Transmitter:

This circuit consists of a IR_Receiver whose signal pin is connected to arduino pin 11.

IR_Receiver converts the signals received from the TV remote and converts it into electrical pulses which is then read by arduino.

These electrical pulses are identified as their respective numbers and then this is made to light three high intensity led bulb such that they represent the binary value of the received number.

For example:

Decimal number received	Equivalent Binary Number	Led 1 <state>	Led 2 <state>	Led 3 <state>
0	000	OFF	OFF	OFF
1	001	OFF	OFF	ON
2	010	OFF	ON	OFF
3	011	OFF	ON	ON
4	100	ON	OFF	OFF
5	101	ON	OFF	ON
6	110	ON	ON	OFF
7	111	ON	ON	ON

Transmitter Code:

```
//OP_COM_Transmit....
#include <boarddefs.h>
#include <IRremote.h>
#include <IRremoteInt.h>
#include <ir_Lego_PF_BitStreamEncoder.h>



int a;
int IRpin = 11;  // pin for the IR sensor
int F=5;
int S=2;
int T=3;
IRrecv irrecv(IRpin);
decode_results results;

boolean LEDon = true; // initializing LEDon as true

void setup()
{
```

```
  Serial.begin(9600);
  irrecv.enableIRIn(); // Start the receiver
pinMode(F, OUTPUT);
pinMode(S, OUTPUT);
pinMode(T, OUTPUT);
pinMode(IRpin,INPUT);
}

void loop()
{
if(irrecv.decode(&results))
  {
    Serial.println(results.value, HEX);
    irrecv.resume();
    switch (results.value)
    {
      case 0xC00001:
      digitalWrite(F,LOW);
      digitalWrite(S,LOW);
      digitalWrite(T,HIGH);
      break;
```

```
case 0xC00002:
digitalWrite(F,LOW);
digitalWrite(S,HIGH);
digitalWrite(T,LOW);
break;

case 0xC00003:
digitalWrite(F,LOW);
digitalWrite(S,HIGH);
digitalWrite(T,HIGH);
break;

case 0xC00004:
digitalWrite(F,HIGH);
digitalWrite(S,LOW);
digitalWrite(T,LOW);
break;

case 0xC00005:
digitalWrite(F,HIGH);
```

