STREET LIGHT GLOWING ON DETECTING VEHICLE MOVEMENT USING IR SENSOR

GUIDED BY

PROF.JONNADULA HARIKIRAN

GROUP MEMBERS

BATCH NO.190220

- Murukonda.Sri Vennela - 19BES7005
- Perni.Bindu Madhavi – 19BCE7124
- Koduri.Lakshmi Anuhya – 19BCE7007
- Gande.Rohin - 19MIS7045
- Pottipadu Degala.Abhishek Joel – 19BEC7061
- Ellukanti.Jayanth Reddy - 19BCE7548

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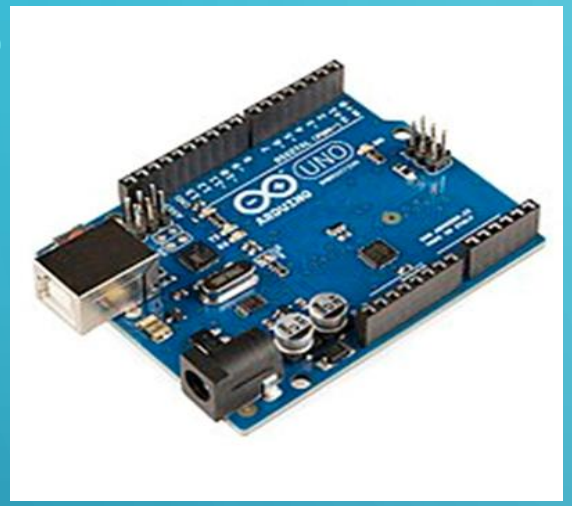
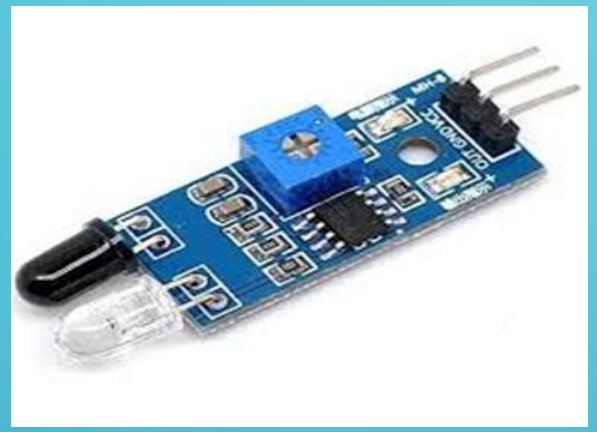
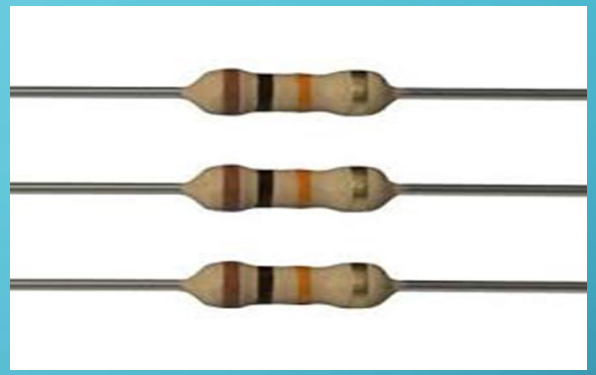
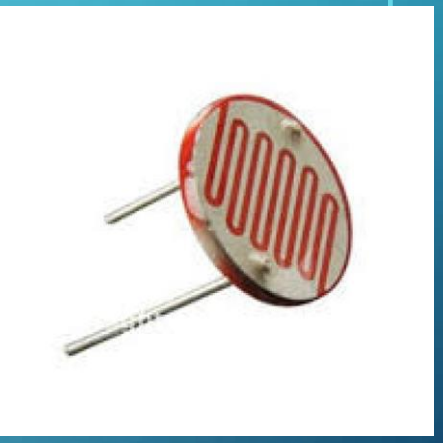
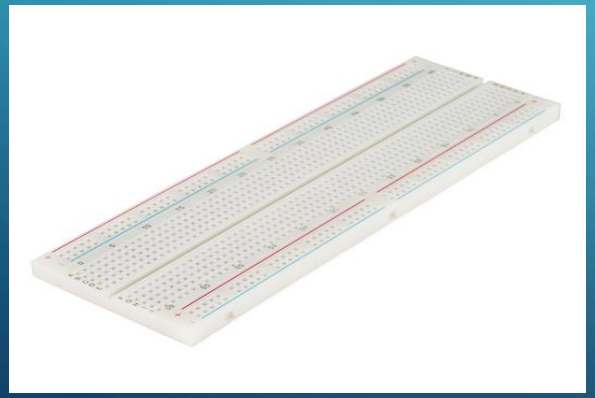
DESCRIPTION ABOUT COMPONENTS

