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Smart and Sophisticated Artificial Railway Platform

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Abstract: *The main aim of this project is to create an artificial bridge from one platform to other platform. Automate railway track pedestrian crossing without using staircase, especially helpful for the physically handicapped peoples. This project identifies the status of each train using IR transceivers and informs to microcontroller. so this project is useful for railway departments. when the train is not present in the station the artificial bridge is connected and people can walk from one platform to another easily without any use of stairs. when the train comes near the railway station the proximity sensor senses the train and gives information to the microcontroller. So that the artificial bridge disconnects before arrival of the train. Artificial bridge is created up to the train when the train is arrived in opposite track that saves time and provides life security to the person crossing the track.*

I. INTRODUCTION

Currently the Indian Govt searches for the development for Indian railways. A definitive Purpose of this framework is to boost the Indian railway platforms to assist the physically challenged individuals to cross the intersection platforms. The exchanging of physically challenged individuals beginning with one platform then onto successive platform is difficult by utilizing stairs. Movable plate's square measures connected within the middle of the railway tracks within the aspect of the platforms. At the purpose once there is no arrival of the train to the station the movable platforms are going to be opened and consequently moving like carry. The physically challenged people can utilize the moving platform to pass the platforms. At the purpose once the train is incoming moving platforms going to be shut. The projected frame work provides a superior account of exchanging physically challenged people in one platform to a different platform while not utilizing the stairs.

Embedded structures do a completely unique task they cannot be programmed to do different things. Embedded structures have very limited sources, mainly the reminiscence. Normally, they do no longer have secondary garage devices which includes the CDROM or the floppy disk. Embedded structures need to paintings towards a few deadlines. a particular task has to be finished inside a selected time. In some embedded structures, known as actual-time structures, the closing dates are stringent. Lacking a closing date may additionally reason a catastrophe-lack of life or harm to assets. Embedded structures are restricted for power. As many embedded systems operate via a battery, the electricity consumption has to be very low. Some embedded systems must perform in extreme environmental conditions including very high temperatures and humidity.

Transportation systems from flight to automobiles increasingly more use embedded systems. New airplanes include advanced avionics consisting of inertial steering structures and GPS receivers that also have full-size safety requirements. Numerous electric powered vehicles — brushless DC automobiles, induction motors and DC vehicles — use electric/digital motor controllers. Motors, electric automobiles, and hybrid motors an increasing number of use embedded systems to maximize performance and decrease pollution. Other automotive protection systems encompass anti-lock braking gadget (ABS), digital balance manipulate (ESC/ESP), traction control (TCS) and automatic four-wheel pressure. Embedded structures are utilized in transportation, fire safety, protection and protection, medical applications and existence vital systems, as those systems may be isolated from hacking and as a consequence, be more dependable.

II. LITERATURE SURVEY

In the existing method railway platforms are not well developed. Present we are using stairs to move from one platform to other platform. It is difficult for physically challenged people to use the stairs from one platform to other platform. Sometimes people crosses the railway track directly without using stairs. So it is risky for their lives. Many time people will be moving from one platform to another through the trains present on opposite side which may be life threat.



is also difficult for physically disabled persons to use staircase to move from one platform to another and also risky to cross the track in absence of train besides which is very much time consuming

III. PROPOSED SYSTEM

In proposed approach the status of every train is known using IR transceivers and informs it to micro controller. The latest survey from the social analytics was said that the most negative aspects in Indian railway is climbing up the overhead steps for the bodily challenged people. Our proposed system particularly rectifies the difficulty by introducing the brand new concept of synthetic railway platform. For the success approach sensors are used and for the execution we are using H-bridge and for the controlling operations with the help of micro controller. The proximity sensor senses the train as it approaches the station and provides relevant information to controller for further action micro controller. so that the platform is disconnects during the advent of the educate. After the train has arrived another time synthetic platform may be created upto teach on any other side. After the train has arrived from the platform the artificial bridge again closes. After the train has departed artificial platform is formed upto train ti still reduce further difficulty of using staircase