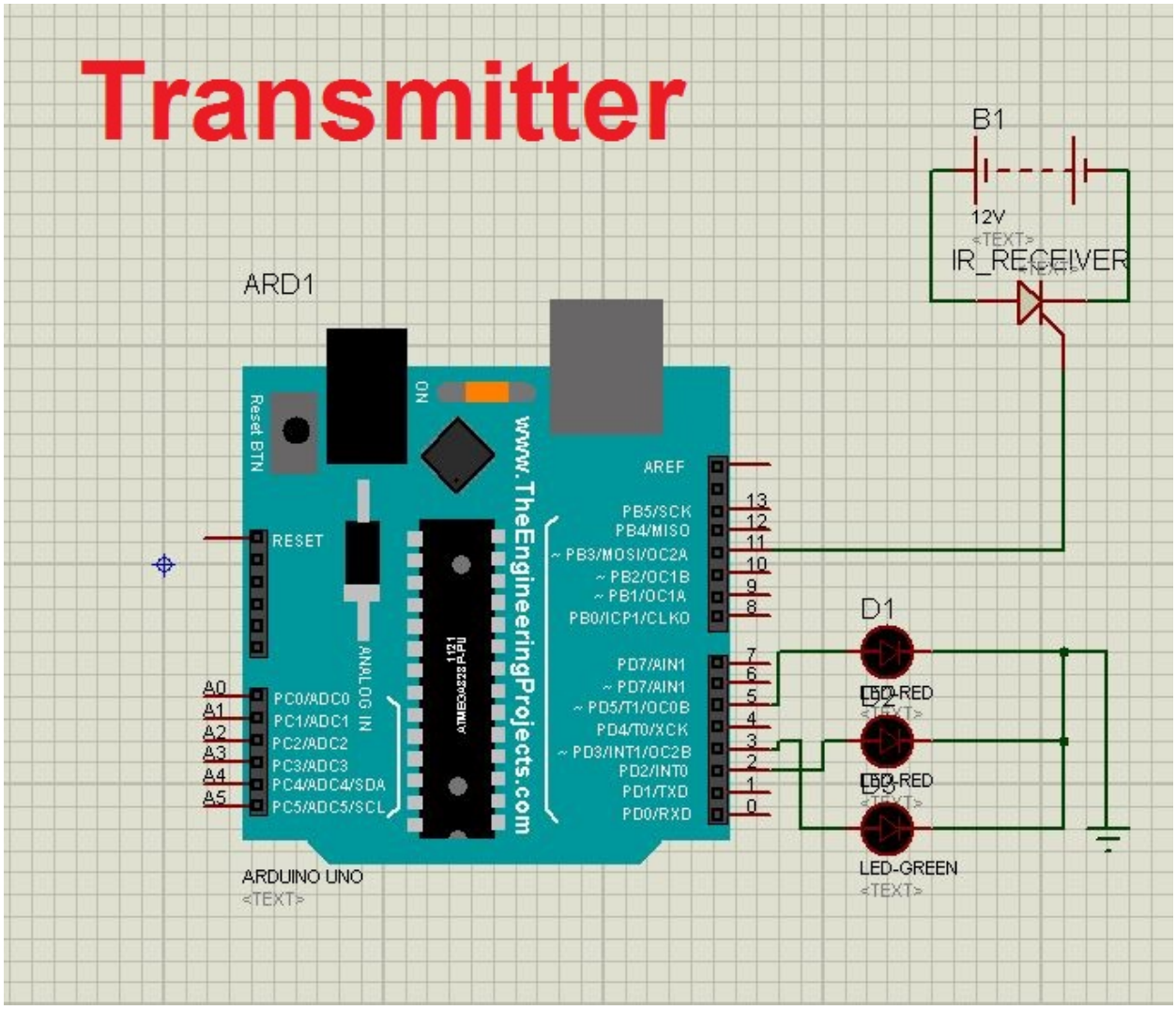
```
digitalWrite(S,LOW);
digitalWrite(T,HIGH);
break;

case 0xC00006:
digitalWrite(F,HIGH);
digitalWrite(S,HIGH);
digitalWrite(T,LOW);
break;

case 0xC00007:
digitalWrite(F,HIGH);
digitalWrite(S,HIGH);
digitalWrite(T,HIGH);
break;

case 0xC00000:
case 0xC00083:
case 0xC0000C:
digitalWrite(F,LOW);
digitalWrite(S,LOW);
```

```
      digitalWrite(T,LOW);
      break;
    }
  }
}
```


Transmitter
B1
12V
<TEXT>
IR_RECEIVER
ARD1
Reset BTN
ON
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AREF
PB5/SCK
PB4/MISO
~ PB3/MOSI/OC2A
~ PB2/OC1B
~ PB1/OC1A
PB0/ICP1/CLKO
RESET
ANALOG IN
PC0/ADC0
PC1/ADC1
PC2/ADC2
PC3/ADC3
PC4/ADC4/SDA
PC5/ADC5/SCL
A0
A1
A2
A3
A4
A5
PD7/AIN1
~ PD7/AIN1
~ PD5/T1/OC0B
PD4/T0/XCK
~ PD3/INT1/OC2B
PD2/INT0
PD1/TXD
PD0/RXD
13
12
11
10
9
8
7
6
5
4
3
2
1
0
D1
LED-RED
LED-GREEN
ARDUINO UNO
<TEXT>

