AUTOMATIC LIGHT SWITCHING USING MOTION SENSORS

WEEK – 1

PRESENTATION

INTRODUCTION
MOTIVATION
EARLIAR SOLUTION
OUR SOLUTION
COMPONENTS

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Introduction

- In this project, we will see the automatic room lights using Arduino and PIR sensor, where the lights in the room will automatically turn-on and off by detecting the presence of a human.

- So, in this DIY Project , we will implement automatic room lights using Arduino and PIR sensor.

MOTIVATION

In Today's busy world, everything has become so fast that humans have stopped giving attention to resources that runs our daily life. Most of us just see these issues as trivial ones.

In order to overcome one of these problems automatic lights can be very helpful in terms of saving electricity and human efforts of manually controlling the lights.

For example :

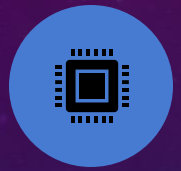
- Corridors of huge infrastructure need not to be illuminated all the time, instead of this the lights can be in use only when there is some activity in that place.
- Street lights are mostly switched on full night in some frequently visited places ,as a solution automatic lights can be of great help.

Hence we can notice that the movement or motion detection can play a vital role in regulating the lights.

EARLIER SOLUTIONS

- **Switching of light using remote sensing :-**
- remotes sensors are used to turn on and off the lights in a room, but they also needed some kind of human involvement to turn.
- In order to save electricity LEDs lights were innovated but they could not reduce the unnecessary wastage due to human misuse.

OUR SOLUTIONS



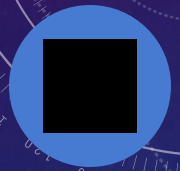
AS A SOLUTION TO THE PROBLEMS DISCUSSED ABOVE, WE WILL CREATE THE AUTOMATIC ROOM LIGHTS USING THE ARDUINO AND PIR SENSOR, WHERE THE LIGHTS WILL AUTOMATICALLY TURN ON AND OFF

BY DETECTING THE PRESENCE, ESPECIALLY THE MOVEMENT OF HUMANS.

SUCH AUTOMATIC LIGHTS CAN BE IMPLEMENTED IN GARAGES, STAIRCASES, BATHROOMS, LONG CORRIDOORS, STREET LIGHTS, ATMS WHERE THE CONTINUOUS LIGHT IS NOT REQUIRED AND ARE IN NEED ONLY FOR

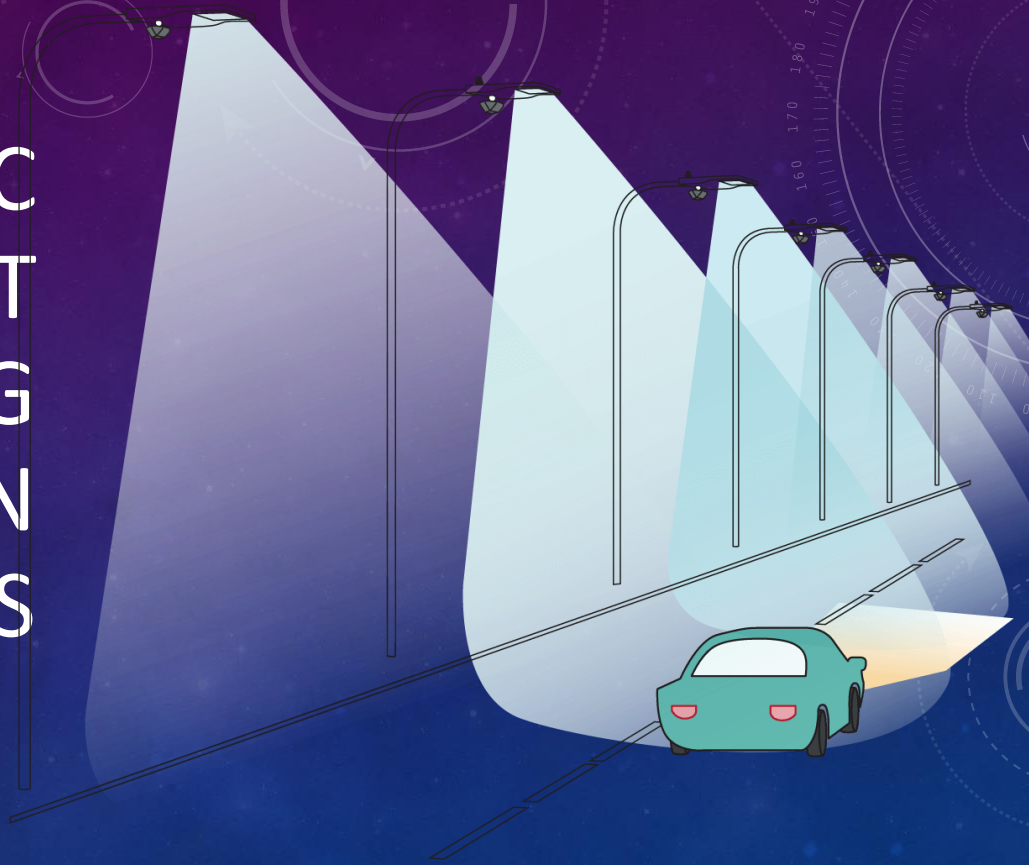
A PARTICULAR INTERVAL OF TIME.

ALSO, WITH THE HELP OF AN AUTOMATIC LIGHT CONTROL SYSTEM ONE CAN SAVE ELECTRICITY SINCE THE LIGHT ARE NOT IN THE USE WHEN THERE IS NO PERSON EVENTUALLY HELPING IN THE CONCERNS OF THE



ENVIRONMENTAL ISSUES

AUTOMATIC LIGHT SWITCHING USING MOTION SENSORS



COMPONENTS USED IN THE PROJECT

Arduino – UNO

- Arduino is an open-source electronics platform simply a micro-controller based on easy-to-use hardware and software.
- Arduino boards are able to read inputs - light on a sensor, a finger on a button, or a Twitter message - and turn it into an output - activating a motor, turning on an LED.
- You can tell your board what to do by sending a set of instructions to the microcontroller on the board.
- So, nowadays playing with electrical components and making some simple and useful electrical gadgets become very easy.

DETAILS

Microcontroller	ATmega328P – 8 bit AVR family microcontroller
Operating Voltage	5V
Recommended Input Voltage	7-12V
Input Voltage Limits	6-20V
Analog Input Pins	6 (A0 – A5)
Digital I/O Pins	14 (Out of which 6 provide PWM output)
DC Current on I/O Pins	40 mA
DC Current on 3.3V Pin	50 mA
Flash Memory	32 KB (0.5 KB is used for Bootloader)
Frequency (Clock Speed)	16 MHz

PIR Sensor

- The PIR sensor stands for **Passive Infrared sensor.**
- It is a low cost sensor which can detect the presence of Human beings or animals.
- These sensors works on the principle that " when any living being comes close to this sensor it detects the infrared radiations emitted by the living being and changes output voltage."
- This sensor has three output pins Vcc, Output and Ground.

DETAILS

Pin Number	Pin Name	Description
1	Vcc	Input voltage is +5V for typical applications. Can range from 4.5V- 12V
2	High/Low Output (Dout)	Digital pulse high (3.3V) when triggered (motion detected) digital low(0V) when idle(no motion detected
3	Ground	Connected to ground of circuit

LEDs Connecting wires


Thank you
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