# HOUSE AUTOMATION USING EMBEDDED SYSTEMS

DESCRIPTION

This purposed home automation technology provides smart monitoring and control of the home appliances. The control and monitoring the status (ON/OFF of the appliances) have been implemented using multiple ways such as electrical switch and automatically. The system has low-cost design, user-friendly, and easy installation in home or multi-purpose building. Using this technology, the consumer can reduce the wastage of electrical power by regular monitoring of home appliances or the proper ON/OFF scheduling of the devices.

HARDWARE DETAILS

* ARDUINO UNO
* DHT 11sensor
* Gas sensor
* LDR sensor
* LCD sensor
* LCD display
* Buzzer
* Power supply
* DC fan

SOFTWARE REQUIRED

* ARDUINO IDE

WORKING

very Arduino board needs a way to be connected to a power source. A power supply of 5v is provided to Arduino uno board which in turn provides supply for any input device such as sensors and output devices such as lcd display , buzzers connected in Arduino board. The 5V pin supplies 5 volts of power, and the 3.3V pin supplies 3.3 volts of power. Most of the simple components used with the Arduino run happily off of 5 or 3.3 volts. In this project sensors are used to sense the environmental conditions which are required.These sensors are given a power supply through Vcc pin and grnd pin is grounded.There are 3 sensors used in this project:

DHT 11/temperature and humidity sensor: The purpose of using this sensor is to sense the room temperature and checks it with the threshold condition. If it exceeds the threshold value ,then it switches on the fan.It indicates the status of fan in lcd display.

LDR/Light dependent resistor sensor: An LDR sensor (Light Dependent Resistor) is a device that is used to detect light. To sense the presence of light these resistors are often used.These resistors have many functions and resistances.For instance, when the LDR is in darkness, then it can be used to turn ON the light or to turn OFF the light when it is in the light.

Gas sensor: The MQ2 Gas Sensor Module is a robust Gas sensor suitable for sensing LPG, Smoke, Alcohol, Propane, Hydrogen, Methane and Carbon Monoxide concentrations in the air. As we are planning on creating an indoor gas leakage detecting system,MQ2 Gas Sensor Module is a great choice. We are setting a threshold limit here if it is found that measured value has exceeded the threshold,it alerts the residents using buzzers.

The output of sensors are reflected in the output devices such as lcd,buzzer. LCD stands for Liquid Crystal Display.It displays the printing statement provided in the code if specific condition is satisfied through LCD. Power supply is provided to vcc pin of LCD through 5v pin of Arduino board and Gnd pin is grounded. Buzzer is an output device that gives an alarm sound to indicate the leakage of gas if detected.

CODE

#include,LiquidCrystal.h>

#include "DHT.h"

LiquidCrystal lcd(13,12,11,10,9,8);

#define DHTPIN 7

#define DHTTYPE DHT11

DHT dht(DHTPIN,DHTTYPE);

float humidityData;

float temperatureData;

int led=5;

int ldr=A0;

int value;

void setup() {

pinMode(7,INPUT);//dht sensor

pinMode(4,OUTPUT);//relay to on fan

pinMode(ldr,INPUT);//ldr sensor

pinMode(led,OUTPUT);//led to on if dark

pinMode(A1,INPUT);//gas sensor

pinMode(6,OUTPUT);//buffer

Serial.Begin(9600);

lcd.begin(16,2);

dht.begin();

}

void loop() {

value=analogRead(ldr);

temperatureData=dht.readTemperature();

lcd.clear();

lcd.setCursor(0,0);

lcd.print("T:");

lcd.print(temperatureData);

lcd.print((char)223);

lcd.print("C");

if(temperatureData>32 )

{

lcd.setCursor(0,1);

lcd.print("Fan ON");

digitalWrite(4,HIGH);//relay to on dc fan

}

else

{

lcd.setCursor(0,1);

lcd.print("Fan OFF");

digitalWrite(4,LOW);//relay to off dc fan

}

if( value<500)

{

lcd.setCursor(7,1);

lcd.print("Light ON");

digitalWrite(led,HIGH);//ldr light

}

else

{

lcd.setCursor(7,1);

lcd.print("Light OFF");

digitalWrite(led,LOW);//ldr light

}

if(Sensor>400)

{

digitalWrite(6,HIGH);//BUFFER

}

else

{

digitalWrite(6,LOW);//BUFFER

}

delay(1000);