

Savitribal Phule Pune University  
Alard College of Engineering and Management  
Oct/Nov 2023-24 OR/PRTW EXAMINATION

ATTENDANCE REPORT- PBL (Termwork)

Center : ACEM (4070)

Branch : APPLIED SCIENCE

Subject Name: Project Based Learning

Name of Internal Prof. R. A. Deshmukh

Day:

Date: 30/05/24

Min Marks 13

SEM-II

Maximum Marks - 25

Sr. No.	Seat No	Exam Seat No	Name of Student	Regular / Backlog	Marks obtained	Sign of Students
1	FE_2019_A29	F190700003	BIRADAR ABHISHEK ANIL	R	19	Abhishek
2	FE_2019_A1	F190700005	ADE BALAJI SUBHASH	R	15	Bs
3	FE_2019_A2	F190700006	ADE SUJAL RAJESH	R	20	Sujal
4	FE_2019_A3	F190700009	AGASIMANI RAJAMA CHINAGIBADASHAIA	R	22	Rajma
5	FE_2019_A4	F190700010	AGHAV AKANKSHA BANDU	R	21	✓
6	FE_2019_A5	F190700013	AMBURE KESHAV BIHARATRAO	R	21	Keshav
7	FE_2019_A6	F190700015	ARBAT RUTVIK DURVAS	R	15	Arbat
8	FE_2019_A7	F190700016	ASGAONKAR SOHAM SAJJAN	R	21	Soham
9	FE_2019_A27	F190700019	BHOSALE AVADHUT SAMBHAJI	R	15	Avadhut
10	FE_2019_A9	F190700021	AWGHAD PRIYA PRAKASH	R	20	✓
11	FE_2019_A10	F190700023	BADE VAISHNAVI RAJESH	R	21	Vaishnavi
12	FE_2019_A12	F190700024	BALWADKAR BHAKTI MACHINDRA	R	22	Bhakti
13	FE_2019_A13	F190700025	BAND PRAGATI DINESH	R	21	Pragati
14	FE_2019_A15	F190700026	BARDE SHEFALI MADHUKAR	R	21	Barde
15	FE_2019_A17	F190700027	BARMAD UDAYRAJE BALAJI	R	22	Udayraje
16	FE_2019_A18	F190700028	BAROTE NIYAMAT HANNANPASHA	R	20	Niyamat
17	FE_2019_A19	F190700029	BAWAGE VIJAY PRADEEP	R	15	
18	FE_2019_A20	F190700030	BEMBALKAR OM SATISH	R	13	
19	FE_2019_A21	F190700032	BERAD VAIBHAV VIKAS	R	13	
20	FE_2019_A22	F190700033	BHADKE GAURAV SUNIL	R	15	Gaurav
21	FE_2019_A25	F190700037	BHAWARE SAMYAK DIPAK	R	17	Samyak
22	FE_2019_A26	F190700038	BHOKNAL PURVA RAJENDRA	R	18	
23	FE_2019_A28	F190700040	BHUJBAL RUSHIKESH RAMAKANT	R	18	
24	FE_2019_A30	F190700042	BOKADE RISHIKESH ANIL	R	15	Rishikesh
25	FE_2019_A31	F190700043	BORADE PRADYUMN VASANT	R	16	Pradyumn
26	FE_2019_A32	F190700044	BORADE PRANAV BALIRAM	R	15	Pranav
27	FE_2019_A33	F190700045	CHAHANDE VEDANT AJAY	R	15	Vedant
28	FE_2019_A34	F190700048	CHAMALE VAIBHAVI VINOD	R	22	Vinod
29	FE_2019_A35	F190700049	CHAMATE OMKAR SUNIL	R	13	
30	FE_2019_A36	F190700050	CHANDANE VAISHNAVI ASHOK	R	16	Chandane
31	FE_2019_A37	F190700051	CHASKAR SNEHA DATTATRAY	R	22	Chaskar



