Automatic room light control using Arduino

Team members

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OBJECTIVE

- In recent years the people are looking forward for the automation in their day to day life
- People are lazy to switch off the lights while leaving the room.
- In public and private sector companies, offices most of the people are not interested to switch OFF
- In this project we will see automatic room light control that will control the main switch, which will be turned on only if a person is detected.
- It is based on IR sensor and Arduino Uno board.

RESEARCH PAPERS

RESEARCH-1

- IN This paper they used Arduino and PIR sensor to develop automatic room light system as follows
- PIR Sensor's Data OUT Pin is connected to Arduino's Digital I/O Pin 8. An LED is connected to pin 13 of Arduino to indicate whether the light is turned ON or OFF . The IN1 pin of the Relay Module is connected to Pin9 of Arduino. A bulb is connected to mains supply through relay.

RESEARCH-2

- IN This paper we came across ARM based automatic room light controller using PIR sensor
- Microcontroller determines whether a visitor is coming in or going out by reading the output sequence of the two sensors. We will call the outside sensor Sensor-A and the inside sensor as Sensor-B The output of the microcontroller derives a relay circuit that turns on the lights of the room when the counter is incremented from 0.

RESEARCH-3

- This paper proposed a system where IR beam as source and Arduino as controller
- The System is based on the interruption of IR beam. An IR beam is used as the source of light beam.
- Bidirectional Visitor Counter with Automatic Room Light Controller and Arduino as the master controller has two sections.

HARDWARE COMPONENTS

ARDUINO UNO

- The Arduino Uno is an open source microcontroller board
- The board is equipped with sets of digital and analog input/output(I/O) pins that may be interfaced to various expansion boards (shields) and other circuits

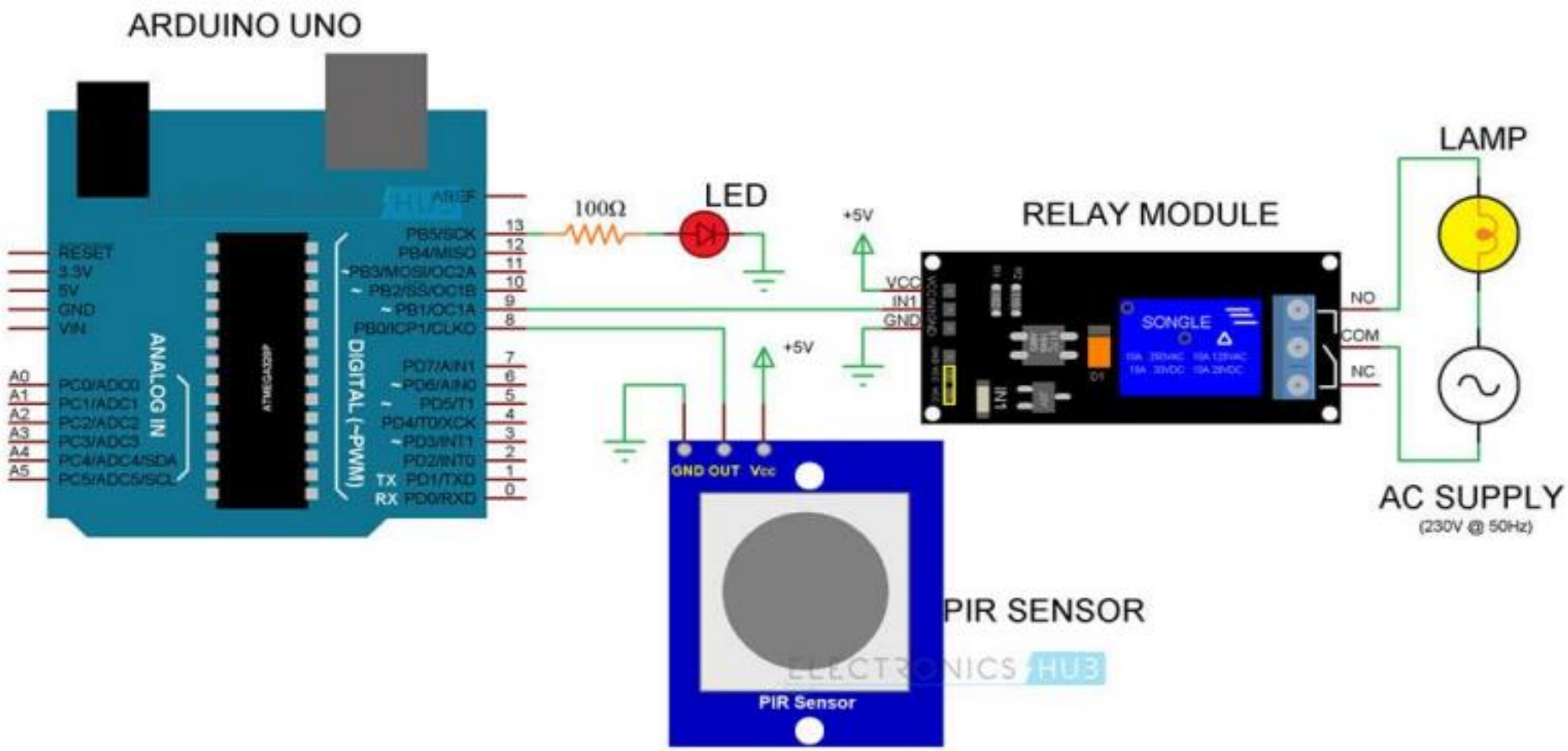
PIR SENSOR

- A passive infrared sensor (PIR sensor) is an electronic sensor that measures infrared (IR) light radiating from objects in its field of view.
- They are most often used in PIR-based motion detector. PIR sensors are commonly used in security alarms and automatic lighting applications.