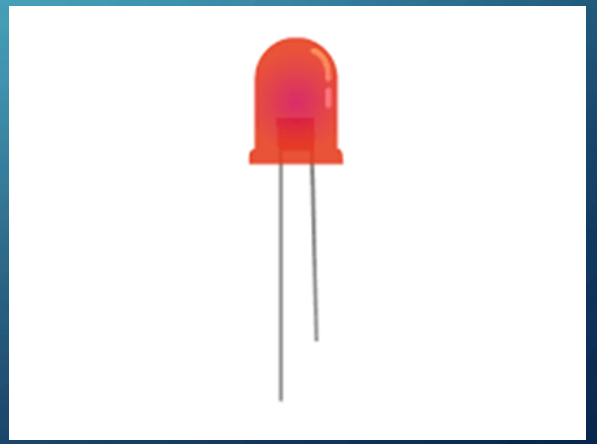








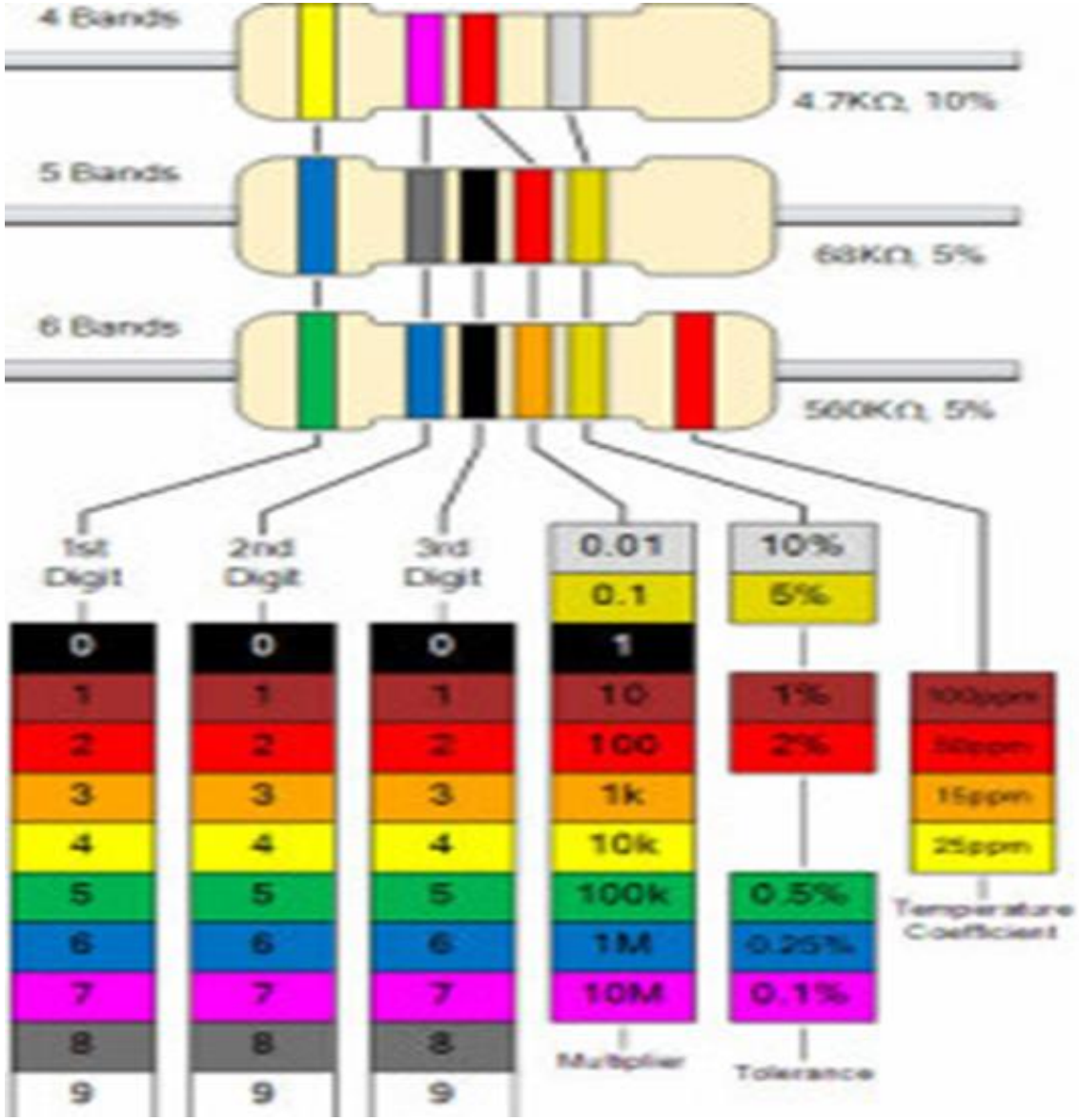




ARDUINO

- The Arduino Uno is an open-source microcontroller board based on the Microchip ATmega328P microcontroller and developed by Arduino.cc.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
- The word "uno" means "one" in Italian and was chosen to mark the initial release of the Arduino Software.
- The Uno board is the first in a series of USB-based Arduino boards, and it and version 1.0 of the Arduino IDE were the reference versions of Arduino

DIFFERENT TYPES OF RESISTORS AND ITS COLOR CODE CALCULATION IN ELECTRONICS



RESISTOR

- A **resistor** is a passive two-terminal electrical component that implements electrical resistance as a circuit element. In electronic circuits, resistors are used to reduce current flow, adjust signal levels, to divide voltages, bias active elements, and terminate transmission lines, among other uses.
- WE USE 10K RESISTOR IN OUR PROJECT

CAPACITOR

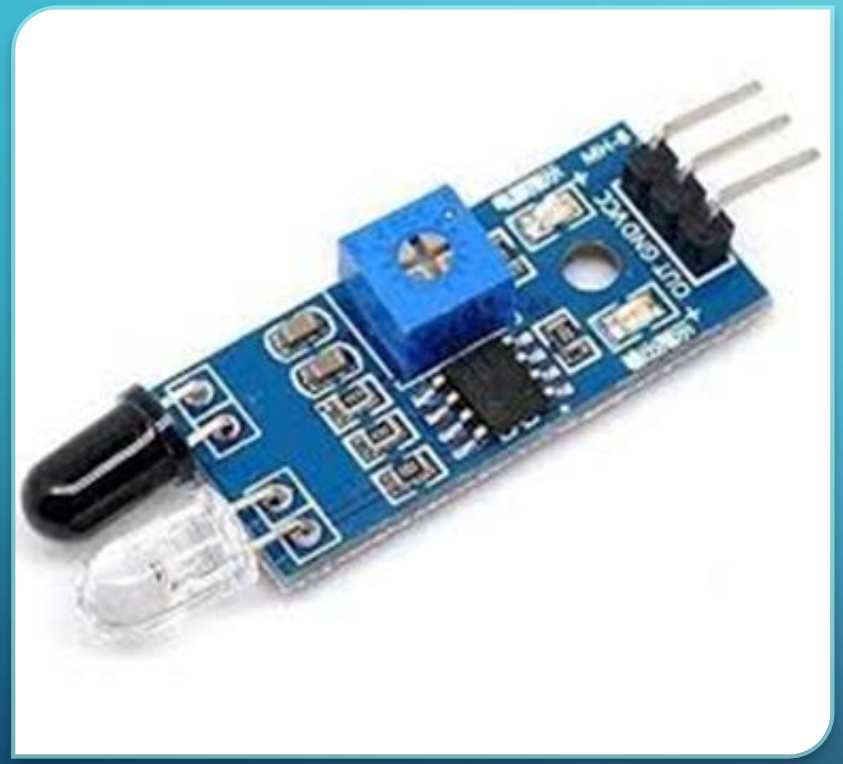
- A **capacitor** is a device that stores electrical energy in an electric field. It is a passive electronic component with two terminals.
- The effect of a capacitor is known as capacitance. While some capacitance exists between any two electrical conductors in proximity in a circuit, a capacitor is a component designed to add capacitance to a circuit. The capacitor was originally known as a **condenser** or **condensator**. The original name is still widely used in many languages, but not commonly in English.
- WE USE 22PF CERAMIC CAPACITOR IN OUR PROJECT

LED AND LDR

- . An **LED is** a small light (it stands for "light emitting diode") that **works** with relatively little power.
  The **Arduino** board has one built-in on digital pin 13.

- A Light Dependent Resistor (**LDR**) or a photo resistor is a device whose resistivity is a **function** of **the** incident electromagnetic radiation. Hence, they are light sensitive devices. They are also called as photo conductors, photo conductive cells or simply photocells.

