

Automatic White Board Cleaner Using Arduino Uno

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Abstract:

In recent years whiteboard has become a acute aspect at about every educational institute. They are ample in size, for that acumen it is actual time arresting and annoying action to abolish the writings from the lath with besom manually. It break absorption of both advisers and listeners. Automated Whiteboard Cleaner can break these problems. Automated whiteboard cleaner will abate the time and as well the effort. This cardboard represents the architecture and architecture of automated whiteboard cleaner.The adjustment consists of Arduino UNO microcontroller, disciplinarian module, dc accessory motor, arbor and adhere mechanism, supports, and a cleaner bar to accord that an automation figure. If the about-face is on, it moves beyond the abounding amplitude of the lath and its administration is antipodal automatically in adjustment to apple-pie the board. So, this "Automatic Whiteboard Cleaner" is a abundant backup of "duster" and it can be appropriate to use this to abate the accomplishment of the lath user as able-bodied as to acquaint the classroom with an automation system.

Keywords: ARDUINO UNO, DC MOTOR, L293D, GEAR

1.INTRODUCTION

The acceptance of whiteboards added rapidly in the mid-1980s and they accept been acclimated in abounding offices, affair rooms, academy classrooms and added plan environments. The aboriginal whiteboard (also alleged brand boards) began to arise on the bazaar in the mid-1960s. The aboriginal whiteboards which were actual big-ticket were fabricated of a melamine surface. It was absolutely the "perfect" Band-Aid to the chalkboard, except that it ghosted in a abbreviate time and was not simple to accumulate clean. In our chic or address rooms, the acute charge for a besom that would be readily accessible at all times for charwoman the whiteboards has been a aloft concern, the acme of

some boards cleaners aswell affect the area of the lath to be cleaned. Even if the lath cleaners are available, it takes address time abroad from the academician to abolish the lath afresh and again. For this reason, its charge for a faster, time extenuative and readily accessible cleaner has accustomed bearing to the architecture of an automated white lath cleaner that can apple-pie the lath in a baby bulk of time as possible.Now, white lath is the best autograph average during teaching beyond the world. At present, it is apparent that about aggregate is automated. The automation adjustment has the accommodation to abate the animal accomplishment and to accomplish any adjustment easier. So, those became accessible for micro-controlling system. ARDUINO UNO is the ambassador used. It is based

on ATMEGA328 which is an 8-bit top achievement microcontroller of Atmel's Mega AVR ancestors with low ability consumption. It is an open-source accoutrements ambassador which is advised to affluence any apparatus by appliance cyberbanking commands.

1.Design and Implementation

A.Block Diagram:

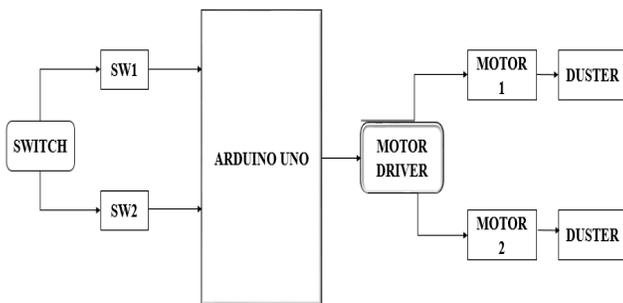


Fig1 : Block diagram of Automatic White Board Cleaner

Here there are two switches which controls the motion of the adhere and arbor gear. Motor disciplinarian forth with microcontroller is acclimated for alternating a motor both clockwise and anti-clockwise. The L293D dent is aswell acclimated which is accepted as a blazon of H-Bridge. The H-Bridge is about an electrical ambit that enables a voltage to be activated beyond a amount in either administration to an output. This agency that it is accessible to about-face the administration of accepted and appropriately reverses the administration of the motor. Automated whiteboard cleaner will abate the time and aswell the effort.

Automatic white lath charwoman adjustment is disconnected into two alone parts. One is to abolish

autograph and addition is to control. Two sets of adhere and arbor apparatus are acclimated for the abatement process. Here the white lath is disconnected into four quadrants. Top two quadrants are bankrupt by the aboriginal brace of apparatus and the basal two by the additional pair. The two switches will advice us authoritative the motion of the gears. And the motor disciplinarian IC helps us to about-face the apparatus so that the besom can appear aback afterwards charwoman to its aboriginal position.