RELAY MODULE

- This module contains two relays that are electrically isolated from the controlling input.
- The relays can be used to switch higher voltage and current loads than a microcontroller can traditionally accomplish.

CIRCUIT


ARDUINO UNO
LED
100Ω
+5V
RELAY MODULE
LAMP
VCC
IN1
GND
NO
COM
NC
SONGLE
AC SUPPLY
(230V @ 50Hz)
GND OUT Vcc
PIR Sensor
PIR SENSOR
ELECTRONICS HUB
RESET
3.3V
5V
GND
VIN
ANALOG IN
DIGITAL (~PWM)
A0
A1
A2
A3
A4
A5

SOFTWARES USED

PROGRAMME CODE

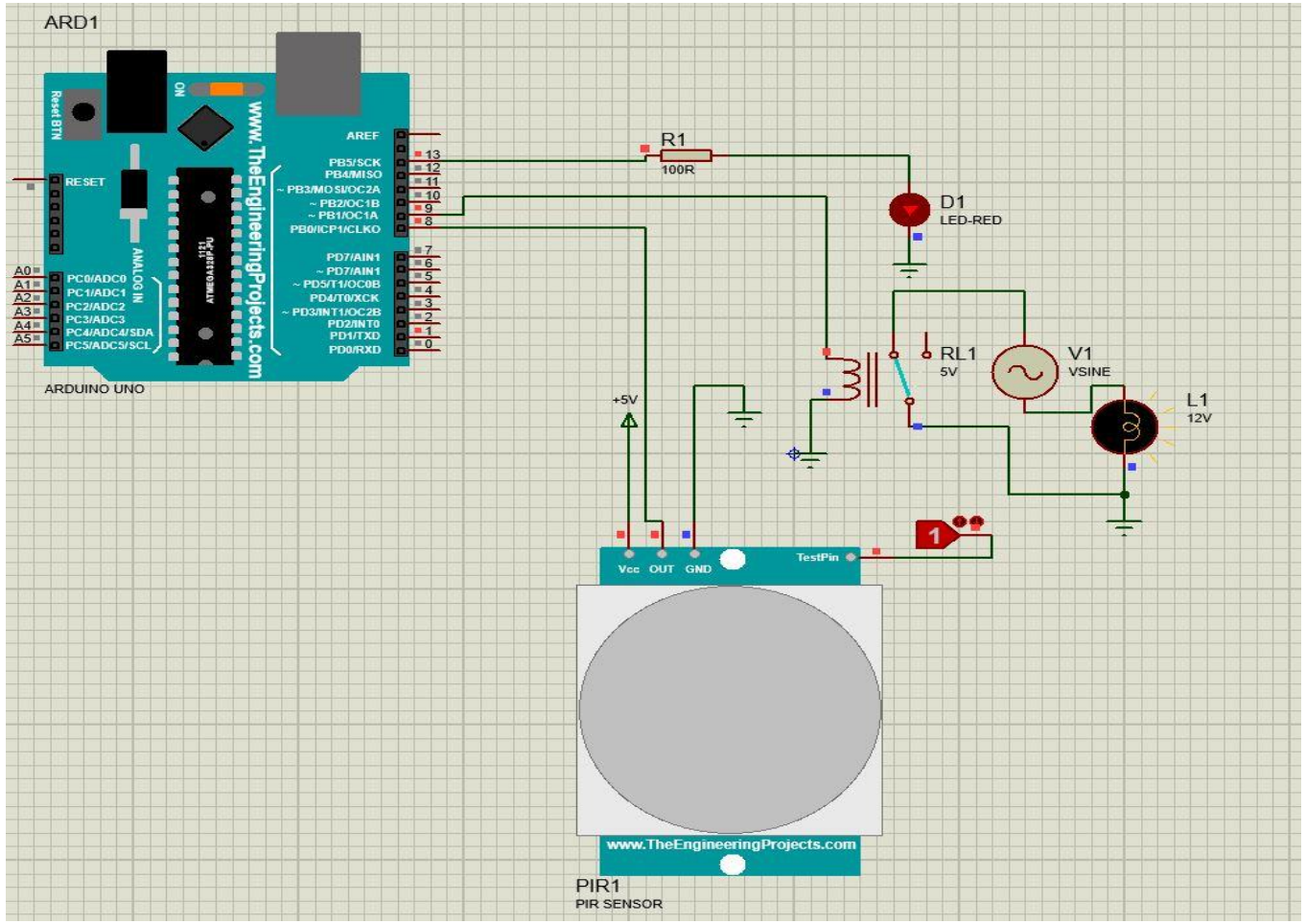
MPCALABCODE | Arduino 1.8.13

File Edit Sketch Tools Help

MPCALABCODE

```
int in1=9;
   int sensor=8;
   int led = 13;
   unsigned long t=0;

   void setup()
   {
     Serial.begin(9600);
     pinMode(in1,OUTPUT);
     pinMode(sensor,INPUT);
     pinMode(led,OUTPUT);

     digitalWrite(in1,HIGH);
     digitalWrite(led,LOW);

     while(millis()<13000)
     {
       digitalWrite(led,HIGH);
       delay(50);
       digitalWrite(led,LOW);
       delay(50);
     }
     digitalWrite(led,LOW);

     }

     void loop()
     {
       digitalWrite(in1,HIGH);
     digitalWrite(led,LOW);
     if(digitalRead(sensor)==HIGH)
     {
       t=millis();
       while(millis()<(t+5000))
       {
         digitalWrite(in1,LOW);
         digitalWrite(led,HIGH);
           if((millis()>(t+2300))&&(digitalRead(sensor)==HIGH))
       {
         t=millis();

       }
     }
     }
}
```

SIMULATION IN PROTEUS



THANK YOU