



NEW HORIZON COLLEGE OF ENGINEERING

New Horizon Knowledge Park, Ring Road, Marathalli

Autonomous College Permanently Affiliated to VTU, Approved by AICTE & UGC

Accredited by NAAC with 'A' Grade, Accredited by NBA

AUTOMATIC RAILWAY GATE USING 8051 MICROCONTROLLER

A MINI PROJECT

REPORT

Submitted by

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In partial fulfilment for the award of the degree of

BACHELOR OF ENGINEERING

IN

ELECTRICAL AND ELECTRONICS ENGINEERING



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Bonafide Certificate

This is to Bonafide that the mini project report entitled “**Automatic railway gate using 8051 microcontroller**” submitted by **Rohan N,Kiran U,Naveen kumar** Department of Electrical Engineering, New Horizon College of Engineering, Bangalore in partial fulfilment for the award of the degree of Bachelor of Engineering , is a record of bonafide work carried out by him/her under my supervision, as per the NHCE code of academic and research ethics.

The contents of this report have not been submitted and will not be submitted either in part or in full, for the award of any other degree or diploma in this institute or any other institute or university. The project report fulfils the requirements and regulations of the institution and in my opinion meets the necessary standards for submission.

Guide Name
Mrs.Rashmi N

Dr. S. Ramkumar
HoD



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Date:

Place:

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ABSTRACT

The target of this project is to give a programmed railroad door at a level crossing supplanting the doors worked by the guard. It manages two things. Right off the bat, it manages the decrease of time for which the door is being kept shut, and furthermore, to give security to the street clients by diminishing the mishaps. By the by and by existing framework when the train leaves the station, the stationmaster illuminates the watchman about the appearance regarding the train through the phone. When the guard gets the data, the shuts the door relying upon the planning at which the train shows up. Thus, if the train is late because of certain reasons, at that point entryway stay shut for quite a while causing traffic close to the doors. By utilizing the programmed railroad door control at the level intersection the appearance of the train is distinguished by the sensor set close to the door. Henceforth, the ideal opportunity for which it is shut is less contrasted with the physically worked doors and furthermore lessens the human work. This sort of entryways can be utilized in an unmanned level intersection where the odds of mishaps are higher and dependable activity is required. Since, the activity is programmed; blunder because of manual activity is forestalled. Programmed railroad entryway control is exceptionally conservative micro controller based plan, intended for use in practically all the unmanned level intersections in the nation.

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INTRODUCTION

A level intersection happens where a railroad line is converged by a street or way on one level, without plan of action to a scaffold or passage. It is a sort of at grade crossing point. The term likewise applies when a light rail line with isolated option to proceed in saved track goes across a street in a similar manner. Different names incorporate railroad crossing, railroad going across, street through railroad, train intersection or level intersection. Early level intersections had a flagman in a close by corner who might, on the methodology of a train, wave a warning or lamp to stop alralic and clear the tracks. Manual or electrical closable doors that blockaded the roadway were laterpresented. The entryways were proposed to be a finished obstruction against guidance of any street traffic onto the railroad. In the good 'ol days of the railroads a lot of street traffic was horse drawn or included domesticated animals. It was accordingly important to give a genuine obstruction. Along these lines, crossing entryways, when shut to street traffic, crossed the whole width of the street. At the point when opened to permit streetclients to go too far, the doors were swung over the width of the railroad, forestalling anypedestrians or animals getting onto the line. With the appearance of motor vehicles, this barrier became less effective and the need for a barrier to livestock diminished dramatically. Many countries therefore substituted the gated crossings with weaker but more highly visible barriers and relied upon road users following the associated warning signals to stop.

Present work is structured utilizing 8051 miniaturized scale controller to keep away from railroad mishaps happening unattended rail route doors, whenever actualized in soul. This project uses two amazing IR transmitters and two collectors; one sets of transmitter and beneficiary is fixed at upside (from where the train comes) at a level higher than a person in accurate arrangement and likewise the other pair is fixed at drawback of the train bearing. Sensor enactment time is so balanced by computing the time taken at a specific speed to cross in any event one compartment of standard least size of the Indian railroad.

