   IBM ASSIGNMENT -1

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Smart Home Automation System Using IoT:

Code:

//call lcd method

#include <LiquidCrystal.h>

//decleration inputs and outputs

int Temperature = A0;

int GasSensor = A1;

int WhiteLed = 8;

int YellowLed = 9;

int BlueLed = 10;

int Fan = 11;

int Speaker = 12;

int UltraSonic = 13;

float time = 0, distance = 0;

LiquidCrystal lcd(2, 3, 4, 5, 6, 7);

void setup() {

//lcd setup

Serial.begin(9600);

lcd.begin(16, 2);

//wellcome message

lcd.print("wait please...");

delay(1000);

lcd.clear();

lcd.print("Completed");

delay(1000);

lcd.clear();

lcd.print("Hi, Sir");

lcd.setCursor(0, 1);

lcd.print("Ready to go");

delay(1000);

lcd.clear();

//define outputs

pinMode(WhiteLed, OUTPUT);

pinMode(YellowLed, OUTPUT);

pinMode(BlueLed, OUTPUT);

pinMode(Speaker, OUTPUT);

pinMode(UltraSonic, OUTPUT);

pinMode(Fan, OUTPUT);

}

void loop() {

//take temperature sensor input value

int ts = analogRead(Temperature);

float Temp = ts \* 500.0 / 1023.0;

//print the temp

lcd.print("Temp = ");

lcd.print(Temp);

//condition of the two cases

if (Temp > 37){

digitalWrite(Fan, HIGH);

digitalWrite(WhiteLed, HIGH);

lcd.setCursor(0, 1);

lcd.print("Danger in Temp");

delay(2000);

lcd.clear();

lcd.print("Fan is on");

delay(2000);

lcd.clear();

}

else {

digitalWrite(Fan, LOW);

digitalWrite(WhiteLed, LOW);

lcd.setCursor(0, 1);

lcd.print("Temp is fine");

delay(2000);

lcd.clear();

lcd.print("Fan is off");

delay(2000);

lcd.clear();

}

//take gas sensor input value

int gs = analogRead(GasSensor);

//print the temp

lcd.print("Gas rate = ");

lcd.print(gs);

//condition of the two cases

if (gs > 35){

digitalWrite(Fan, HIGH);

digitalWrite(YellowLed, HIGH);

lcd.setCursor(0, 1);

lcd.print("Gas rate Danger!");

delay(2000);

lcd.clear();

lcd.print("Fan is on");

delay(2000);

lcd.clear();

}

else {

digitalWrite(Fan, LOW);

digitalWrite(YellowLed, LOW);

lcd.setCursor(0, 1);

lcd.print("Gas rate fine");

delay(2000);

lcd.clear();

lcd.print("Fan is off");

delay(2000);

lcd.clear();

}

//take the time of transfer from low to high

pinMode(UltraSonic,OUTPUT);

digitalWrite(UltraSonic, LOW);

delay(0.1);

digitalWrite(UltraSonic, HIGH);

delay(0.1);

digitalWrite(UltraSonic, LOW);

delay(0.1);

pinMode(UltraSonic, INPUT);

time = pulseIn(UltraSonic, HIGH);

//transfer time to distance

distance = (time)/29 /2 ;

//print results

lcd.print("Distance = ");

lcd.print(distance);

lcd.print("cm");

//condition of the two cases

if (distance <= 100){

tone(Speaker, 220, 10000000);

digitalWrite(BlueLed, HIGH);

lcd.setCursor(0, 1);

lcd.print("Object Danger!");

delay(2000);

lcd.clear();

lcd.print("Speaker is on");

delay(2000);

lcd.clear();

}

else {

digitalWrite(BlueLed, LOW);

noTone(Speaker);

lcd.setCursor(0, 1);

lcd.print("No One in range");

delay(2000);

lcd.clear();

lcd.print("Speaker is off");

delay(2000);

lcd.clear();

}

}