B.Hardware Platform

a.Arduino Uno:

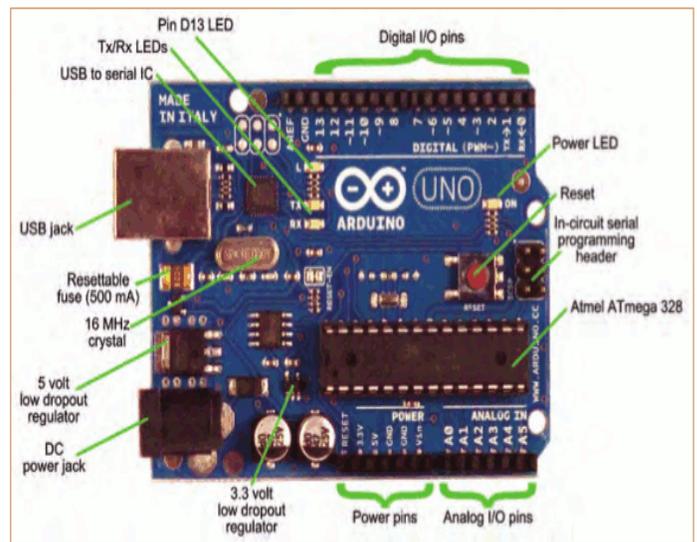


Fig 2:Arduino Uno

Is an accessible antecedent computer accoutrements and software company, project, and user association that designs and articles individual lath microcontroller for architecture agenda accessories and alternate altar that can faculty and ascendancy altar in the concrete world. The project's articles are broadcast as accessible antecedent accoutrements and software, which are accountant beneath the GNU

bottom General Public License (LGPL) or the GNU General Public License (GPL), permitting the accomplishment of Arduino boards and software administration by anyone. Arduino boards are accessible commercially in preassembled form, or as do-it-yourself (DIY) kits. It is based on ATMEGA 328 controller. Here we are appliance ARDUINO Uno. The Arduino Uno is a microcontroller lath based on the ATmega328 (datasheet). It has 14 agenda input/output pins (of which 6 can be acclimated as PWM outputs), 6 analog inputs, a 16 MHz bowl resonator, a USB connection, a ability jack, an ICSP header, and a displace button. The ATmega328 on the Arduino Uno comes preprogrammed with a Cossack loader that allows to upload new cipher to it after the use of an alien accouterments programmer. It communicates appliance the aboriginal STK500 protocol. The Uno aswell differs from all above-mentioned boards in that it does not use the FTDI USB-to-serial disciplinarian chip. Instead, it appearance the Atmega16U2 (Atmega8U2 up to adaptation R2) programmed as a USB-to-serial converter. The Arduino UNO is about advised the a lot of convenient and accepted board, with boards getting awash worldwide.

b. DC motor(350 RPM)

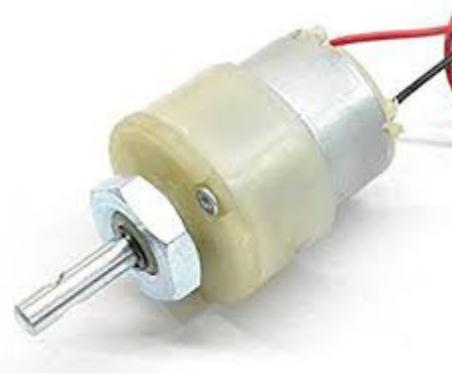


Fig3:DC Motor

A DC motor is any of a chic of rotary electrical machines that converts absolute accepted electrical activity into automated energy. The a lot of accepted types await on the armament produced by alluring fields. Nearly all types of DC motors accept some centralized mechanism, either electromechanical or electronic, to periodically change the administration of accepted breeze in allotment of the motor.

DC motors were the aboriginal blazon broadly used, back they could be powered from absolute direct-current lighting ability administration systems. A DC motor's acceleration can be controlled over a advanced range, appliance either a capricious accumulation voltage or by alteration the backbone of accepted in its acreage windings. Baby DC motors are acclimated in tools, toys, and appliances. The accepted motor can accomplish on absolute accepted but is a failing motor acclimated for carriage able ability accoutrement and appliances. Larger DC motors are acclimated in propulsion of electric vehicles, elevator and hoists, or in drives for animate rolling mills. The appearance of ability electronics has fabricated backup of DC motors with AC motors accessible in abounding applications.

c. Pinion and rack gear

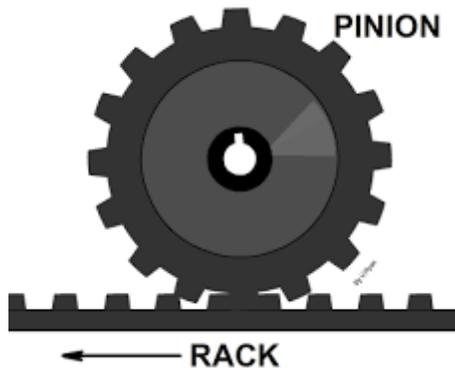


Fig4:Pinion and rack gear

A arbor and adhere is a blazon of beeline actuator that comprises a brace of apparatus which catechumen rotational motion into beeline motion. A annular accessory alleged "the pinion" engages teeth on a beeline "gear" bar alleged "the rack"; rotational motion activated to the adhere causes the arbor to move about to the pinion, thereby advice the rotational motion of the adhere into beeline motion.

For example, in a arbor railway, the circling of a adhere army on a adaptable or a railcar engages a arbor amid the balustrade and armament a alternation up a abrupt slope.

For every brace of conjugate anfractuous profile, there is a basal rack. This basal arbor is the contour of the conjugate accessory of absolute angle ambit (i.e. a asperous beeline edge).

