



MEASUREMENTS AND TESTING PROJECT

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Dr. Islam Shaalan

COMPUTER AND CONTROL ENGINEERING

Group 2

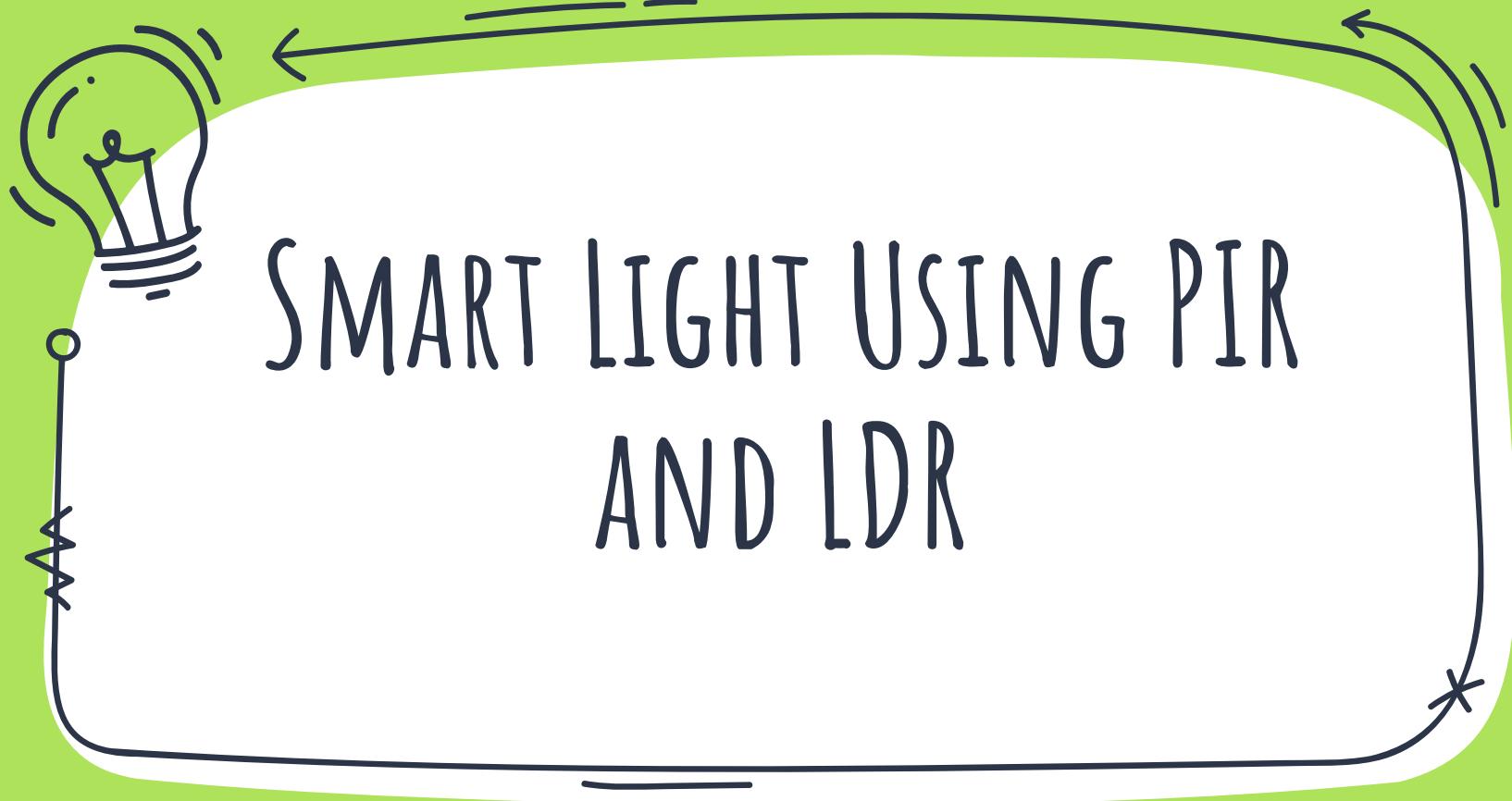


روان السيد محمد حسن زنجير

روفان وائل احمد جويد

نور شريف محمد علي أبو العنين

هلا عصام محمد داود



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PROJECT DESCRIPTION

Smart Light Using PIR and LDR (Using the
combination of PIR and LDR circuits)

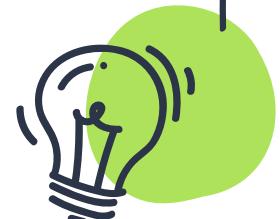
PROJECT DESCRIPTION AND OBJECTIVE

- X Night Activated PIR Motion Sensor initiates its operation whenever the circuit experiences any movement in its range. This circuit will also accordingly be enacted around evening time and go off at day due to the light detection feature that will be added.



PROJECT APPLICATIONS

- Generally, PIR sensor lamps are mostly used to save energy by detecting the motion of humans, animals, etc. It is likewise used in security systems, PIR sensors light, street light project, etc.
- Additionally, areas of applications of PIR sensor are all outdoor light, lift lobby, common staircases, basement or parking areas, shopping malls, garden lights etc.



CIRCUIT OPERATION

This circuit is divided into two parts. There is a particular operation for each part:

- ✖ The first part is the light/night detector circuit. Depending on the light incident on the LDR, it triggers the relay for activation.
- ✖ The second part is the PIR sensor circuit. It is fed to the base of the transistor. Based on the output of the PIR sensor, the transistor works in its operation. When PIR detects the presence of a human being in its area, it produces a high output. If the transistor gets the high data from PIR, it activates the relay, and the connected LED gets power and lit up. If the human moves away, then there is no power and the light switch off automatically.