We have Automatic Railway Gate Control System considered 5 seconds for this project. Sensors are fixed at 1 km on both sides of the gate. We call the sensor along the train direction as 'fore side sensor' and the other as 'after side sensor'. When fore side receiver

gets activated, the gate motor is turned on in one direction and the gate is closed and stays closed until the train crosses the gate and reaches aft side sensors. When aft side receiver gets activated motor turns in opposite direction and gate opens and motor stops. Buzzer will immediately sound at the fore side receiver activation and gate will close after 5 seconds, so giving time to drivers to clear gate area in order to avoid trapping between the gates and stop sound after the train has crossed.

Theory

Keil Software, world's driving designer of Embedded Systems Software, makes ANSI C compilers, macro constructing agents, ongoing parts, debuggers, linkers, library supervisors, test systems, incorporated environments, and assessment sheets for the 8051, 251, ARM7, and C16x/ST10 microcontroller families. Keil Software executed the main C compiler structured from the beginning explicitly for the 8051 miniaturized scale controller.

Algorithm:

Step 1: Start.

Step 2: Set the info sensors for detecting train.

Step 3: Check for the appearance of the train by the sensors.

On the off chance that the train detected go to stage 4 and 5 in any case stage 3.

Step 4: Make the admonition signal for the street clients.

Step 5: Close the door.

Step 6: Check for the train takeoff by the sensors. On the off chance that the train detected go to subsequent stage. In any case repeat Step 6.

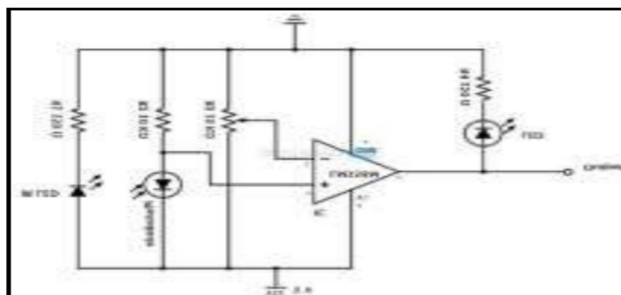
Step 7: Open the entryway.

Step 8: Go to stage 2.

COMPONENTS

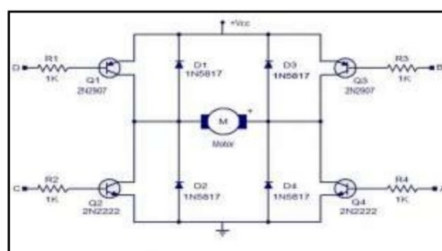
1. IR MODULE

An infrared sensor is an electronic gadget that emanates so as to detect a few parts of the environmental factors. An IR sensor can gauge the warmth of an item just as distinguishes the movement. These sorts of sensors measures just infrared radiation, as opposed to producing it that is called as a detached IR sensor Usually in the infrared range, all the items emanate some type of warm radiations.

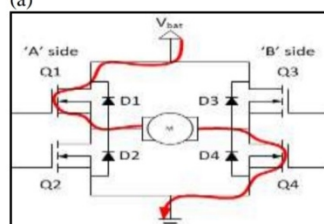


2. H-BRIDGE

The fundamental working method of a H-connect is genuinely straightforward if Q1 and Q4 are turned on the left lead of the engine will be associated with the force flexibly, while the correct lead is associated with ground Current beginnings blowing through the engine which stimulates the engine in (suppose) the forward course and the engine shaft turns over turning.



(a)



(b)

3. BUZZER

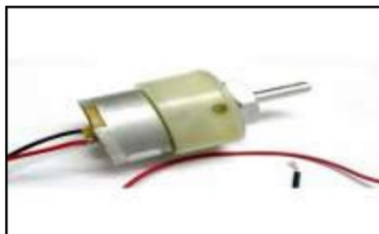
A bell or beeper is a sound flagging gadget, which might be mechanical, electromechanical, or then again piezoelectric. Ordinary employments of signals and beepers incorporate caution gadgets, clocks, and affirmation of client info, for example, a



mouse snap keystroke.

