



# Hindustan

I Institute of Technology and  
Science

**Department:** Information Technology

EMBEDDED SYSTEMS PROGRAMMING LAB  
(ITB4331)

ASSIGNMENT-1

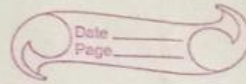
Submitted To:

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Tuesday, 1<sup>st</sup> December, 2020



Vitul Chauhan

18132023/IT/5A

## An ENHANCED RAILWAY TRACK SECURITY

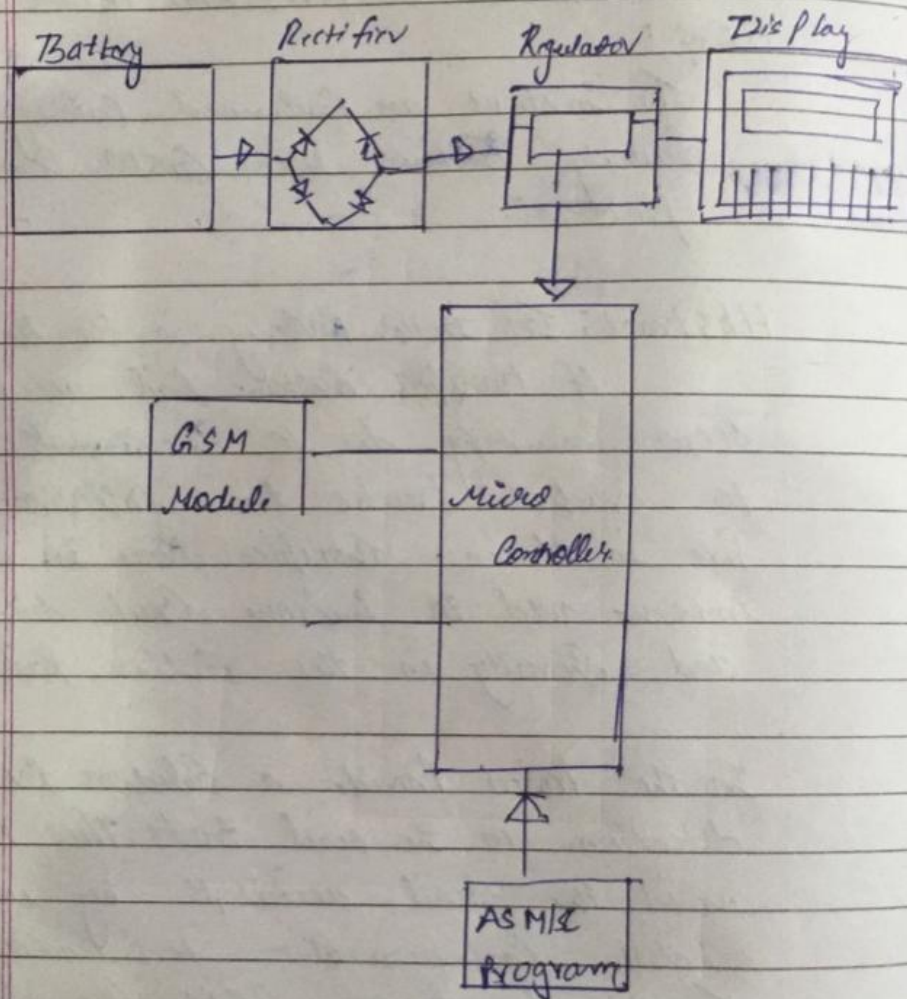
Aim:

To Construct an Enhanced Railway track Security System using GSM Communication protocol.

Abstract: In India, Railway is the backbone of transport system. Rail accidents occur commonly due to derailments due to cracked tracks than collisions on fire in train. Therefore there is an immense need to improve track detection and security in the Indian railway.