32	FE_2019_A67	F190700052	CHAUDHARI ADITYA	R	15	
33	FE_2019_A38	F190700054	CHAUDHARI MANISH PRAMOD	R	19	
34	FE_2019_A39	F190700055	CHAUDHARI SHRAVANI SUSHIL	R	21	Shravani
35	FE_2019_A40	F190700057	CHAURE PRERNA PRAKASH	R	20	Prerna
36	FE_2019_A41	F190700058	CHAVAN AKANKSHA BALASAHEB	R	13	
37	FE_2019_A43	F190700060	CHEKKE NEHA DILIP	R	13	
38	FE_2019_A44	F190700063	CHINTAWAR DIVYA SANTOSH	R	18	Divya
39	FE_2019_A45	F190700066	CHOUDHARY NIRMA AJIT	R	16	Nirma
40	FE_2019_A46	F190700067	DABLE ANUSHKA KISHOR	R	17	Anushka
41	FE_2019_A47	F190700068	DAKE RAM PRATAPRAO	R	17	Ram
42	FE_2019_A48	F190700069	DAKSH SINGH	R	20	Daksh
43	FE_2019_A49	F190700070	DARADE VINAYAK DADARAO	R	13	
44	FE_2019_A50	F190700072	DEOGADE SRUSHTI SUDHAKAR	R	13	
45	FE_2019_A51	F190700073	DESHMUKH DNYANESHWAR BALASAHEB	R	15	Dnyaneshwar
46	FE_2019_A53	F190700074	DESHMUKH PRANAV DEVENDRA	R	13	
47	FE_2019_A54	F190700075	DESHMUKH SAKSHI SAMBHAJI	R	21	Sakshi
48	FE_2019_A55	F190700076	DESHMUKH SUMIT SANJAY	R	20	Sumit
49	FE_2019_A57	F190700077	DHAKNE SURAJ SAINATH	R	15	
50	FE_2019_A58	F190700079	DHANVE SHREYA VINOD	R	20	Shreya
51	FE_2019_A59	F190700080	DHAVAL TUSHAR GANESH	R	22	Tushar
52	FE_2019_A61	F190700081	DHAWALE YASH JOHNSEMYUAL	R	13	
53	FE_2019_A62	F190700090	DUDHE PRANAV MAHESH	R	20	Pranav
54	FE_2019_A52	F190700091	DESHMUKH DUSHYANT	R	13	
55	FE_2019_A63	F190700094	GADGE NEHA SANJAY	R	22	Neha
56	FE_2019_A64	F190700095	GAIKWAD ADITYA KISHOR	R	13	
57	FE_2019_A65	F190700096	GAIKWAD OMKAR JAGNNATH	R	13	
58	FE_2019_A66	F190700097	GAIKWAD YASHVANT PRADHUMN	R	13	
59	FE_2019_A42	F190700241	CHAVAN NIKHIL SANJAY	R	15	
60	FE_2019_A23	F190700288	BHALERAO PRADEEP SHANKAR	R	16	Praadeep
61	FE_2019_A60	F190700313	DHAWALE ROHAN RAJENDRA	R	13	
62	FE_2019_A24	F190700331	BHAMERE SAURAV SANDEEP	R	17	Saurav
63	FE_2019_A11	F190700340	BAGWAN SHAHID ASHPAK	R	20	Shahid
64	FE_2019_A56	F190700383	DESHMUKH SUSHMA DIGAMBAR	R	19	Sushma
65	FE_2019_A14		BARDE SALONI RAMESHWAR	R		
66	FE_2019_A16		BARDE SHREYA BASWESHWAR	R		
67	FE_2019_A8		ATAPADKAR ROHAN SUBHASH	R		

Total Number of Students :

Total Number of Students Present :

Total Number of Students Absent : —

Total Number of Students Pass : All

Total Number of Students Fail : —

Name of Examiner :

Sign of Sr. Supervisor

Prof. R. A. Deshmukh

*R. A. Deshmukh*



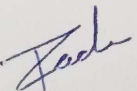
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
DEPARTMENT OF APPLIED SCIENCE