4.DC MOTOR

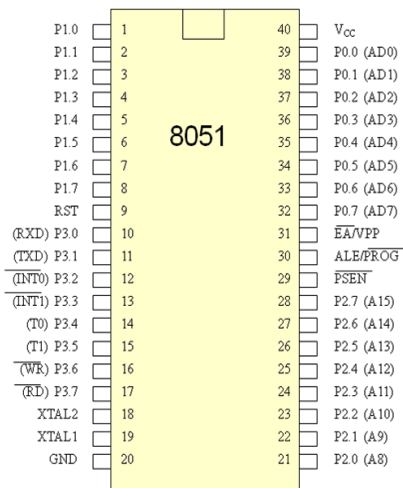
A miniaturized scale controller is an incorporated circuit or a chip with a processor and other help gadgets like program memory, information memory, I/O ports, sequential correspondence interface and so forth coordinated together. In contrast to a chip (ex: Intel 8085), a microcontroller doesn't require any very interfacing of help devices. Intel 8051 is the most mainstream microcontroller ever delivered on the planet showcase



5. 8051 MICROCONTROLLER

Microcontrollers will join different gadgets, for example,

1. A clock module to permit the microcontroller to perform undertakings for certain timeframes
2. A sequential I O port to permit information to stream between the controller and different gadgets, for example, PIC or another microcontroller
3. An ADC to permit the microcontroller to acknowledge simple info information for processing.



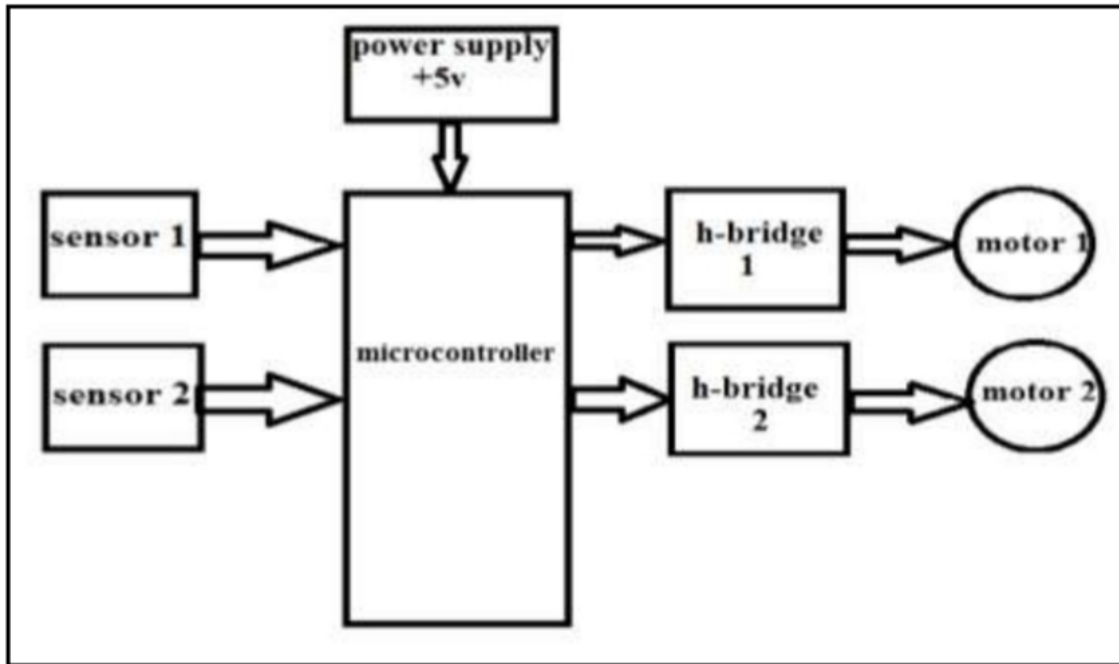
Working of project

Railroads being the least expensive method of transportation are favored over the various methods when we go through the day by day news we go over numerous railroad mishaps happening at unmanned rail route intersections. This is for the most part because of the inconsiderateness in manual activities or absence of laborers.