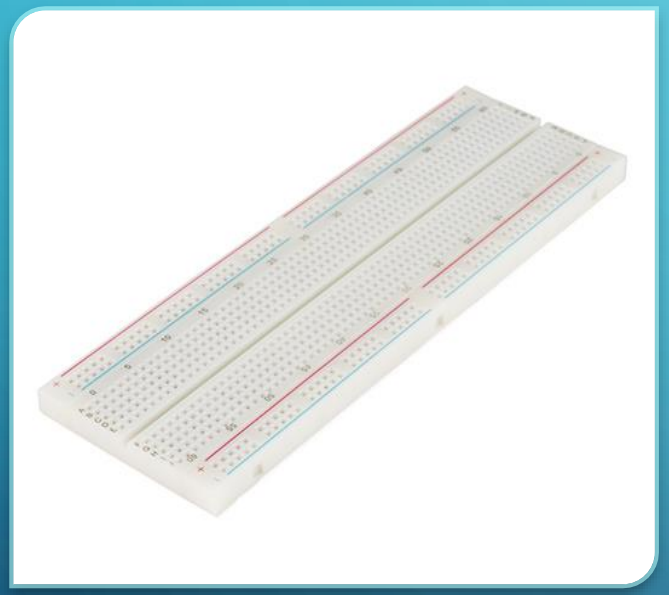
IR SENSOR



- Infrared waves are not visible to the human eye. In the electromagnetic spectrum, infrared radiation can be found between the visible and microwave regions. The infrared waves typically have wavelengths between 0.75 and 1000μm.
- The infrared spectrum can be split into near IR, mid IR and far IR. The wavelength region from 0.75 to 3μm is known as the near infrared region. The region between 3 and 6μm is known as the mid-infrared region, and infrared radiation which has a wavelength greater higher than 6μm is known as far infrared.

READ BOARD

B



- A **breadboard** is a construction base for prototyping of electronics. Originally the word referred to a literal bread board, a polished piece of wood used for slicing bread.In the 1970s the **solderless breadboard** (a.k.a. **plugboard**, a terminal array board) became available and nowadays the term "breadboard" is commonly used to refer to these.
- Because the solderless breadboard does not require soldering, it is reusable. This makes it easy to use for creating temporary prototypes and experimenting with circuit design. For this reason, solderless breadboards are also popular with students and in technological education. Older breadboard types did not have this property. A stripboard (Veroboard) and similar prototyping printed circuit boards, which are used to build semi-permanent soldered prototypes or one-offs, cannot easily be reused. A variety of electronic systems may be prototyped by using breadboards, from small analog and digital circuits to complete central processing units (CPUs).

CODING

```
#define LDR 0
#define PIRA 9
#define PIRB 10
#define LEDA 3
#define LEDB 5
#define LEDC 6

int pirAState;
int pirBState;
int pirCState;
int ldrValue;
int dark;
int motion; // do you have a PIN????? Check!!! Is there need for one?


void setup() {
 Serial.begin(9600);
 pinMode(LEDA, OUTPUT);
 pinMode(LEDB, OUTPUT);
 pinMode(LEDC, OUTPUT);
 pinMode(PIRA, INPUT);
 pinMode(PIRB, INPUT);
}
void loop()  {
 ldrValue = analogRead(LDR);
 Serial.print("Analog reading = ");
 Serial.println(ldrValue);
 //dark = 0;
```