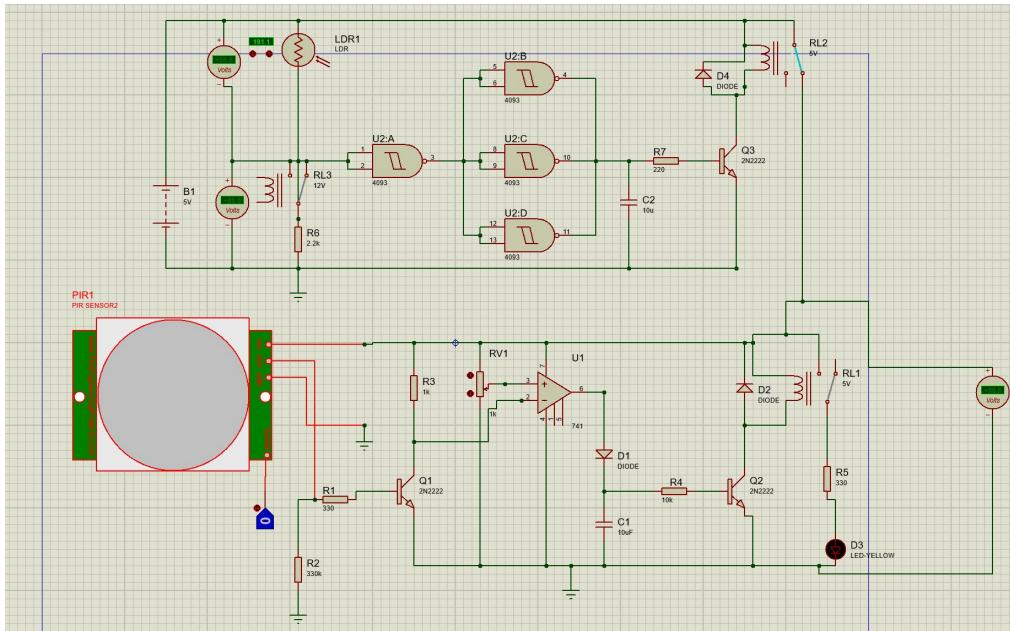


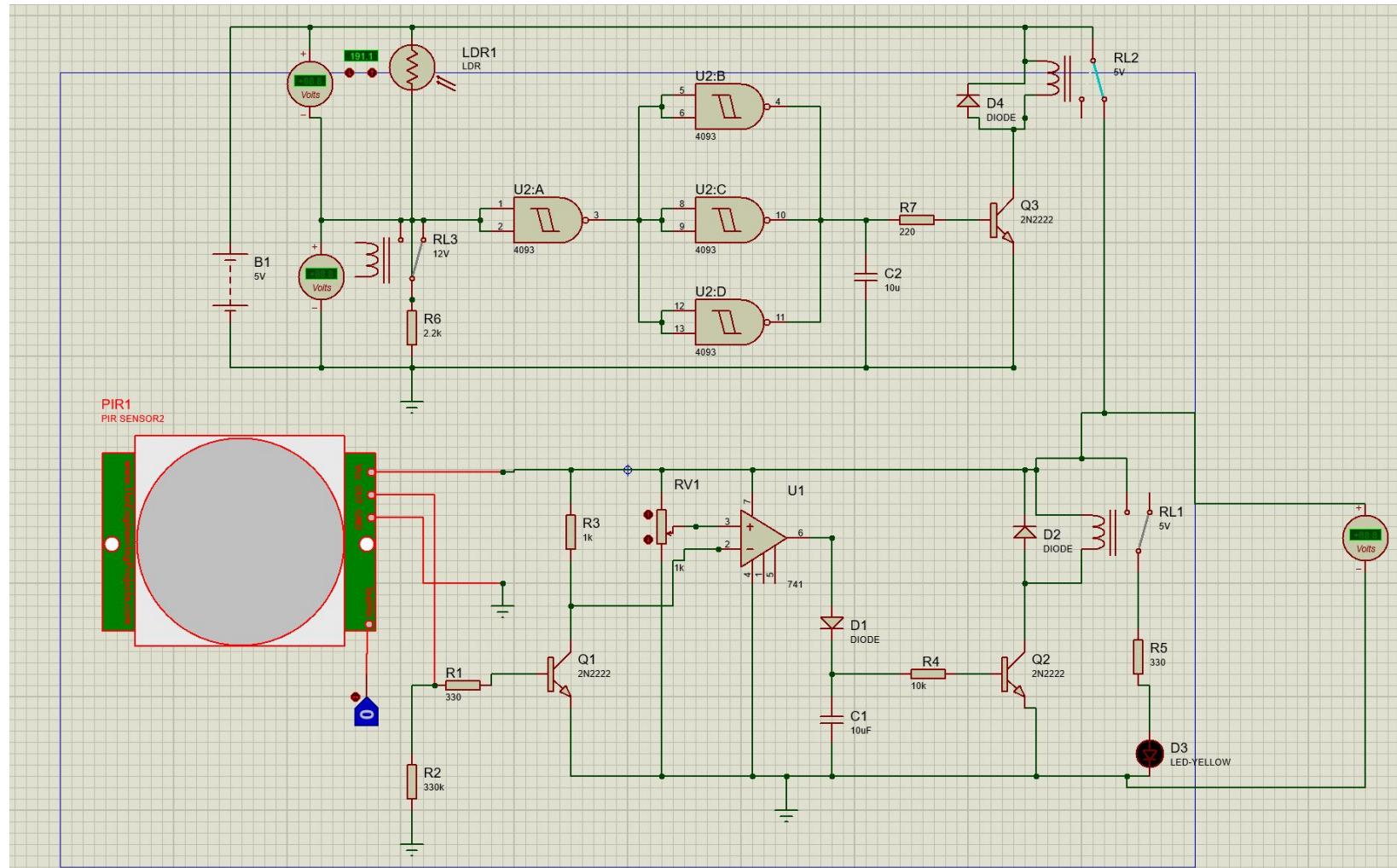
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CIRCUITS DIAGRAM

Smart Light Using PIR and LDR (Using the
combination of PIR and LDR circuits)

1ST CIRCUIT DIAGRAM



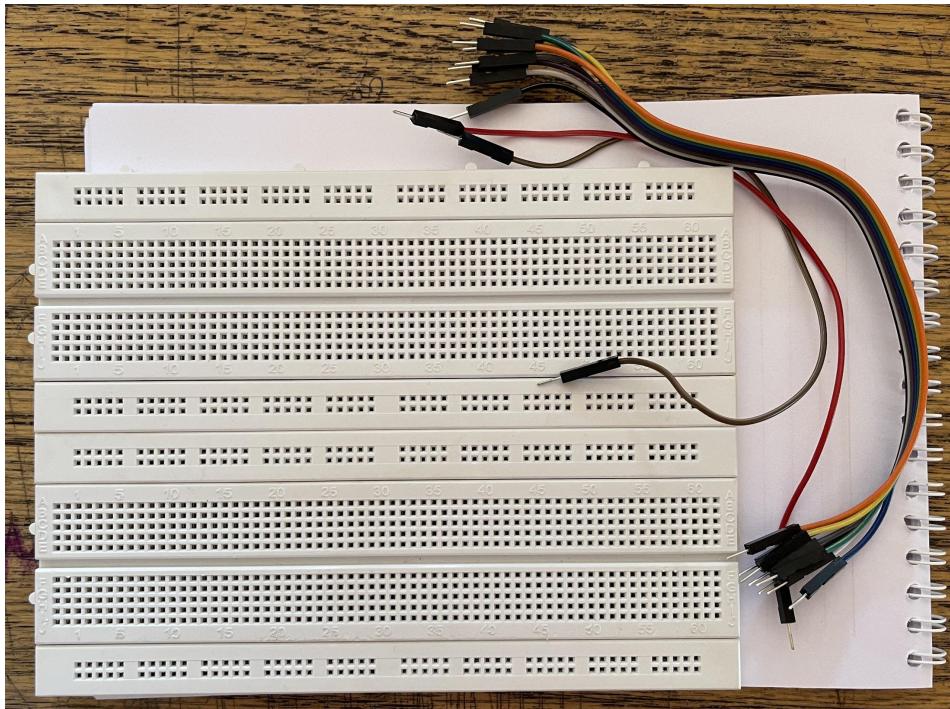


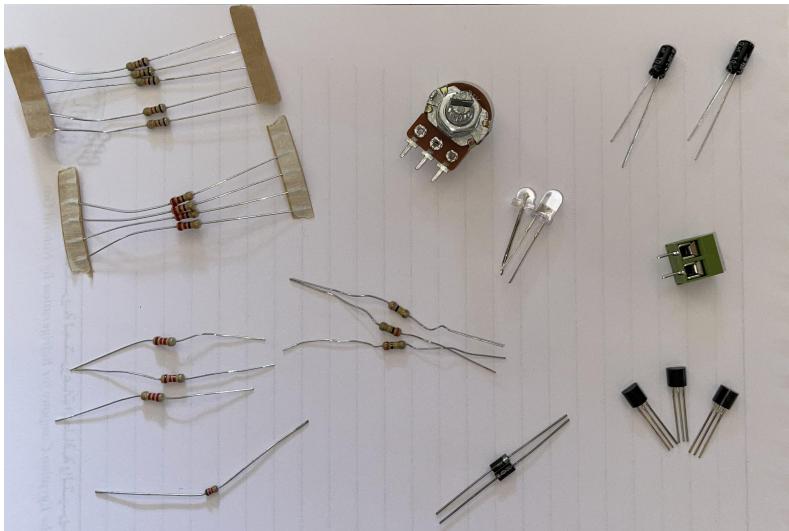
HARDWARE COMPONENTS

Component number	Components	Value	Quantity
1	PIR Motion Sensor	-	1
2	LDR	-	1
3	IC	4093	1
4	Op Amp	741	1
5	Transistor	2N2222	2
6	C1	10uF	1
7	C2	10uF	1
8	R1	330K	1
9	R2	330K	1
10	R3	1K	1
11	R4	10K	1
12	R5	330K	1
13	R6	2.2K	1
14	R7	220R	1
15	RV1	1K	1
16	LED	-	1
17	Relay	5V/240R	2
18	Relay	12V/240R	1