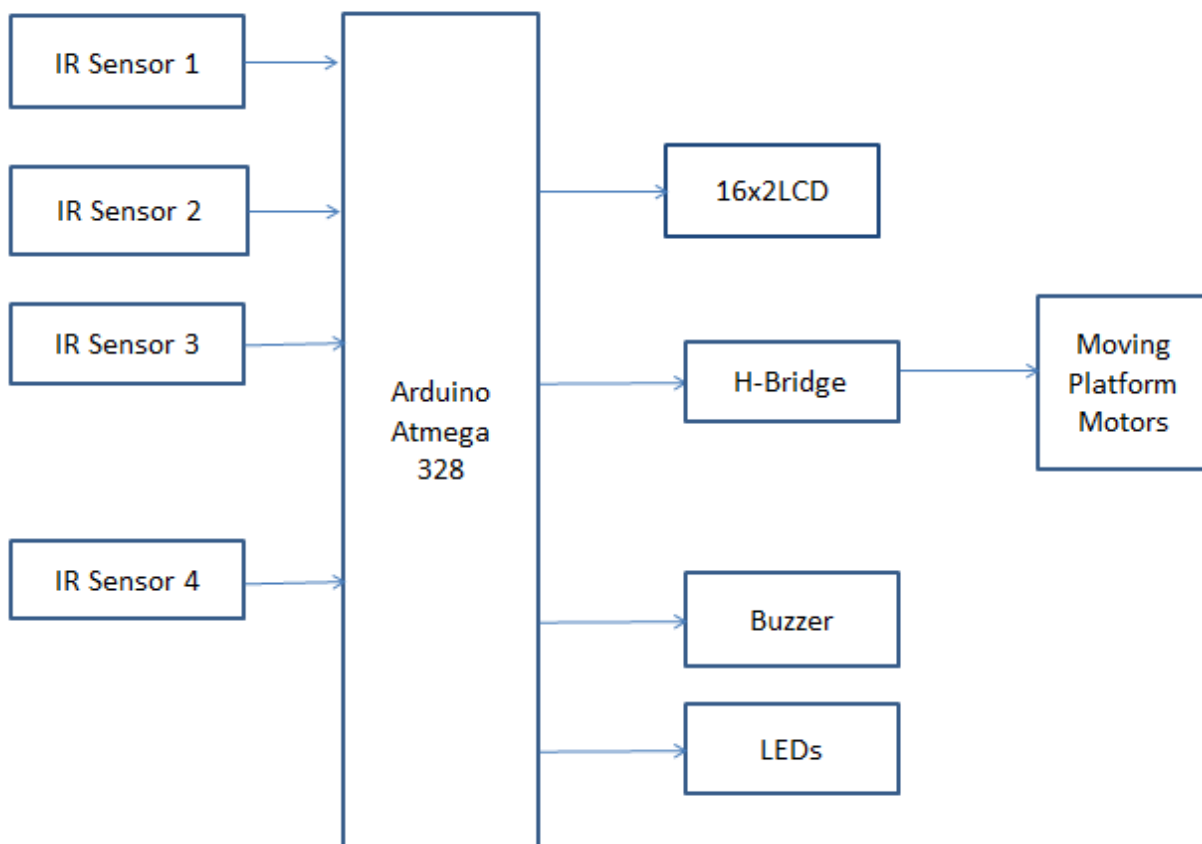


Fig 3.1 Block Diagram

A. Arduino Uno

The Arduino Uno is a microcontroller board primarily based on the ATmega328 (datasheet). Possess 14 virtual input/output pins out of which PWM outputs are used for 6 pins, analog inputs are six, stable crystal oscillator is of 16MHz, with a USB jack along with an energy jack and also ICSP header with a reset button. It consists of the whole thing had to guide the microcontroller; definitely join it to a pc with a USB cable or electricity it with a AC-to-DC adapter or battery to get began. The Uno differs from all previous boards in that it does not use the FTDI USB-to-serial driving force chip. alternatively, it functions the Atmega8U2 programmed as a USB-to-serial converter.