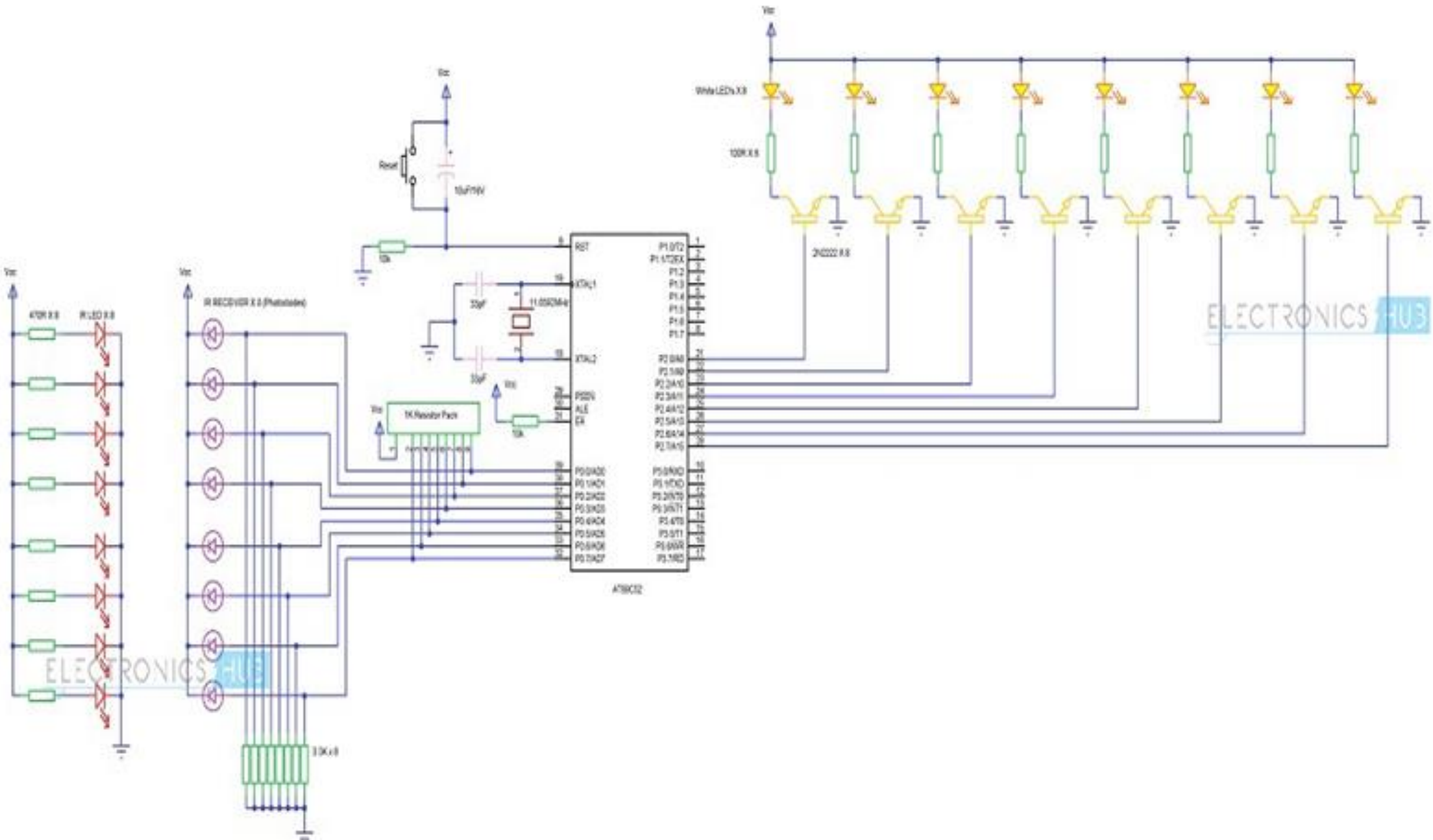
CODING

```
while(1){
 ldrValue = analogRead(LDR);                // read LDR value
 if(ldrValue >= 601) {
 dark = 1;
 }
 if(ldrValue < 601) {                       // read LDR value
 dark = 0;
 }
          if (dark == 1)                    // condition to switch OFF LED
            {
             digitalWrite(LEDA, LOW);       // set output LOW (LEDs OFF)
             digitalWrite(LEDB, LOW);
             digitalWrite(LEDC, LOW);
            }
             if (dark == 0)                 // condition to switch ON LED
            {
              digitalWrite(LEDA, HIGH);     // set output HIGH (LEDs ON)
              digitalWrite(LEDB, HIGH);
              digitalWrite(LEDC, HIGH);
              break;
            } delay(5000);
 ldrValue = analogRead(LDR);
 Serial.print("Analog reading = ");
 Serial.println(ldrValue);
}
 while(1)  {
```

CODING

```
pirAState = digitalRead(PIRA);
 if (pirAState == 1)
        {
          motion = 0;                  // pir detect motion?
        }
 if(pirAState == 0)
        {
          motion = 1;                  // pir does not detect motion?

        }
        if(motion == 0 && dark == 0)     // if motion detected and dark(night)
detected
        {
          digitalWrite(LEDA, HIGH);      // set output HIGH (LEDs ON)
          digitalWrite(LEDB, HIGH);
          digitalWrite(LEDC, HIGH);
        }
          digitalWrite(LEDA, LOW);       // set output HIGH (LEDs ON)
          digitalWrite(LEDB, LOW);
          digitalWrite(LEDC, LOW);
          break;                       // break to get out of the loop
          delay(100);
}
}
```


Vcc
Reset
10uF/16V
10k
33pF
11.0592MHz
XTAL1
XTAL2
RST
PSEN
ALE
EA
1K Resistor Pack
10k
AT89C52
White LED's X 8
100R X 8
2N2222 X 8
4.7DR X 8
IR LED X 8
IR RECEIVER X 8 (Photodiodes)
3.3K x 8
ELECTRONICS HUB

REFERENCES

- *https://www.instructables.com/id/Smart-Street-Light-Using-Ir-Sensor-With-Arduino/
- https://www.researchgate.net/
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Thank you!