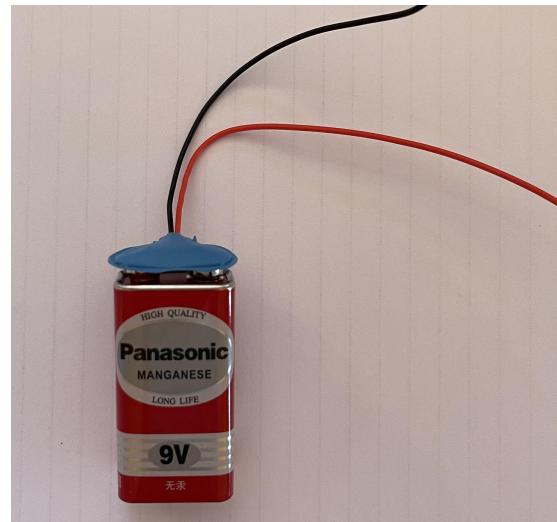
BREADBOARD

Pictures of Breadboard
and components of the
1st circuit

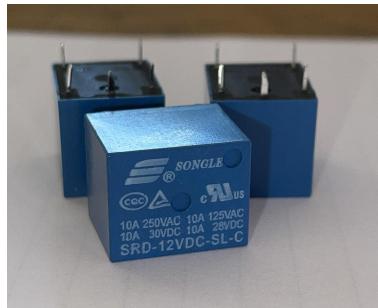




Resistors and LEDs



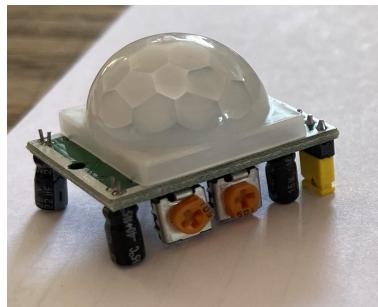
9V Battery



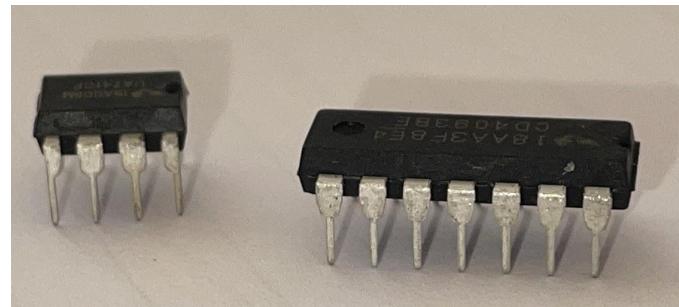
Relays



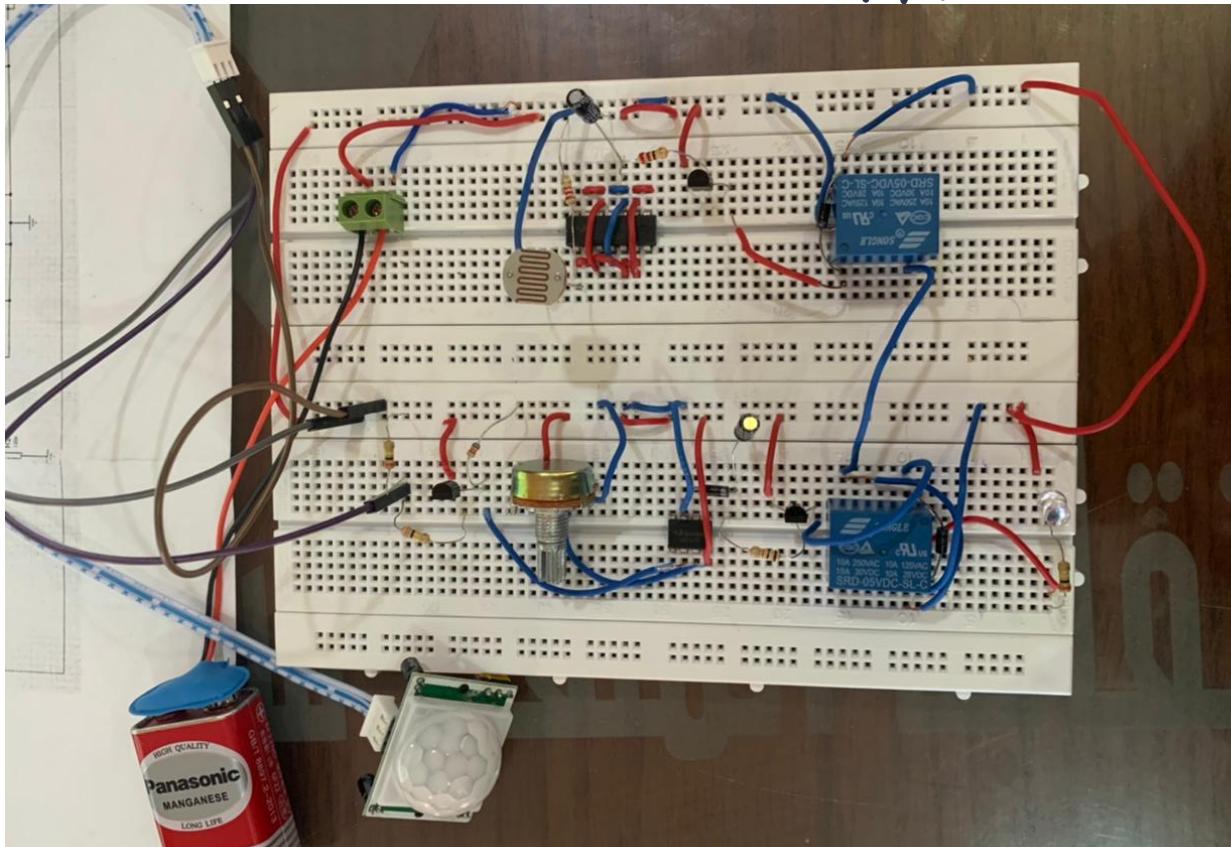
LDR



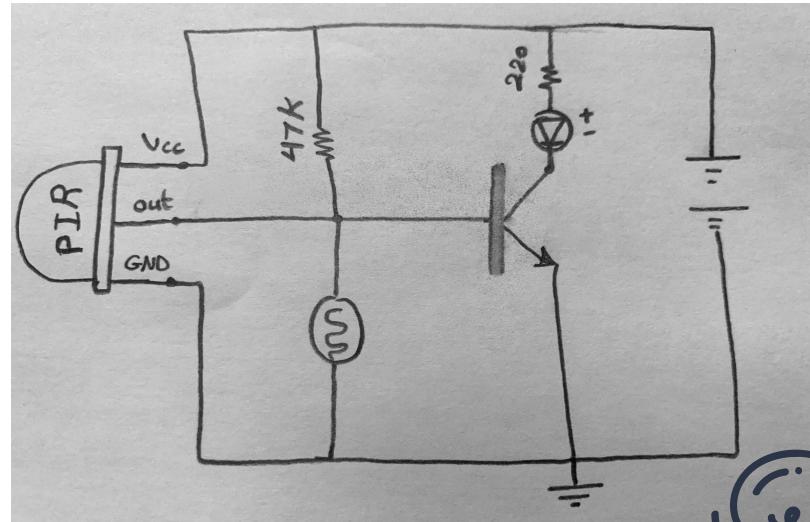
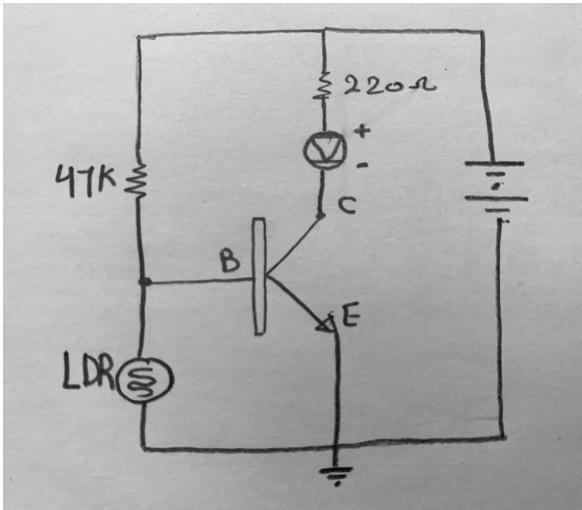
PIR



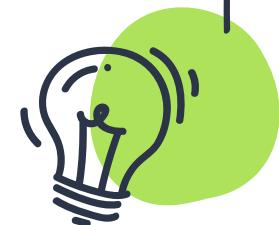
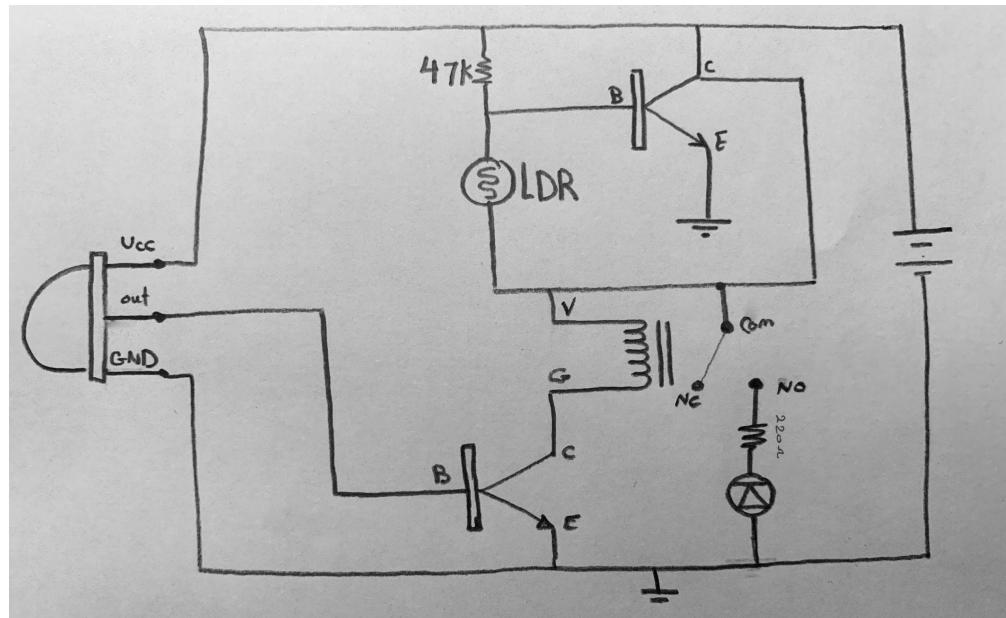
IC and Op Amp



