Internal Design Hackathon

YEAR & SEMESTER – II Year, III Semester

PROBLEM STATEMENT– Motion Sensor Light

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Motion Sensor Light

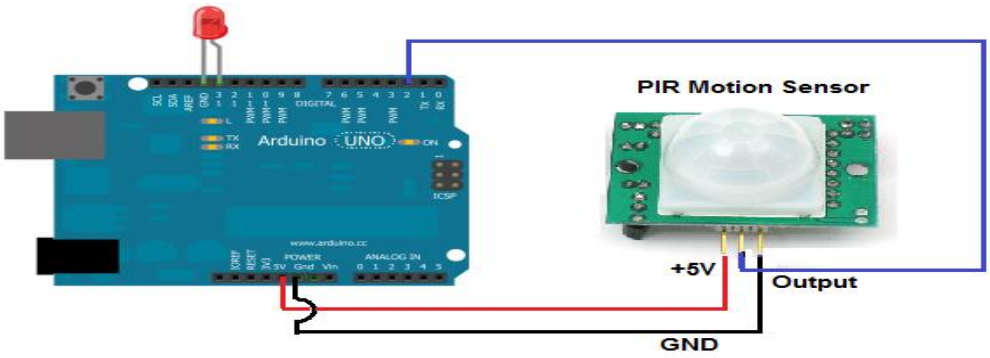
Objective – A motion sensor light circuit which turns on when motion is detected.

Abstract – In this project, we made a motion sensor light circuit with the help of an Arduino UNO and PIR sensor. The lights are turned on when motion is detected. With a PIR motion sensor integrated with an Arduino, we can detect movement and program the Arduino to turn a light on for a certain period of time once this motion is detected.

Introduction – Motion sensor light injects energy (light , microwaves or sound) into the environment in order to detect a change of motion. Once motion is detected, we will turn on the light attached to the output of the PIR sensor for 1 minute. When motion is detected, the light will turn on for about 1 or 2 minutes, so that it can provide illumination for this time if the person that triggered the sensor stays in the area. Then, after this period of time has elapsed, it will turn off. If the person continues moving in the vicinity of the motion sensor, it will then be triggered again and stay on for 2 minutes again. This cycle will continue as long as needed. We can decide how long we want the light to stay on according to requirements also.

Hardware/Software Requirements – Arduino UNO microcontroller, PIR motion sensor , LEDs. The main electronic component we will use that allows us to pick up this detection is the PIR motion sensor. The PIR motion sensor is a sensor which detects movement through picking up infrared radiation. When a person emits infrared radiation, the sensor is able to detect this and react. We will program it with the help of Arduino UNO microcontroller.

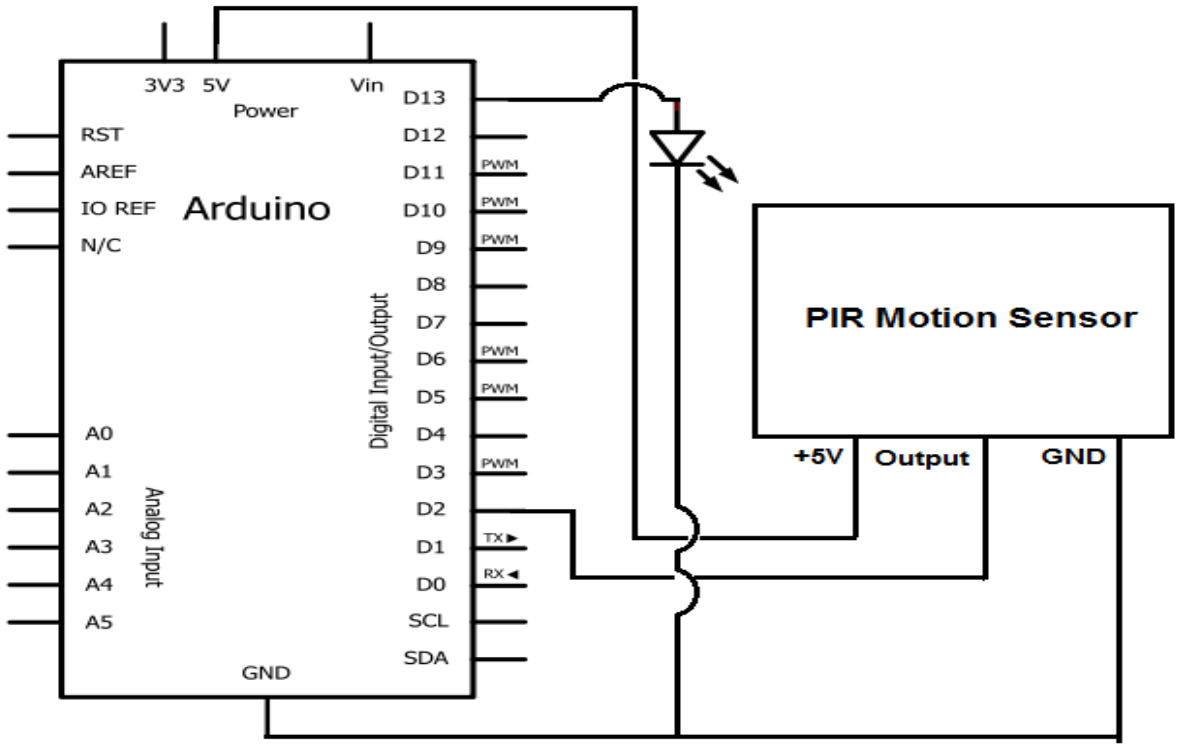
Circuit Diagram and Working –



The PIR motion sensor is a 3 pin device. Pin 1 is the pin which receives the positive DC voltage. The PIR motion sensor needs between 5V-9VDC of power for operation. Pin 2 is the negative DC voltage or ground pin of the device. Pin 3 is the Output pin of the PIR module. When motion is detected by the PIR, its output will go high to 3V. When no motion is detected, its output is low and it gives off practically no voltage. When output is HIGH, the

LEDs will glow. When the motion detector does not detect any motion, the output is LOW and the Arduino receives no voltage signal.

Schematic Diagram –



Conclusion –

A motion sensor light circuit is constructed and LED turns on when PIR motion sensor detects any motion. Light of the LED turns off automatically after 2 minutes of no motion detection thereby saving electricity. This can be used in public places like washrooms, parking areas, hotel corridors, etc. to conserve electricity usage and thus contributing towards the environment through sustainable development methods.