Fig 3.2 Arduino Uno

"Uno" manner one in Italian and is known as to mark the upcoming launch of Arduino 1.zero. The Uno and model 1.0 could be the reference versions of Arduino, moving forward. The Uno is the cutting-edge in a chain of USB Arduino boards, and the reference version for the Arduino platform; for a comparison with previous variations, INDEX OF ARDUINO boards

The Features of Arduino are

- 1) Microcontroller : AT mega Uno
- 2) Operating voltage : 5V
- 3) Input voltage : 7-12 V
- 4) Digital I/O Pins : 14 (of which 6 provide PWM output)
- 5) Analog Input pins : 6
- 6) Dc current per I/O : 40 mA
- 7) DC current 3.3 V pin : 50 mA
- 8) Flash memory : 32 KB of which 0.5 KB used by boot loader
- 9) SRAM : 2 KB
- 10) EEPROM : 1 KB
- 11) Clock : 6MHZ

B. Ir Sensor

A typical IR sensing circuit is shown below.

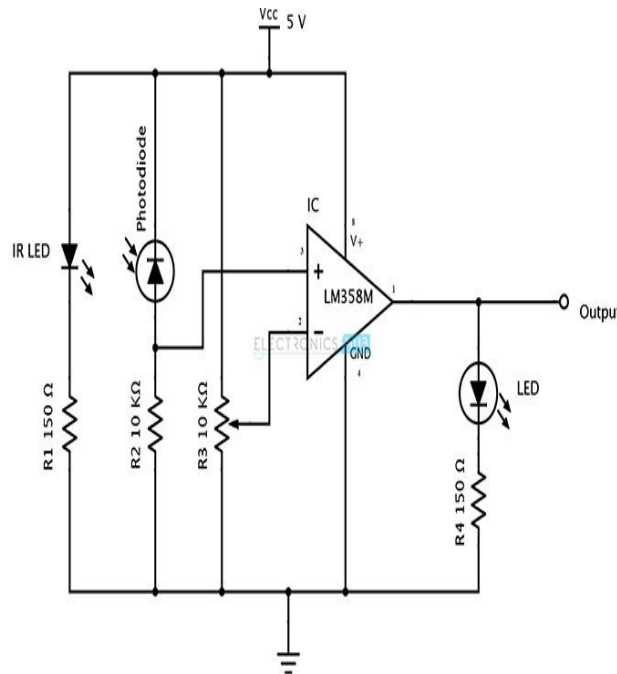


Fig 3.3 Schematic of an IR Sensor

It consists of an IR LED, a photodiode, a potentiometer, an IC Operational amplifier and an LED. IR LED emits infrared light. The photodiode detects the infrared light. Voltage comparator makes use of operational amplifier. Output of the sensor is calibrated by potentiometer. Light emitted by means of the IR LED is incident at the photodiode after hitting an object, the resistance of the photodiode falls down from a large cost. One the op – amp is at threshold value set by means of the potentiometer. The opposite enter to the op-amp is from the photodiode’s collection resistor. When the incident radiation is greater at the photodiode, the voltage drop across the collection resistor will be high. Inside the IC, both the edge voltage and the voltage across the series resistor are compared. If the voltage across the resistor series to photodiode is extra than that of the threshold voltage, the output of the IC Op – Amp is excessive. as the output of the IC is attached to an LED, it lightens up. Potentiometer Adjustments adjust the threshold voltage depending on the environmental conditions. IR LED and the IR Receiver is an crucial element. When the IR LED is held directly in the front of the IR receiver, this setup is known as direct prevalence. In this situation, almost the complete radiation from the IR LED will fall on the IR receiver. Hence there is a line of sight verbal exchange among the infrared transmitter and the receiver. Obstacle along this line, obstructs the radiation from reaching the receiver.