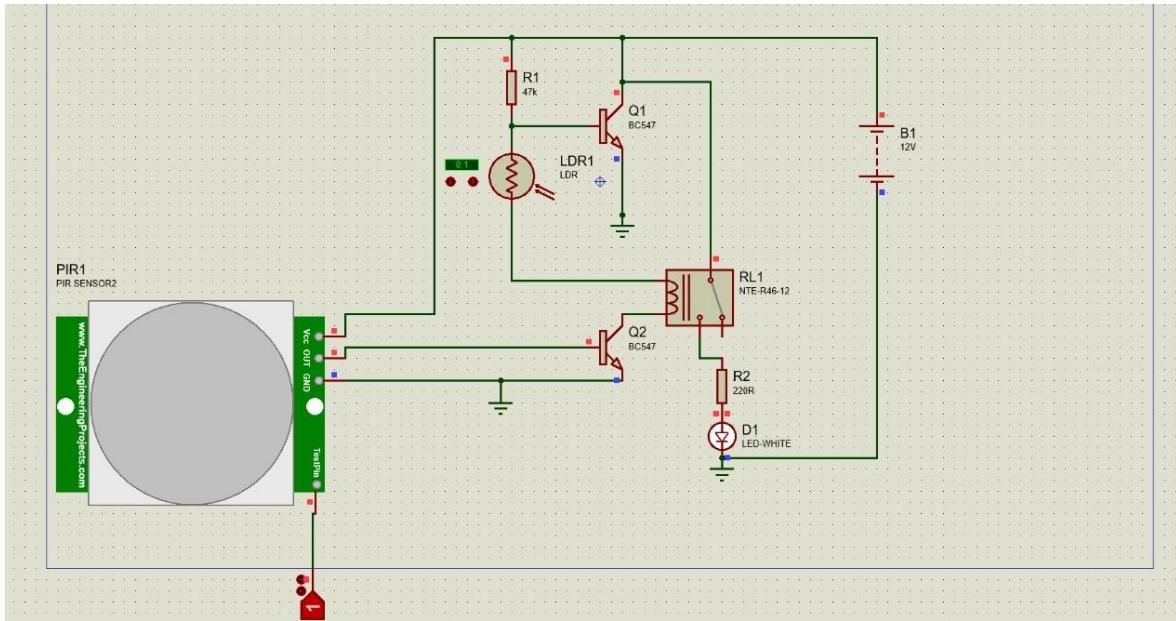
2ND CIRCUIT DIAGRAM

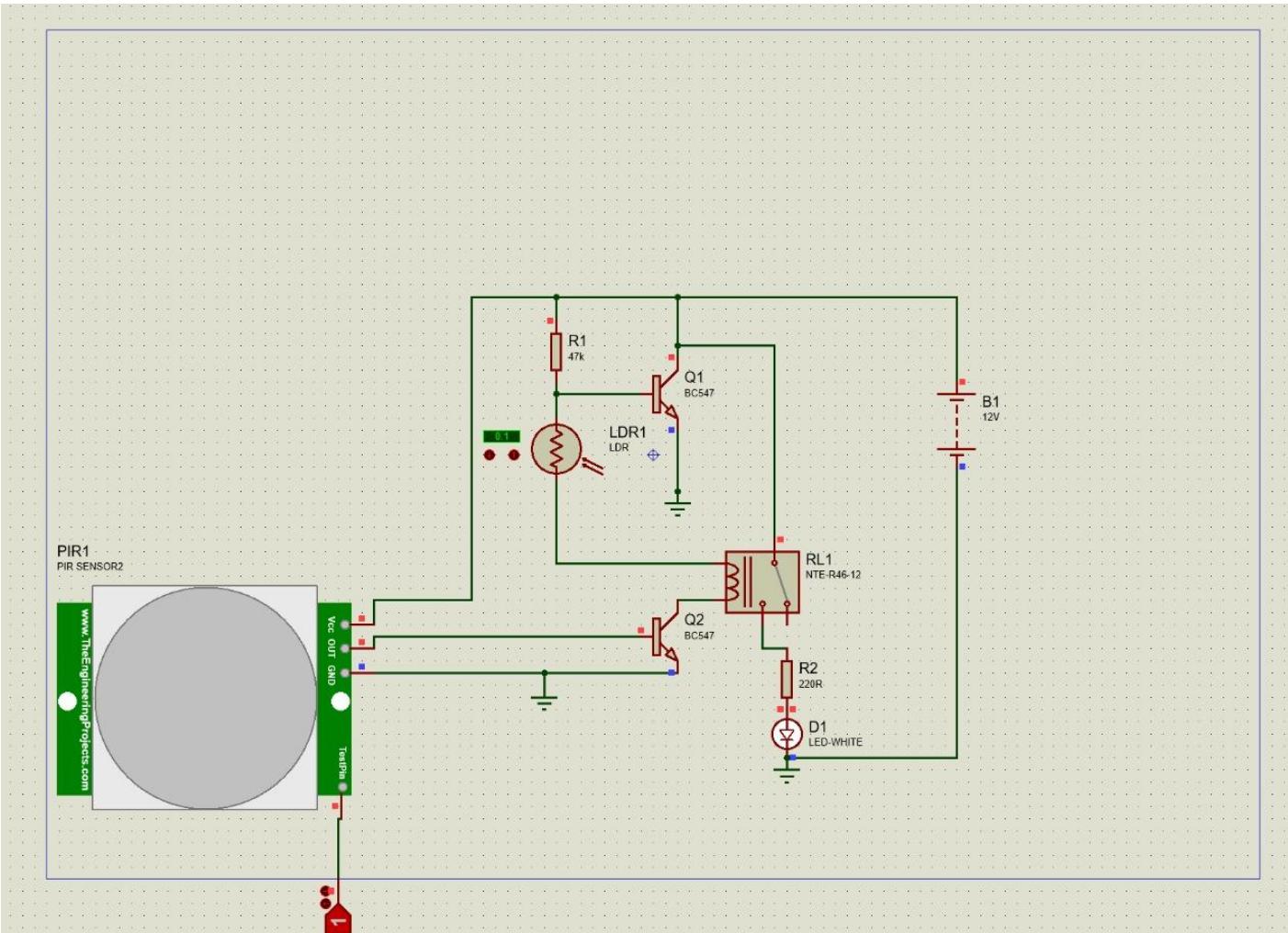


2ND CIRCUIT DIAGRAM



2ND CIRCUIT DIAGRAM





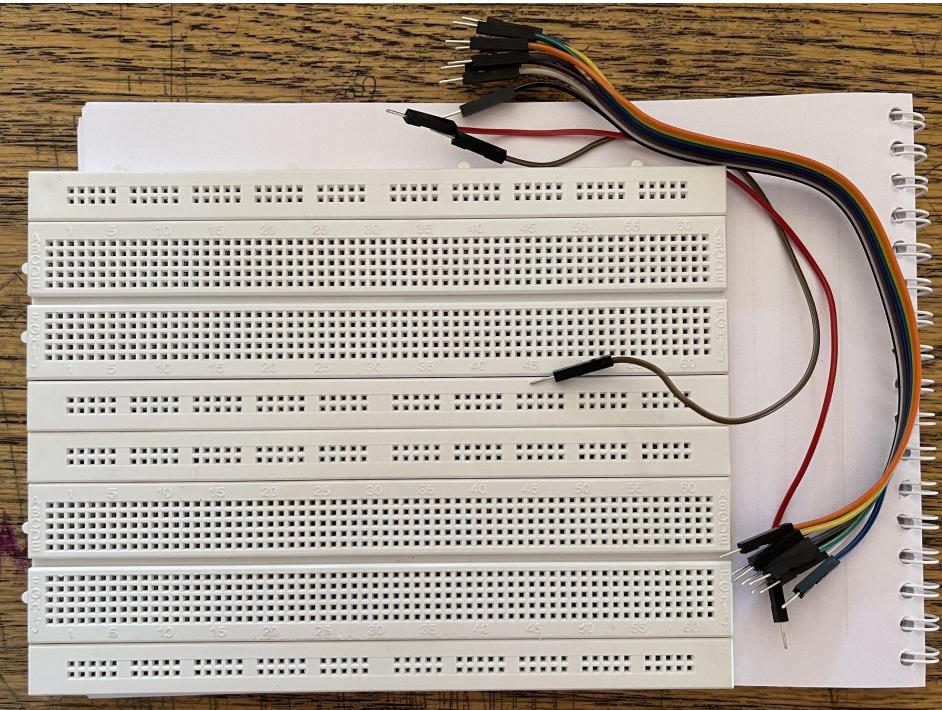
HARDWARE COMPONENTS

COMPONENTS	VALUES
PIR	--
LDR	12mm
Relay	5 Volt
LED	White
Voltage Source	Variable Adapter (6 Volt)
R1 , R2	47K , 220 ohms
Q1 , Q2	BC547