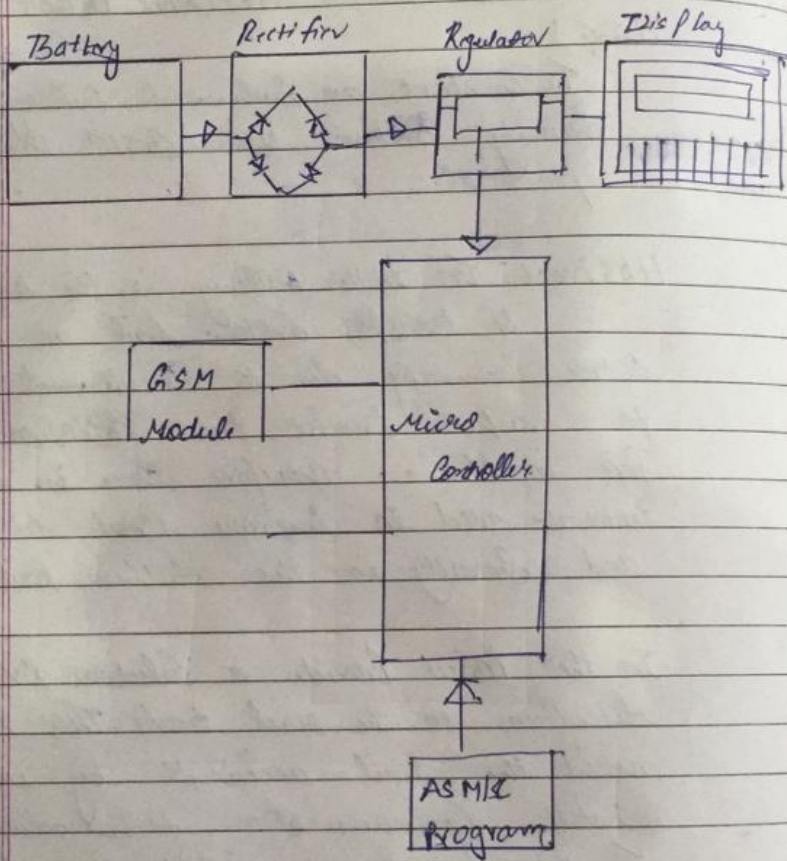
In the project provide a solution for problem detection in the rail tracks. This is to avoid the rail accidents by using latest communication technology. In this project GSM Communication protocol are used. To convey the message of track detection via SMS. Track detection is achieved by using IR sensors attached to a vehicle that moves along the rails with the detection of cracks the system also alerts the railway authorities the security system.

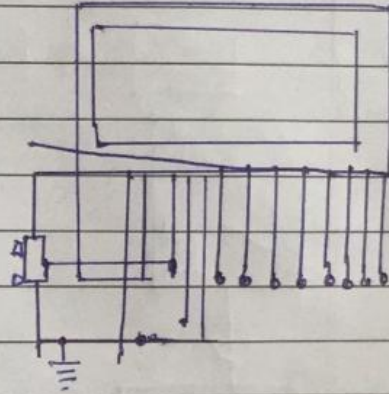
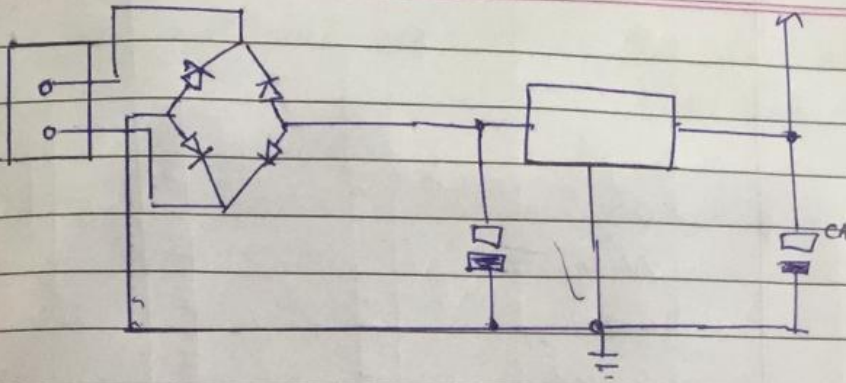
## Block Diagram of Enhanced Railway Track System