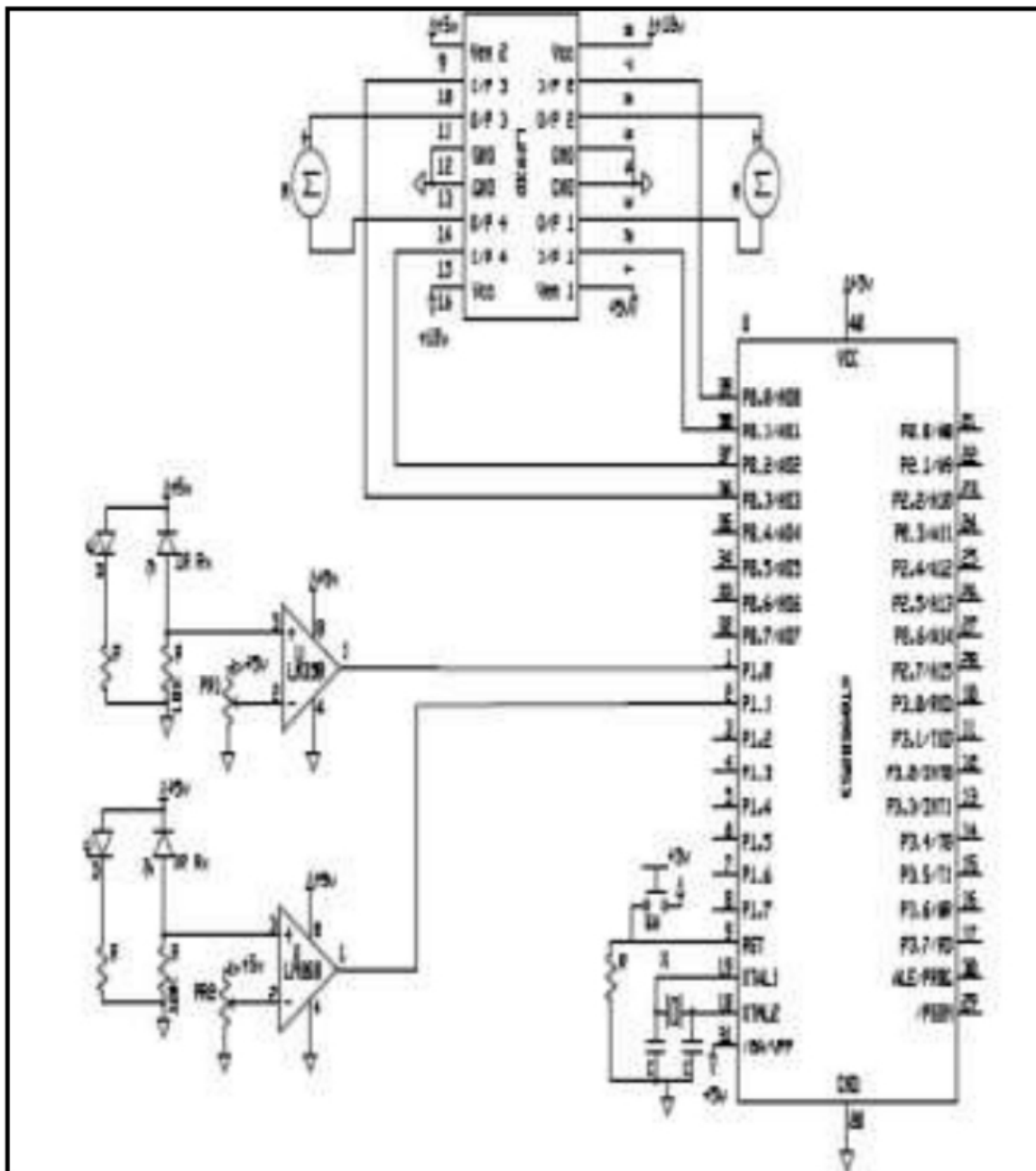
We, in this project have concocted an answer for the equivalent. Utilizing basic electronic segments we have attempted to computerize the control of railroad entryways. As a train moves toward the railroad crossing from either side, the sensors set at a specific good ways from the entryway identifies the moving toward train and as needs be controls the activity of the door. Additionally a marker light has been given to caution the drivers about the moving toward train. The two IR sensors are put at left and right half of the railroad entryway. The separation between the two IR sensors is reliant on the length of the train. By and large we need to think about the longest train in that course.