##
##
##
##

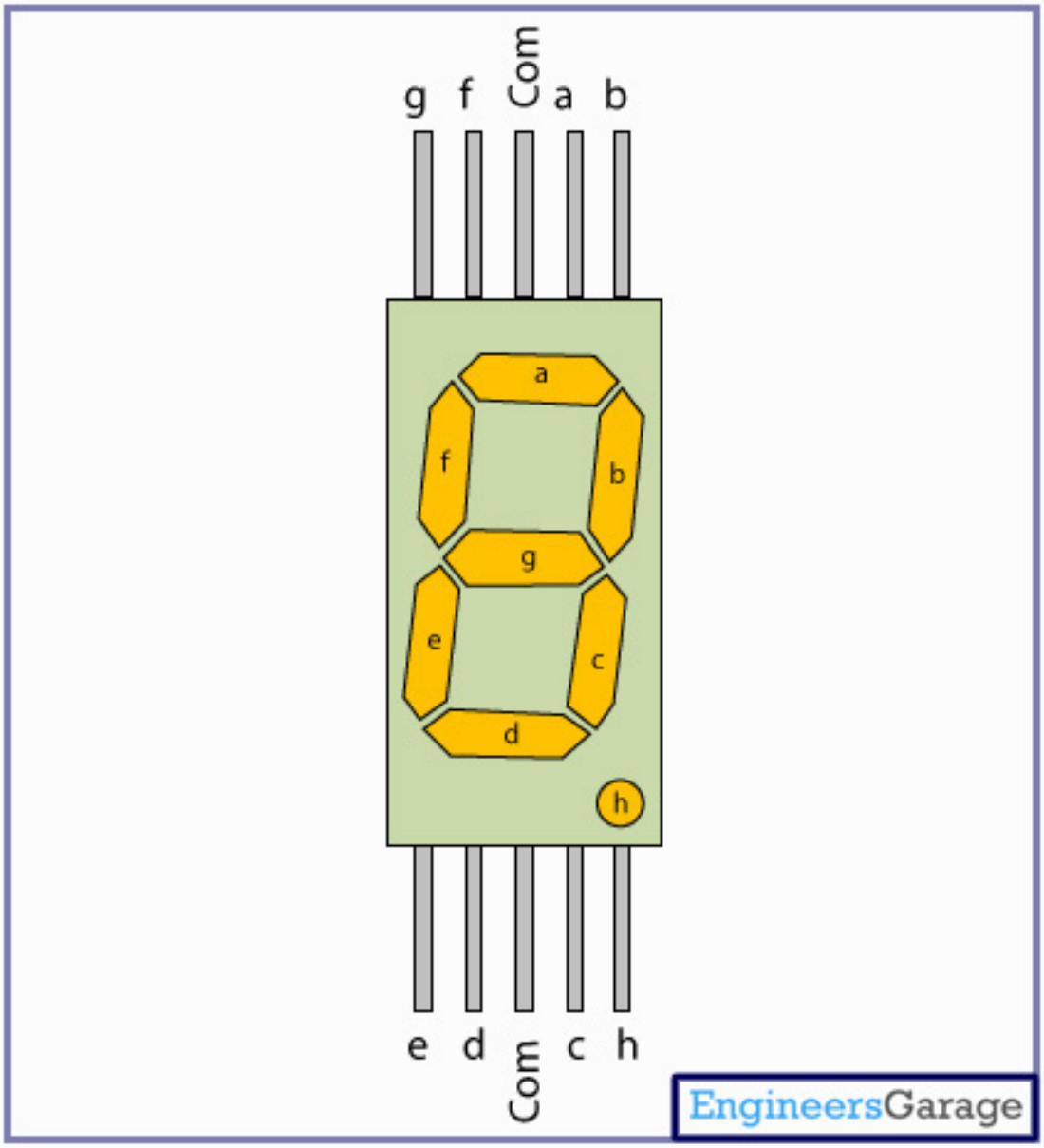
Receiver Circuit:

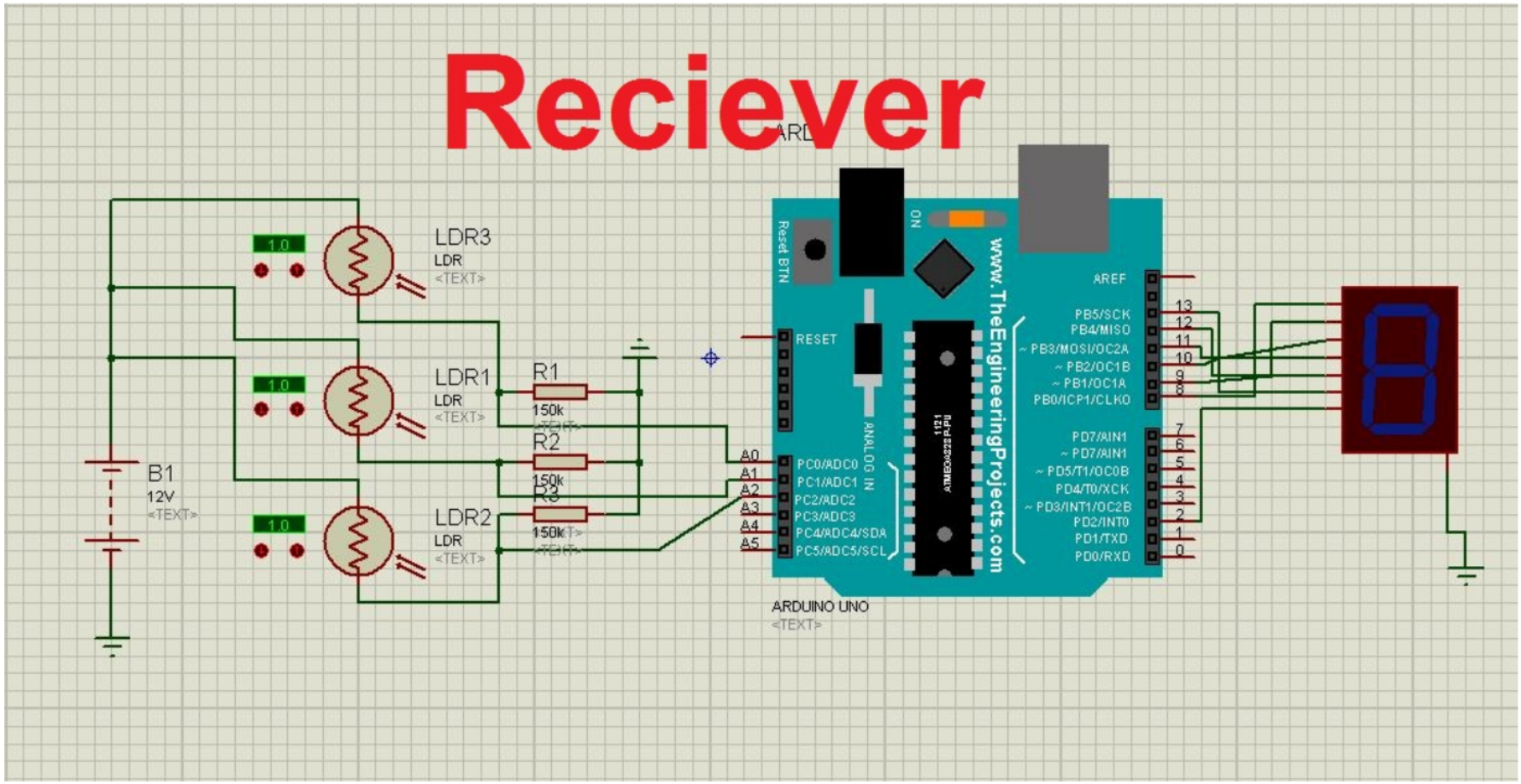
This circuit converts the information passed as light into electrical inputs which the arduino senses and converts it into decimal data and displays it in a common cathode display.

When a voltage of 3.3 volt is passed through the ldr, it allows a certain amount of current to pass through which is diverted to the ground through a 150k ohm resistor. This is the optimum value of resistance so that the micro_controller detects an input when light falls on it.

This is how the input is converted into digital data:

LDR 1 <STATE>	LDR 2 <STATE>	LDR 3 <STATE>	Equivalent Binary Info	Equivalent Decimal Value
OFF	OFF	OFF	000	0
OFF	OFF	ON	001	1
OFF	ON	OFF	010	2
OFF	ON	ON	011	3
ON	OFF	OFF	100	4
ON	OFF	ON	101	5
ON	ON	OFF	110	6
ON	ON	ON	111	7


g f Com a b
a
f
b
g
e
c
d
h
e d Com c h
EngineersGarage


Reciever
LDR3
LDR
<TEXT>
LDR1
LDR
<TEXT>
LDR2
LDR
<TEXT>
R1
150k
R2
150k
R3
150k
B1
12V
<TEXT>
Reset BTN
ON
RESET
ANALOG IN
www.TheEngineeringProjects.com
AREF
PB5/SCK
PB4/MISO
~ PB3/MOSI/OC2A
~ PB2/OC1B
~ PB1/OC1A
PB0/ICP1/CLKO
PD7/AIN1
~ PD7/AIN1
~ PD5/T1/OC0B
PD4/T0/XCK
~ PD3/INT1/OC2B
PD2/INT0
PD1/TXD
PD0/RXD
A0
A1
A2
A3
A4
A5
PC0/ADC0
PC1/ADC1
PC2/ADC2
PC3/ADC3
PC4/ADC4/SDA
PC5/ADC5/SCL
ARDUINO UNO
<TEXT>