## Block Diagram of Enhanced Railway Track System





## Solar Powered LED Street Lighting with Auto Intensity

AIM: To Construct a Solar Powered LED Street Lighting with Auto intensity

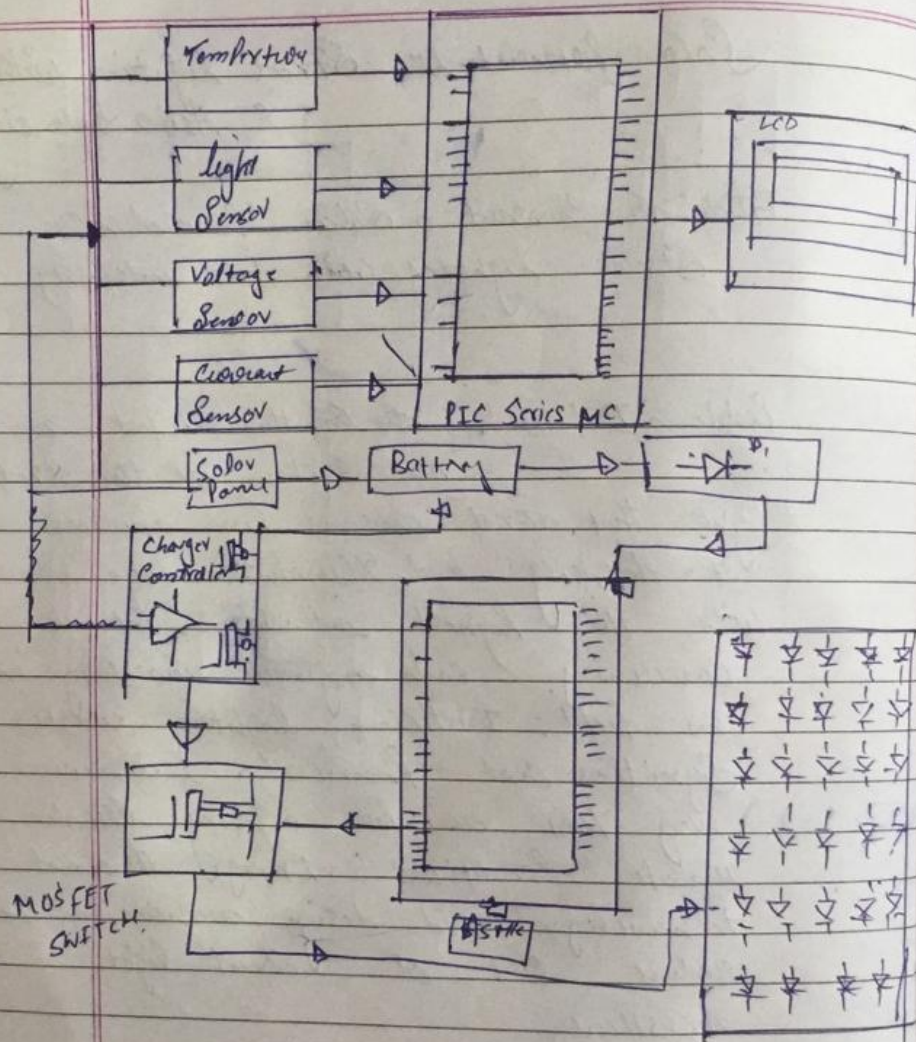
Problem Definition: In this Project a new system for the street light that donot consume huge amount of electricity and illuminate large areas with the highest intensity light is concerning each engineer working in this field. Inefficient lighting wastes significant financial resources every year and poor lighting creates unsafe conditions. Energy efficient technology and design mechanism can reduce cost of street light drastically.



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## Monitoring Vehicular Pollution By using Embedded Systems

AIM: To Construct a Monitoring Vehicular Pollution System in Embedded Systems

Abstract: Air pollution is not only harmful to the environment but to all the other living beings on earth. Seventy-five percent of the total carbon monoxide emissions are caused due to automobiles. In urban areas, automobile emissions contribute to 50-90% of the total air pollution. Every vehicle will have emission. It is not possible to avoid emission completely but it can be monitored and controlled by using pollution detection systems.

Due to improper maintenance of vehicles the emissions level of the vehicle increases. When the emission levels of the vehicle increase, when the emissions levels of the vehicle increase, vehicle owner will be informed about harmful level of pollution.

## Hardware Component Required

- (a) Arduino Uno : (Atmega 328)
- (b) Liquid Crystal Display (LCD)
- (c) Sensors
  - (i) ~~on~~ Motor Sensors
  - (d) GSM and GPRS Module

## Block diagram of Suggested System