BREADBOARD

Pictures of Breadboard
components of the
2nd circuit





Variable Adapter



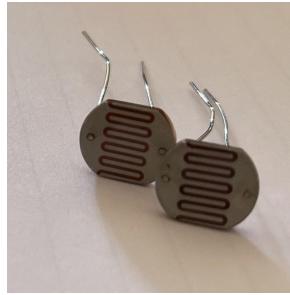
LEDs



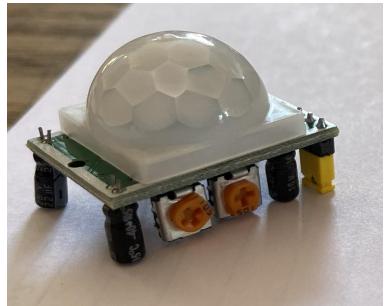
47K, 220 ohms Resistors



Relay 5V



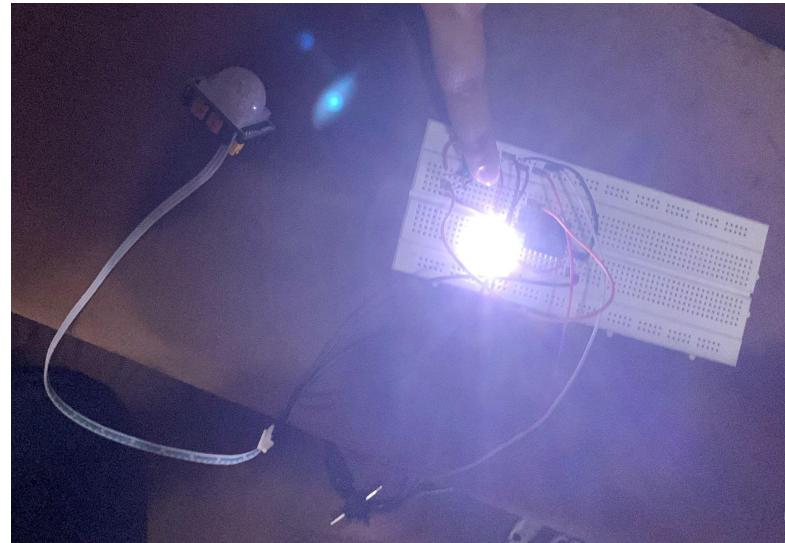
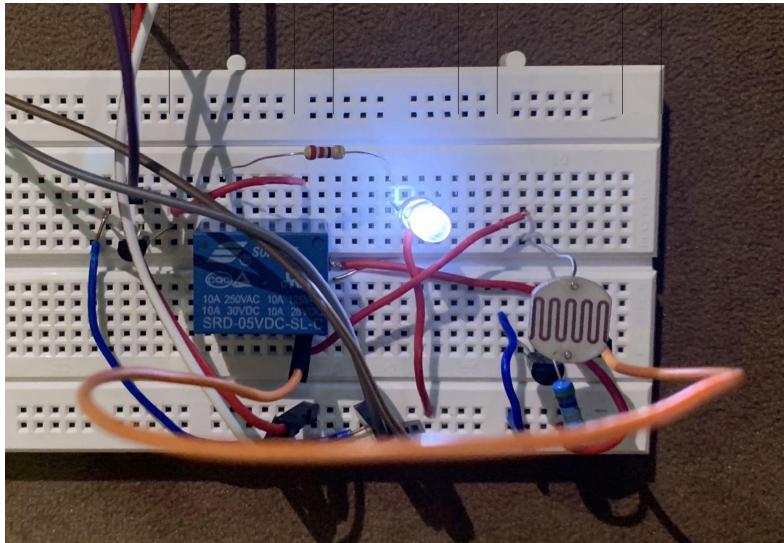
LDR

