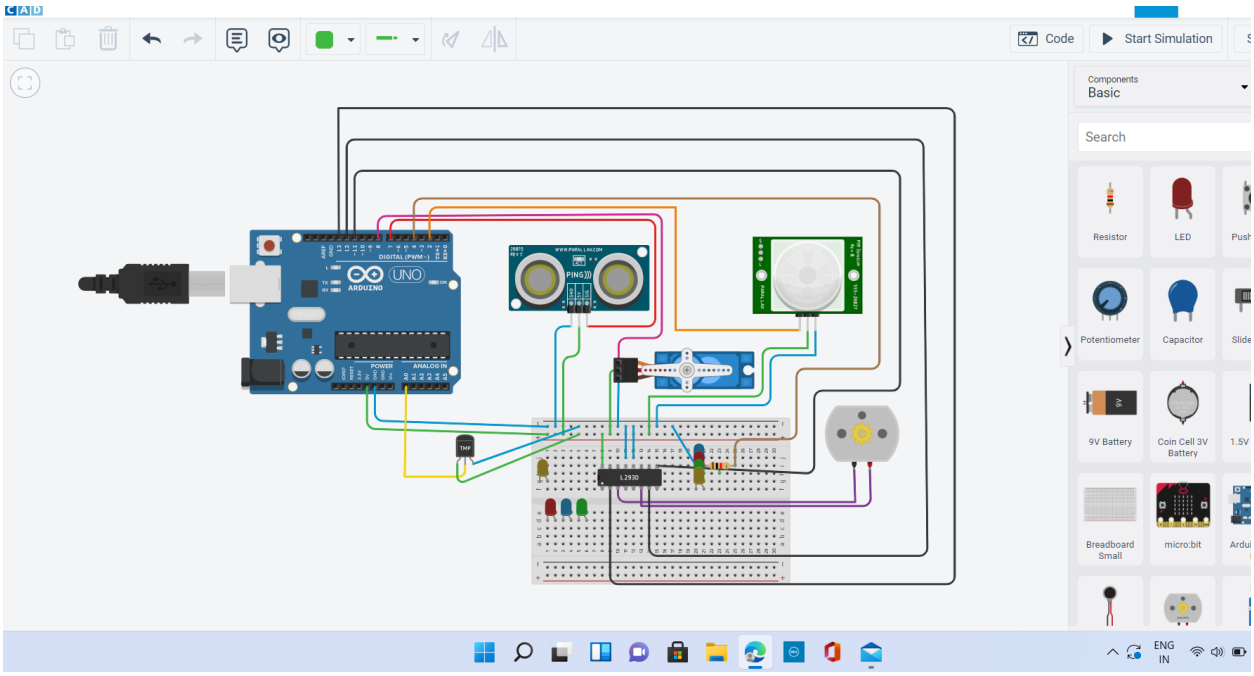
It's a home automation system where

1. The door will open if anyone comes near the door within 40cm and the door will be open for 2 seconds. Then it will check again if anyone is still within 40cm, if yes, then the door will still open for 2 more seconds and if no, then the door will automatically be closed. (I used here Ultrasonic Sensor for measuring distance and Servo motor for opening the door)

2. If the room detects any movement, the light (LED) will automatically be lighting. If there is no movement in the room, then the light will remain off. (I used here PIR for detecting movement and LED for Light)

3. It will detect room temperature and if that is greater than 20 (degree Celsius) then a fan will be running, otherwise, the fan will remain stopped. (I used here temperature sensor LM35 for detecting temperature and a motor for running a fan)



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```
#include<Servo.h>
const int pingPin = 7;
int servoPin = 8;

Servo servo1;

void setup() {
  // initialize serial communication:
  Serial.begin(9600);
  servo1.attach(servoPin);
  pinMode(2,INPUT);
  pinMode(4,OUTPUT);
  pinMode(11,OUTPUT);
  pinMode(12,OUTPUT);
  pinMode(13,OUTPUT);
  pinMode(A0,INPUT);
  digitalWrite(2,LOW);
  digitalWrite(11,HIGH);
}

void loop() {
  long duration, inches, cm;

  pinMode(pingPin, OUTPUT);
  digitalWrite(pingPin, LOW);
  delayMicroseconds(2);
  digitalWrite(pingPin, HIGH);
  delayMicroseconds(5);
  digitalWrite(pingPin, LOW);

  // The same pin is used to read the signal from the PING))): a HIGH pulse
  // whose duration is the time (in microseconds) from the sending of the ping
```

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```
33  // to the reception of its echo off of an object.
34  pinMode(pingPin, INPUT);
35  duration = pulseIn(pingPin, HIGH);
36
37  // convert the time into a distance
38  inches = microsecondsToInches(duration);
39  cm = microsecondsToCentimeters(duration);
40
41  //Serial.print(inches);
42  //Serial.print("in, ");
43  //Serial.print(cm);
44  //Serial.print("cm");
45  //Serial.println();
46  //delay(100);
47  servo1.write(0);
48  if(cm < 40)
49  {
50    servo1.write(90);
51    delay(2000);
52  }
53  else
54  {
55    servo1.write(0);
56  }
57  // PIR with LED starts
58  int pir = digitalRead(2);
59  if(pir == HIGH)
60  {
61    digitalWrite(4,HIGH);
62    delay(1000);
63  }
64  else if(pir == LOW)
```

```
65  {
66    digitalWrite(4,LOW);
67  }
68  //temp with fan
69  float value=analogRead(A0);
70  float temperature=value*0.48;
71  Serial.println("temperature");
72  Serial.println(temperature);
73  if(temperature > 20)
74  {
75    digitalWrite(12,HIGH);
76    digitalWrite(13,LOW);
77  }
78  else
79  {
80    digitalWrite(12,LOW);
81    digitalWrite(13,LOW);
82  }
83 }
84
85 long microsecondsToInches(long microseconds) {
86  return microseconds / 74 / 2;
87 }
88
89 long microsecondsToCentimeters(long microseconds) {
90  return microseconds / 29 / 2;
91 }
```