## CERTIFICATE

This is to certify that MISS CHASKAR SNEHA DATTATRAY, the class of FE CLASS having Roll No. F190700051 has Project Base learning entitled "MOTION DETECTION SENSOR in partial fulfilment of the syllabus of first year applied science Examination as prescribed by Savitribai Phule Pune University, Pune. For academic year 2023-2024(SEM-II)

  
Dr. Padma Zade

(Project Guide)

  
Dr. K. D. Sapate

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# MOTION DETECTION SENSOR

## ACKNOWLEDGMENT

I am honored to express my deep sense of gratitude towards my guide name Prof. PADMA ZADE MAM department of applied science for his creative suggestions, helpful discussion, unfailing advice, constant encouragement during the seminar work.

I consider myself privileged to have worked under her, as she always shared his vast experience so generously and patiently in spite of his busy schedule . I sincerely appreciate the interactive help, received from her by the way of advice, suggestion.

At the outset I take this opportunity to express my sincere gratitude to prof. PADMA ZADE MAM

and Principal sir for giving me an opportunity to pursue my studies for the for the present work.

Date –

Place –



Sr. no.	Name of title	Page number
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## ABSTRACT

This project contains the model of a PIR motion sensor which is used at places where a moving living object detection is required. It allows us to detect the presence of a people, animals when they are located in the range of the sensor. It is less complex, feasible to purchase, is a low power device and reliable i.e. it does not wear out soon and hence it is used in many gadgets and appliances. It is abbreviated as a "Pyroelectric or Passive Infrared Sensor". These are widely used in smart systems where a system has to respond automatically in the presence of a person such as in staircases, rooms, street lights, etc and turns them off in their absence due to which there is reduction in the consumption of energy and also a person need not mechanically perform the task thus reducing the monotonous work.



## INTRODUCTION

A motion detector is a device that detects moving objects especially people. It is often integrated as a component of a smart system to receive alerts. It contains a Pyroelectric sensor which is an optical sensor that senses the moving object through emission or reflection of infrared rays. It is sensitive to a person's skin temperature through emitted black body radiation at mid-infrared wavelengths, in contrast to background objects at room temperature. PIR Sensors have a 3 pin circuit, one is the ground pin, other is the supply voltage pin generally 5V and the third pin is the output signal pin. The PIR sensor board results in a digital output which we recognize as a pin having a flip from low to high or high to low. It is difficult to differentiate between different energy emitting bodies like humans, animals, moving objects, heat emitting bodies, etc. Thus a potentiometer is generally used to tune the frequency of the input system to that of the emitting source to be selective. Once the moving body is out of the range of the detection of the sensor, it results in a low signal indicating the absence and thus system goes to a stand by state waiting for an input radiation.



## REQUIREMENTS

Materials Requires –

- PIR Sensor Module
- Arduino UNO
- LED
- Buzzer
- Breadboard
- Connecting Wire
- 330 ohm resistor
- Battery - 9 volt



## CONSTRUCTION

The PIR sensor consists of a pyro electric element which generates a signal when exposed to heat or temperature variation. It contains a special lens called Fresnel lens which sets the range and sensitivity of the sensor. It helps in converging the detected infrared signals to the pyroelectric element. To make the signal usable by the appliances, it has to be amplified to a dc level of atleast 5v which is done using a 2 stage amplifier and a comparator circuit.

The amplifier and comparator circuit was designed to get low power output to avoid high power dissipation.