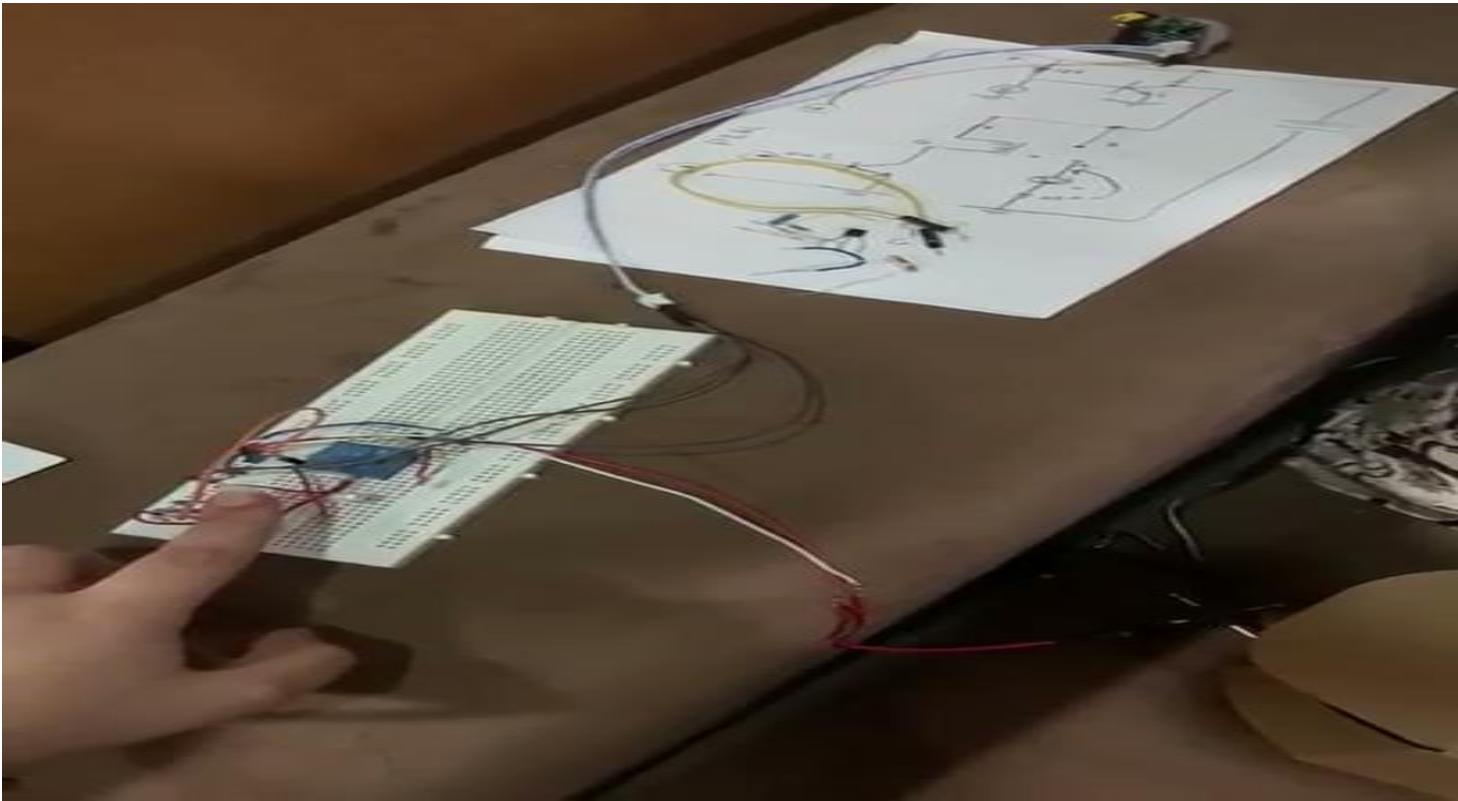


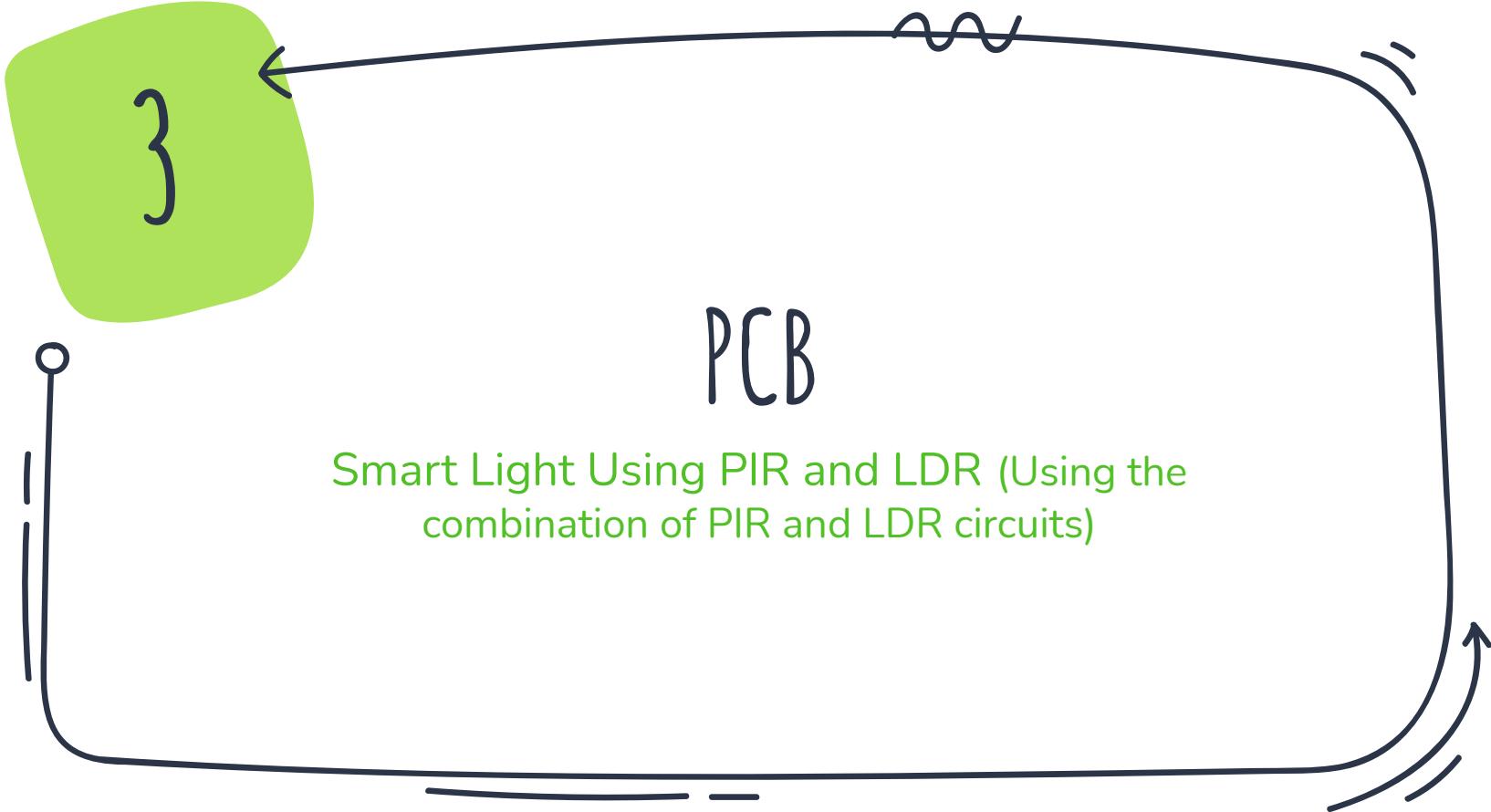
PIR



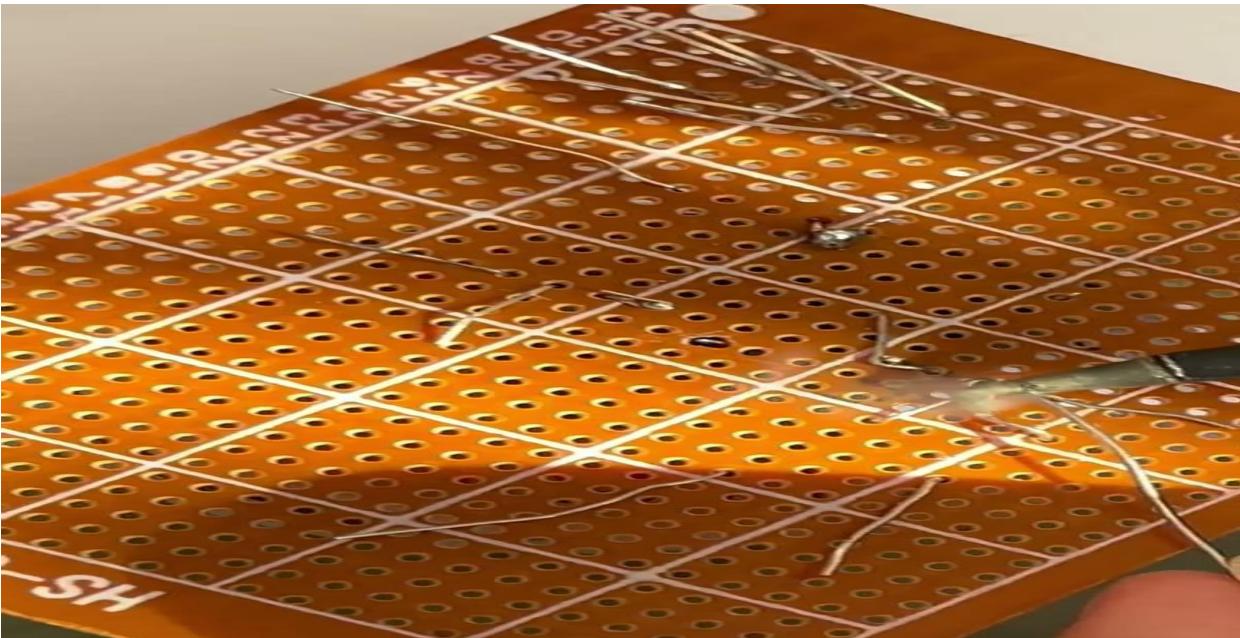