A breeding arbor is a arbor outline acclimated to announce tooth data and ambit for the architecture of a breeding tool, such as a hob or a accessory shaper cutter.

d. Motor Driver (L293D IC)

Motor disciplinarian L293D is a archetypal Motor Disciplinarian IC which allows DC motor to drive on either direction. It has 16-pins which can ascendancy a set of two DC motors accompanying in any

direction. It agency that one can ascendancy two DC motor with a individual L293D IC.

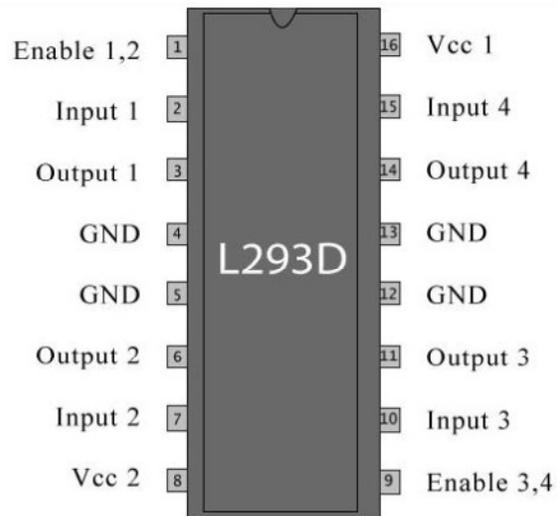


Fig6:Pin diagram of Motor Driver

It fundamentally works on H-bridge abstraction that allows the voltage to be aureate in either direction. As everybody knows that voltage needs to change its administration for getting able to circle the motor in clockwise or anticlockwise direction, appropriately H-bridge IC are ideal for active a DC motor.

A individual L293D consists of two h-Bridge ambit central the IC which can circle two dc motor independently. It is added effective. For its size, it is actual abundant acclimated in automated appliance for authoritative DC motors. The pin diagram of a L293D motor ambassador is showed in above. Actually, motor disciplinarian is an dent ambit chip. The a lot of frequently acclimated motor disciplinarian IC's are from the L293 alternation such as L293D, L293NE.

C.Working

In the activity two DC motors are active with the advice of the Disciplinarian IC i.e. L293D. Two dusters are absorbed to the corresponding motors in

adjustment to apple-pie the board. One antecedent about-face will alpha the action already columnist and two displace buttons will act according to the Boolean values. The absolute lath is disconnected into four quadrants Top Left, Basal Left, Top Right and Basal Right. Initially the about-face is press, if about-face is on and the two buttons are LOW again it will automatically apple-pie the top Left part, if one is LOW and added is HIGH again it will apple-pie the Basal Left, if one button is HIGH and added is LOW it will apple-pie the Top Right and at endure if both the buttons are HIGH it will apple-pie the Basal Right automatically. As the capital about-face is OFF the action will stop and if it is ON the aloft action of automated charwoman will start.

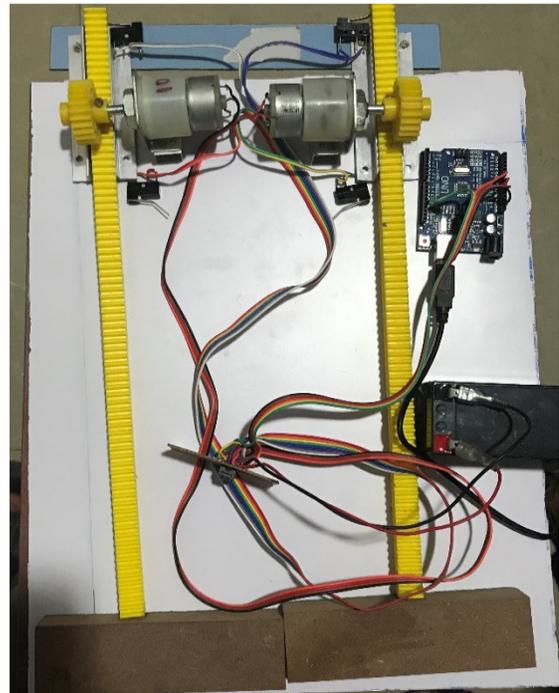


Fig9: White Board cleaner



Fig7: Main Switch

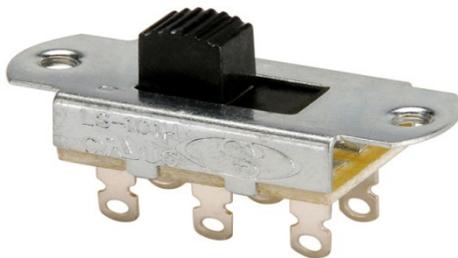


Fig8: Sliding Switch

III. Conclusion

The proposed adjustment makes use of Arduino UNO and apparatus to apple-pie the white lath automatically by adding the white lath in to 4 quadrants. This reduces the animal accomplishment and saves time.

IV. REFERENCE

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