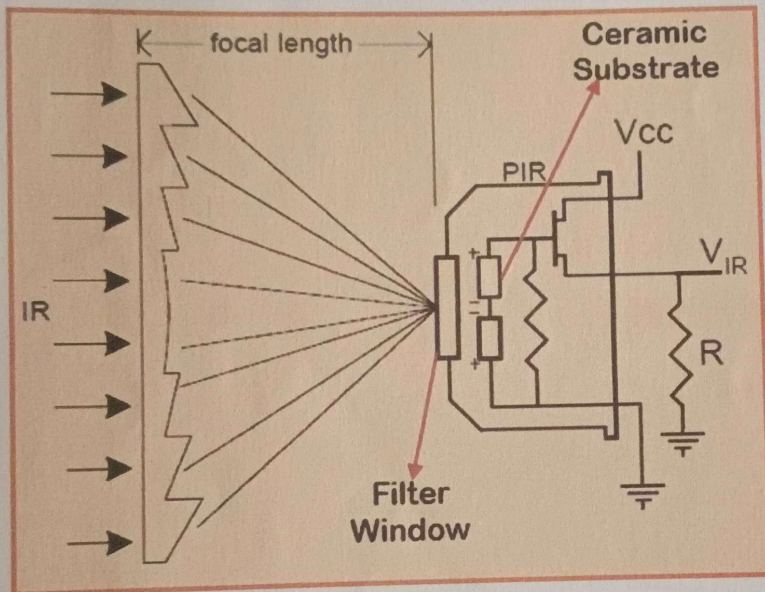
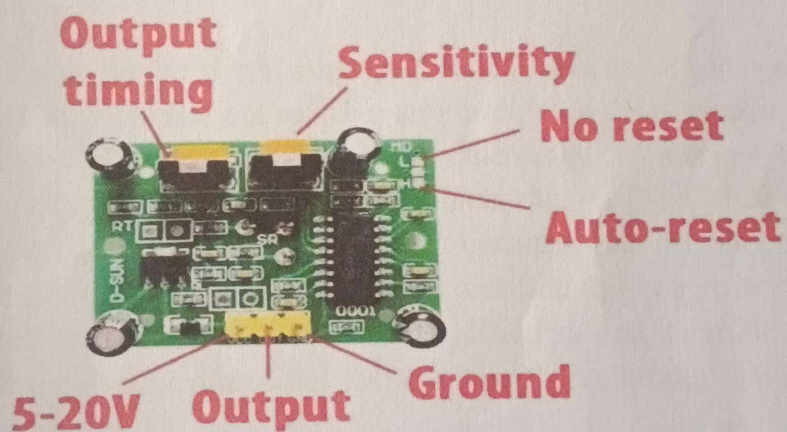


Figure 1: A generalised PIR sensor design The Fresnel lens condenses light, providing a larger range of IR to the sensor. To increase the range of action of the PIR sensor, the lens is split into multiple sections each section of which is a fresnel lens. The lens can change the breadth, range, sensing pattern, very easily. low power devices, we have constructed delay circuits using flip flops of CMOS technology.



## Circuit Diagram and Explanation \_

The circuit Diagram for arduino motion detector project by interfacing Arduino with PIR module and blinking an LED/Buzzer is shown in the below image. We have powered the PIR sensor using the 5V Rail of the Arduino. The output pin of the PIR Sensor is connected to the 2nd digital pin of Arduino. This pin will be the INPUT pin for Arduino. Then the 3rd pin of Arduino is connected to the LED and Buzzer. This pin will act as the output pin of the Arduino. We will program the Arduino to trigger an Output on 3rd pin if an Input has been detected at 2nd pin. The complete Program is explained below.





## WORKING OF A PIR SENSOR

Any object be it living or non-living emits radiations due to its heat. In case of humans or animals, IR radiations are emitted because of body heat. The Fresnel lens captures these rays and focuses them onto the pyroelectric element as shown in figure 3. The infrared rays from the person are focused at the sensing element and thus detected.