Presently we'll perceive how this circuit really functions in continuous. we can see the ongoing portrayal of this project. On the off chance that the sensor I identifies the appearance of the train, microcontroller turns over the engine with the assistance of engine driver so as to close the door. The entryway remains shut as the train passes the intersection. At the point when the train crosses the entryway and arrives at second sensor. It recognizes the train and the microcontroller will open the entryway.

Block diagram



Circuit diagram



Conclusion

The proposed work has many significant favorable circumstances it will diminish the mishaps happening at the railroad level intersection, it will expand the precision and decrease blunders happening because of manual tasks. It will decrease the impact of train and will likewise deal with the course of a specific train to keep away from any postponement in arriving at its goal. Train will consistently be on time at the station no defer will be caused which happens in manual activity.

Security can be executed by putting tracker in the train so as to screen the area of the train if there should be an occurrence of any issue. Sun oriented boards can be utilized to produce power for the framework there by expanding the productivity of the framework. As the framework is totally computerized, it maintains a strategic distance from manual mistakes and in this way gives extreme security to street clients.

By this instrument, nearness of a watchman isn't important and programmed activity of the door through the engine activity is accomplished. Microcontroller 8051 plays out the total activity i.e., detecting, door shutting and opening activity is finished by programming coding composed for the controller. The instrument takes a shot at a basic rule and there isn't a lot of unpredictability required in the circuit.

In this way the programmed railroad door control utilizing 8051 miniaturized scale controller is work proficiently and its decreases the human work also, time. This is the simple to control the railroad door activity and it lessens the event of deficiencies.

APPLICATIONS

- A. It very well may be additionally utilized in banks and furthermore in vehicle leaving.
- B. This is utilized in security territories like military and furthermore in own lofts
- C. It can likewise be utilized in schools, universities and so on.



BIBLIOGRAPHY

1. Ajay.V. Deshmukh, **Microcontrollers (Theory and Application)**, Tata McGraw-Hill Publication, 2005.
2. Ahmed Salih Mahdi, Al-Zuhairi, **Automatic Railway Gate and Crossing Control based Sensors & Microcontroller**, International Journal of Computer Trends and Technology (IJCTT), 2013, 4; (7). 2013.
3. Banuchandar J, Kaliraj V, Balasubramanian P, Deepa S, Thamilarasi N, **Automated Unmanned Railway Level Crossing System**, International Journal of Modern Engineering Research (IJMER), 2012, 2 (1); 458-463.
4. Fred Coleman, Young J. Moon, **Trapped Vehicle Detection System for Four Quadrant Gates in High Speed Rail Corridors**, Transportation Research Record, 2011.
5. Fred Coleman, Young J. Moon, **Design of Gate Delay and Gate Interval Time for Four Quadrant Gate Framework at Railroad-Highway Grade Crossings** Transportation Research Record, 2010.
6. Krishna, Shashi Yadav and Nidhi, **Automatic Railway Gate Control using Microcontroller**, Oriental Diary Of Computer Science and Technology, 2013.
7. V.K. Mehta, **Principles of Electronics**, eleventh version, S Chand and Company, S.R.M University, 2009
8. Muhammad Ali Mazidi, Janice Gillispie Mazidi, Rolin.D. McKinlay, **The 8051 Microcontrollers and Inserted System**, second release Pearson Education, 2008

9. Paul .G. Slade, **Electrical Contacts: Principles and Applications**, second version CRC Press

Taylor and Francis gathering, 2013.