Transistors BC547



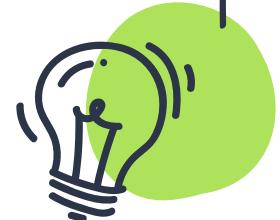
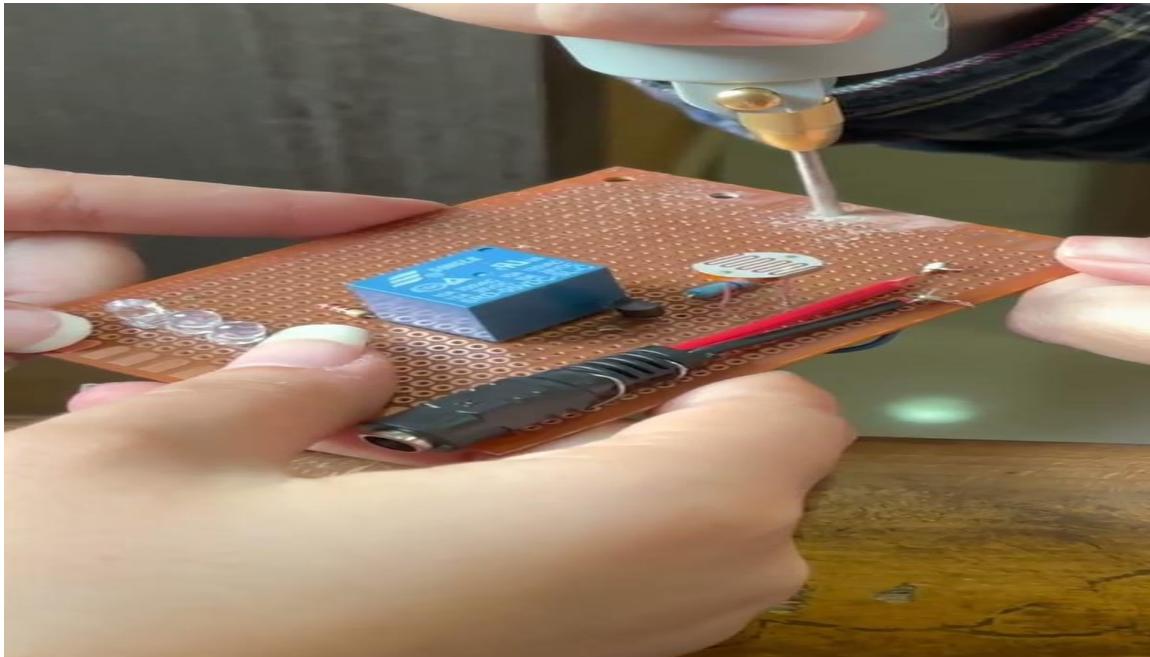