C. Dc Motor

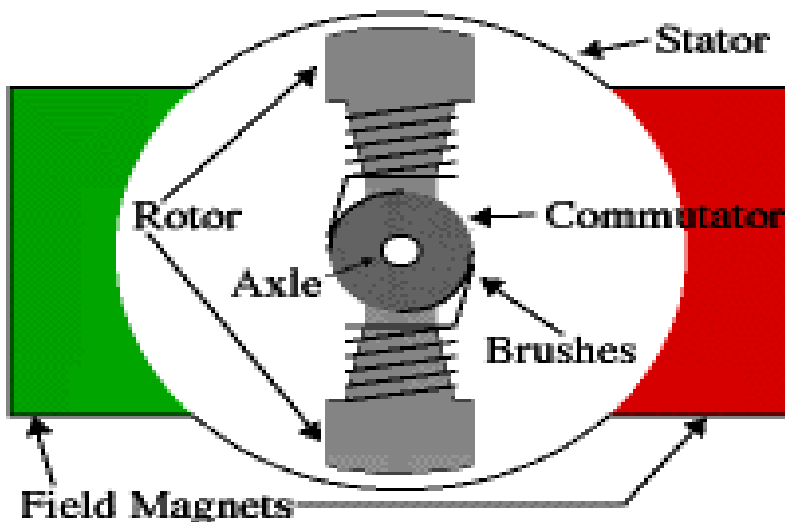


Fig 3.4 DC Motor

In any electric powered engine, operation depends on primary electromagnetism. A modern-conveying conductor creates an appealing area; while this is then set in an out of doors appealing discipline, it will stumble upon a pressure relative to the current inside the conductor, and to the high-quality of the outer appealing area. As you are very a whole lot aware of from gambling with magnets as a infant, inverse (North and South) polarities pull in, while like polarities (North and North, South and South) repulse. The inward arrangement of a DC engine is intended to outfit the appealing collaboration between a cutting-edge-conveying conductor and an outer appealing area to provide rotational movement. How approximately we begin by using taking a gander at a fundamental 2-shaft DC electric engine (here red speaks to a magnet or twisting with a "North" polarization, while green speaks to a magnet or twisting with a "South" polarization).

D. LCD

LCD display includes two traces with 16 characters that includes 5x7 dot matrix. Contrast on display relies upon on the energy deliver voltage and whether messages are displayed in a single or lines, for that reason, variable voltage 0-Vdd is carried out on pin marked as Vee. Trimmer potentiometer is commonly used for that reason. a few versions of presentations have built in backlight (blue or green diodes).