Receiver_Code:

```
///OP_COM_Reviever.....

int a=8;

int b=9;

int c=10;

int d=11;

int e=12;

int ff=13;

int g=2;

int num;

int ans;

int f;

int s;

int t;

int F=A0;

int S=A1;

int T=A2;



void setup()
```

```
{
Serial.begin(9600);
pinMode(F,INPUT);
pinMode(S,INPUT);
pinMode(T,INPUT);
pinMode(a,OUTPUT);
pinMode(b,OUTPUT);
pinMode(c,OUTPUT);
pinMode(d,OUTPUT);
pinMode(e,OUTPUT);
pinMode(ff,OUTPUT);
pinMode(g,OUTPUT);
}

void loop()
{
f=digitalRead(F);
switch(f)
{
case HIGH:s=digitalRead(S);
  switch(s)
```

```
{
case HIGH:t=digitalRead(T);
   switch(t)
   {case HIGH:num=7;Serial.println("7");digitalWrite(a,HIGH);
   digitalWrite(b,HIGH);
   digitalWrite(c,HIGH);
   digitalWrite(d,LOW);
   digitalWrite(e,LOW);
   digitalWrite(ff,LOW);
   digitalWrite(g,LOW);break;
   case LOW:num=6;Serial.println("6");digitalWrite(a,HIGH);
   digitalWrite(b,LOW);
   digitalWrite(c,HIGH);
   digitalWrite(d,HIGH);
   digitalWrite(e,HIGH);
   digitalWrite(ff,HIGH);
   digitalWrite(g,HIGH);break;}break;
case LOW:t=digitalRead(T);
   switch(t)
   {case HIGH:num=5;Serial.println("5");digitalWrite(a,HIGH);
   digitalWrite(b,LOW);
```

```
      digitalWrite(c,HIGH);
      digitalWrite(d,HIGH);
      digitalWrite(e,LOW);
      digitalWrite(ff,HIGH);
      digitalWrite(g,HIGH);break;
      case LOW:num=4;Serial.println("4");digitalWrite(a,LOW);
      digitalWrite(b,HIGH);
      digitalWrite(c,HIGH);
      digitalWrite(d,LOW);
      digitalWrite(e,LOW);
      digitalWrite(ff,HIGH);
      digitalWrite(g,HIGH);break;}
      }
break;
case LOW:s=digitalRead(S);
  switch(s)
  {
  case HIGH:t=digitalRead(T);
      switch(t)
      {case HIGH:num=3;Serial.println("3");digitalWrite(a,HIGH);
      digitalWrite(b,HIGH);
```

```
    digitalWrite(c,HIGH);
    digitalWrite(d,HIGH);
    digitalWrite(e,LOW);
    digitalWrite(ff,LOW);
    digitalWrite(g,HIGH);break;
    case LOW:num=2;Serial.println("2");digitalWrite(a,HIGH);
    digitalWrite(b,HIGH);
    digitalWrite(c,LOW);
    digitalWrite(d,HIGH);
    digitalWrite(e,HIGH);
    digitalWrite(ff,LOW);
    digitalWrite(g,HIGH);break;}break;
case LOW:t=digitalRead(T);
    switch(t)
  {case HIGH:num=1;Serial.println("1");digitalWrite(a,LOW);
   digitalWrite(b,HIGH);
   digitalWrite(c,HIGH);
   digitalWrite(d,LOW);
   digitalWrite(e,LOW);
   digitalWrite(ff,LOW);
   digitalWrite(g,LOW);break;
```

```
    case LOW:num=0;Serial.println("0");digitalWrite(a,HIGH);
     digitalWrite(b,HIGH);
     digitalWrite(c,HIGH);
     digitalWrite(d,HIGH);
     digitalWrite(e,HIGH);
     digitalWrite(ff,HIGH);
     digitalWrite(g,LOW);break;}
     break;
  }
}

//delay(250);
}
```