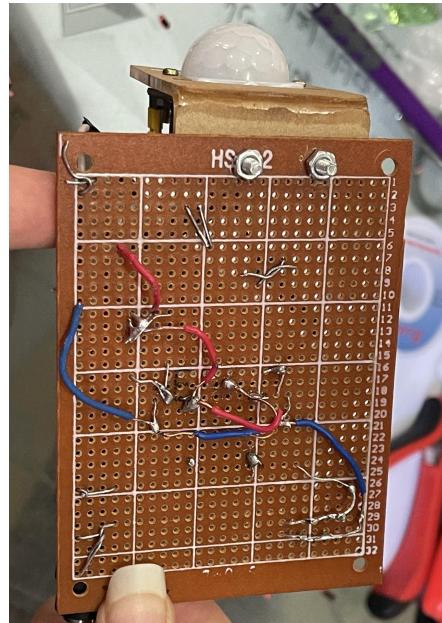
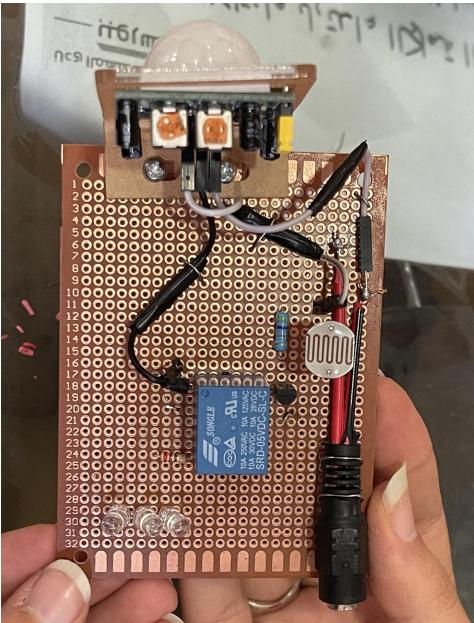
PCB PROGRESS



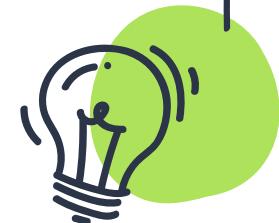
PCB PROGRESS



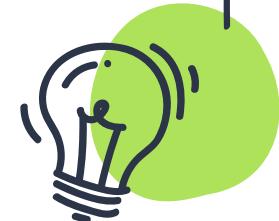
PCB PICTURES



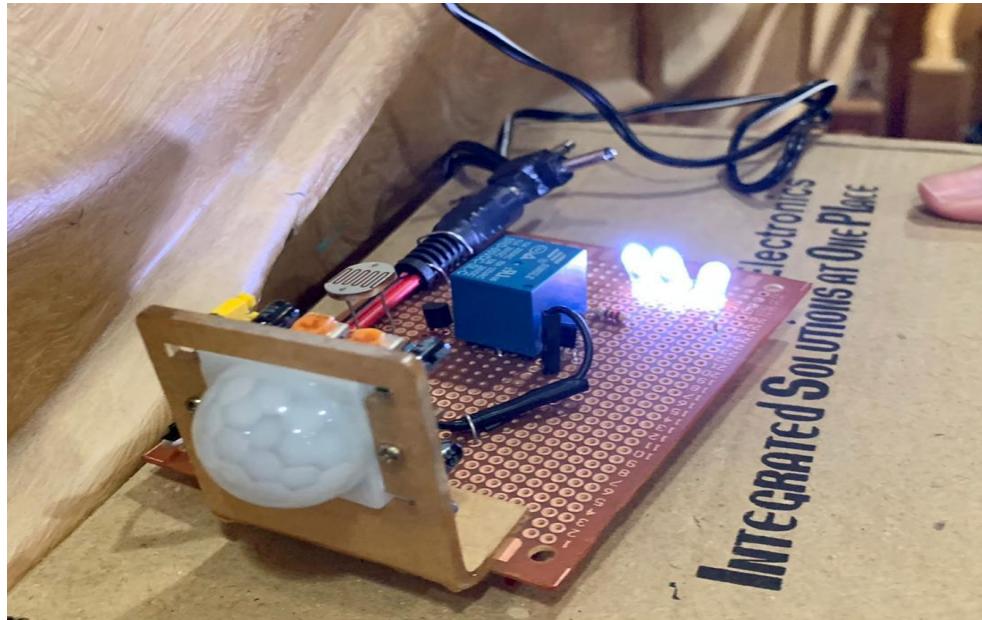
PCB PICTURES



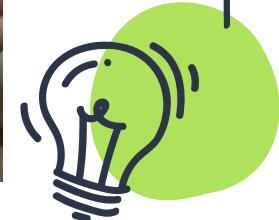
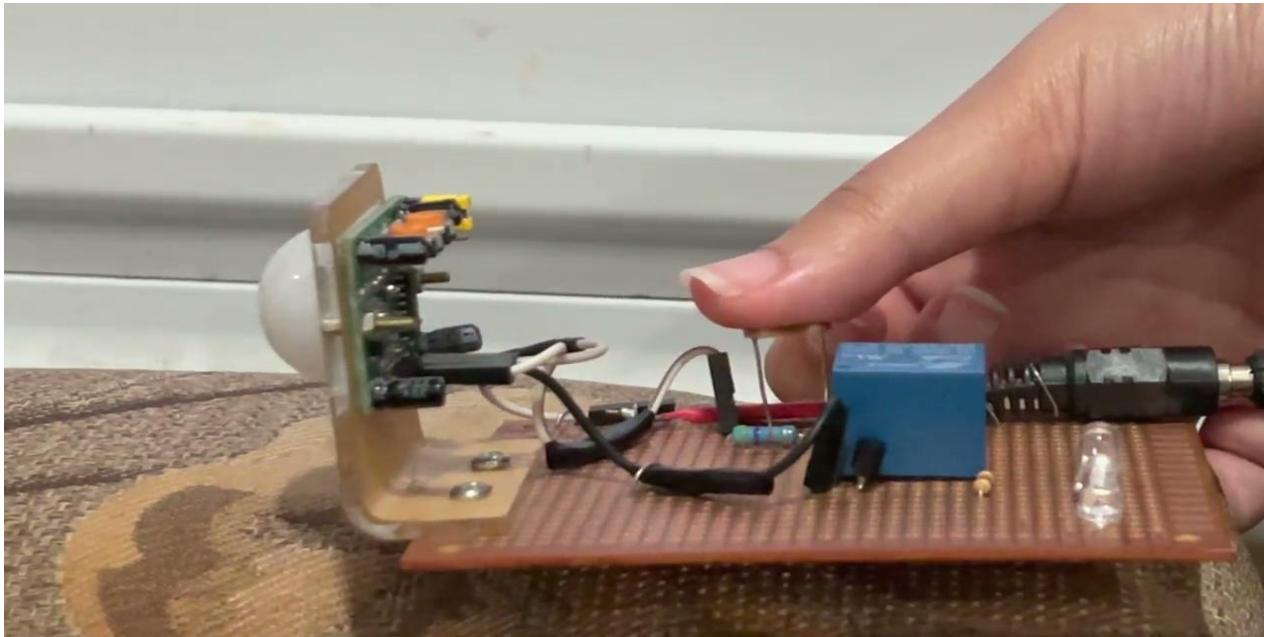
PCB PICTURES



PCB PICTURES



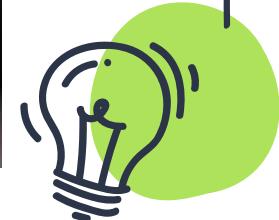
WORKING PROJECT ON PCB



WORKING PROJECT ON PCB



WORKING PROJECT ON PCB





THANK YOU