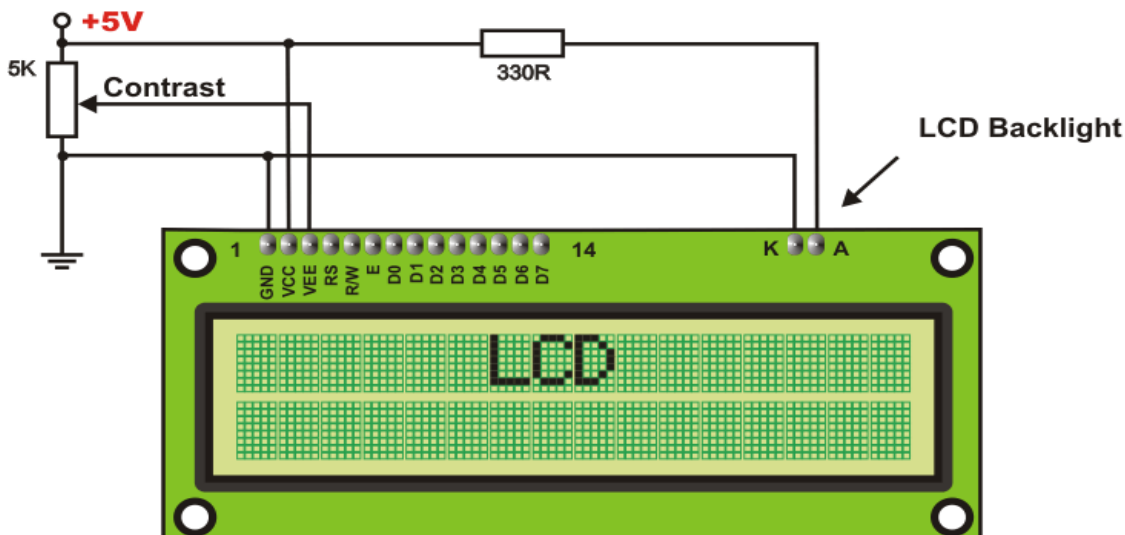


Fig 3.5 LCD

IV. EXPERIMENTAL RESULTS

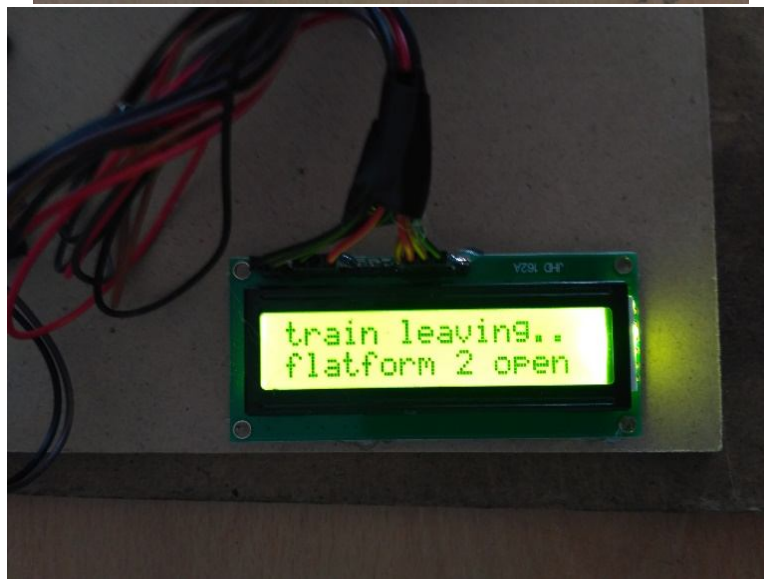


Screenshot 4.1 Displaying Movable Railway Platform on LCD



Screenshot 4.2 Displaying Artificial Platform 1 to be closed as train is
Screenshot 4.3 Displaying Artificial Platform 1 to be opened
as

Approaching train is Leaving

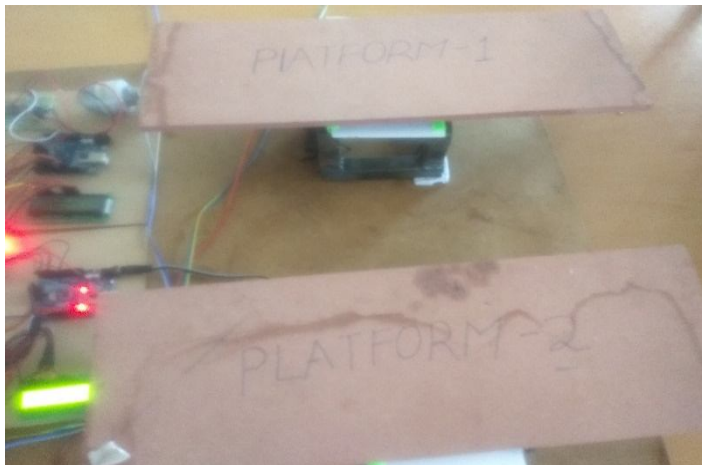


Screenshot 4.4 Displaying Artificial Platform 2 to be closed as train is opened as

Screenshot 4.5 Displaying Artificial Platform 2 to be

Approaching

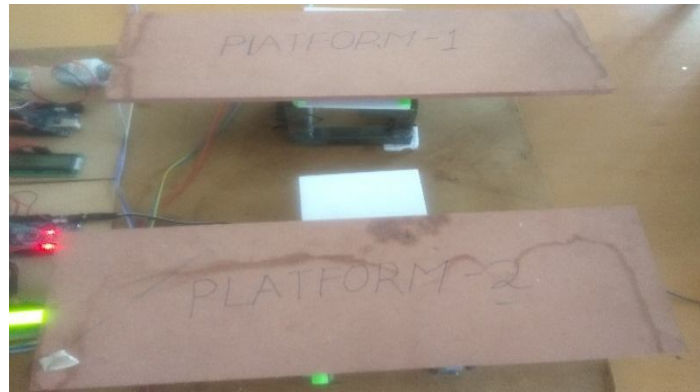
train is Leaving



Screenshot 4.6 Displaying No Artificial Platform is created indicating

Screenshot 4.7 Displaying train at Platform 1 has

left trains are present on both the platforms hence artificial platform is being created



Screenshot 4.8 Displaying train at Platform 2 has left hence artificial Screenshot 4.9 Displaying trains have left both the platforms Platform is being created hence artificial platforms are created

V. CONCLUSION

Here a smart moving artificial platform is created that reduces the burden of the passengers using stair case to move from one platform to another which is also time consuming especially for physically disabled persons. Here with the help of IR sensors the sensing of train is accomplished, based on train departure and arrival the artificial platform is opened and closed. Even after the train has approached at one platform artificial platform from another platform is maintained so as the passengers arriving late may not miss the train. The future enhancement for this can be extended with high load withstanding capability artificial platform.

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