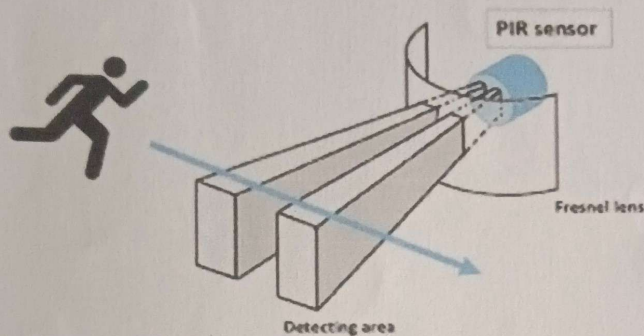
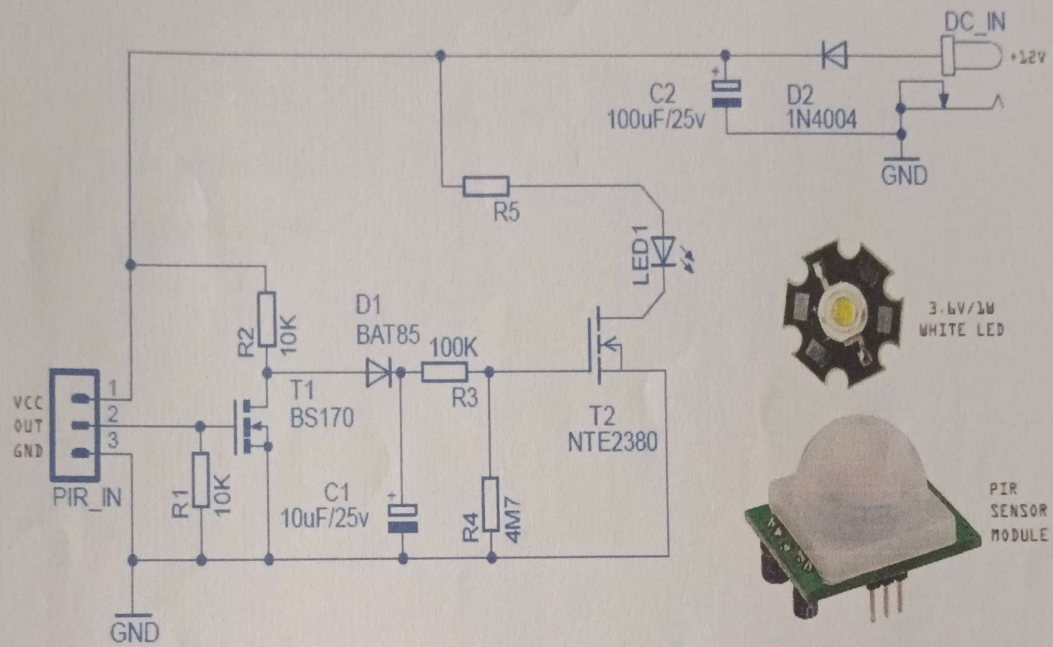


Figure 2: Fresnel lens As the signal amplified is available as a trigger only for a short period which is not sufficient to drive any circuits, a delay circuit was constructed which helps in rectifying the same. The delay circuits can be constructed using a duty cycle controller, flip-flops, etc. As the CMOS devices are The sensing element thus produces an analog output signal on detection of a heat source movement. This signal is full wave rectified to get a pulse. This pulse is of very few volts and thus has to be amplified so that it can be used elsewhere. Hence a two stage amplifier followed by a comparator is used to get appropriate voltage level .

The output analog waveform on full wave rectification gives a pulse which is given to an amplifier and a comparator to get a digital output with immunity to noise. This digital sensor output is on only for a certain amount of time, and re triggering is required to get consistent output. And thus a delay circuit is built using flip-flops.



## Flow chart





## FEATURES OF A PIR SENSOR

1. Motion Detection.
2. Low Noise.
3. Supply Voltage - 5V.
4. Delay Time Adjustable.
5. Standard Pulse Output.



## DISADVANTAGES

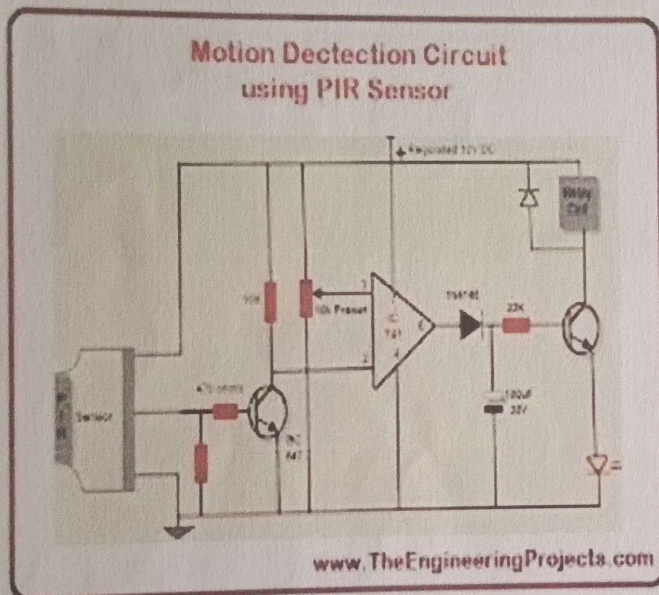
- 1) Limited range
- 2) poor line of sight
- 3) PIR sensor pot should be adjusted in such a way to detect the humans only.



## APPLICATIONS

- 1) Street lights
- 2) Security system
- 3) Automatic door opening
- 4) Any power saver circuits

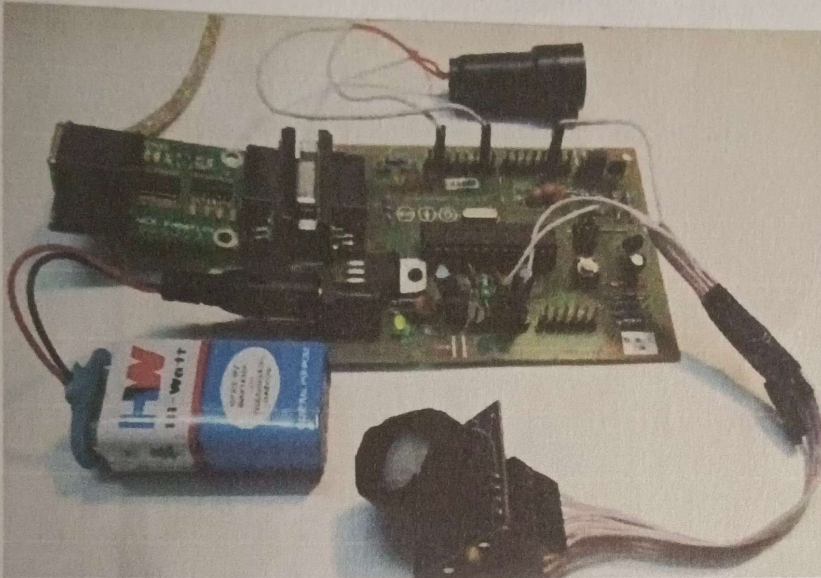
The applications of the PIR sensor are based on the requirement of the system, such that the energy is not wasted and the system is automated without human intervention. The system is thus designed with low power, cost reliability and exhibits more immunity to noise. Figure 6: Amplifier and comparator circuit.





## RESULT

The result show the final hardware design of the purposed system. This result clearly show how all the components required for our system is connected.





## CONCLUSION

Hereby we come to an end of project Motion Detector Using PIR sensor. This project give us an idea to detect the motion. This project can be used anywhere either at home or office. This is also cost efficient does by this attempt of ours circuit can be used as protecting device and can be used for security also. It can be used as kind of antitheft device. It is very much cost efficient can be easily and efficiently.



## REFERENCE

- 1] [www.beprojectidea.blogspot.com](http://www.beprojectidea.blogspot.com)
- 2] A great page on PIR sensors from GLOLAB (<http://adafru.it/aKn>)
- 3] NYU sensor report (<http://adafru.it/aKo>)
- 4] Adafruit Industries <http://learn.adafruit.com/pir-passive-infrared-proximity-motion-sensor>.