

DESIGNING AND IMPLEMENTATION OF WATER VENDING MACHINE

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ABSTRACT:

Now a day's water vending machines are available and operated on only one coin but our aim is to design water vending machine which is operated on different coins. In India there is problem of safe drinking water therefore we are going to provide mineral water. Water has become the most commercial products of the century. This may sound bizarre, but true. The stress on the multiple water resources is a result of a multitude of factors. On the one hand, the rapidly rising population and changing lifestyles have increased the need for fresh water. If opportunity costs were taken into account, it would be clear that in most rural areas, households are paying far more for water supply than the often-normal rates charged in urban areas. Also, if this cost of fetching water which is almost equivalent. To 150 million women days each year, is covered into a loss for the national exchequer, it translates into a whopping 10 billion rupees per year.

Keywords: Arduino controller, coin acceptor module, Lcd display, Solenoid valve

INTRODUCTION

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Figure 1: Arduino controller

1. Arduino controller

An Arduino board consists of an Atmel 8-bit, 16-bit and 32-bit AVR microcontroller with complementary components that facilitate programming and incorporation into other circuits. An important aspect of the Arduino is its standard connectors, which lets users connect the CPU board to a variety of interchangeable add-on modules known as shields. Some shields communicate with the Arduino board directly over various pins, but many shields are individually addressable via an PC serial bus so many shields can be stacked and used in parallel. Official Arduinos have used the mega AVR series of chips, specifically the ATmega8, ATmega168, ATmega328, ATmega1280, and ATmega2560. A handful of other processors have been used by Arduino compatibles.

. Most boards include a 5 volt linear regulator and a 16 MHz crystal oscillator (or ceramic resonator in some variants), although some designs such as the Lily Pad run at 8 MHz and dispense with the onboard voltage regulator due to specific form-factor restrictions. An Arduino microcontroller is also pre-programmed with a boot loader that simplifies uploading of programs to the on-chip flash memory, compared with other devices that typically need an external programmer. This makes using an Arduino more straightforward by allowing the use of an ordinary computer as the programmer.

1)Coin acceptor module:

When coin is inserted into the machine, it will get detected, after that machine will be switched on automatically and it will give Xerox of the page which is kept inside the machine. In this type of machine one rupees coin is used

2) Coin rejection:

Coin rejecter separates coins according to their size, weight, metal hardness and magnetic properties. When rejecter is adjusted for other coin, the result is not necessarily perfect. Too small diameter coins drop through the machine and are rejected. Too big ones do not get into the cradle because of size limiter. So the coin having right size will only move forward.

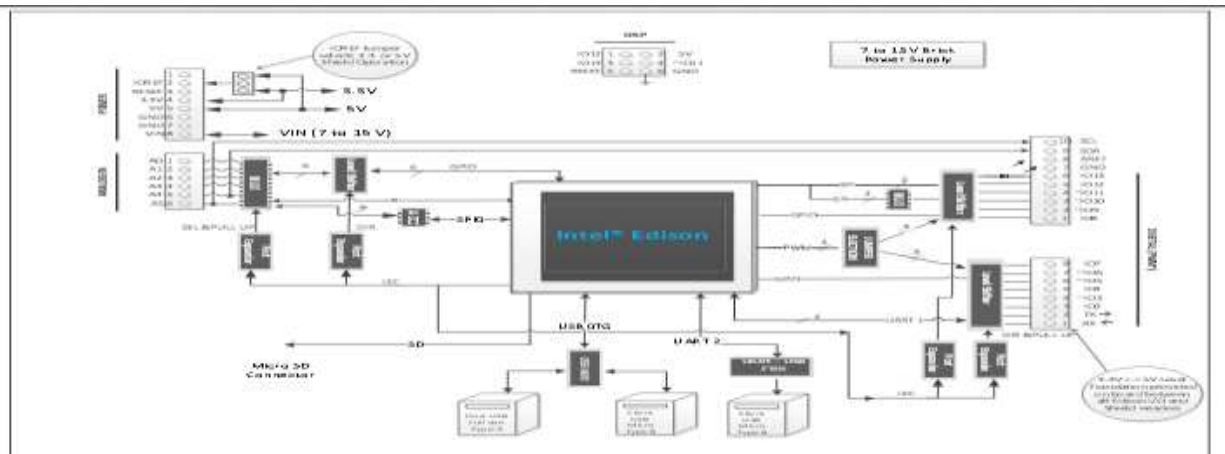


Fig 2. Architecture Diagram

2.SOLONOID VALVE



Fig no 3

This is simple on/off type 9V dc supply valve. This type of valve is used in motors. This module consists of interface between vending machine and water output valve with the help of Arduino microcontroller and its programming by using different sensors and pulse signals.

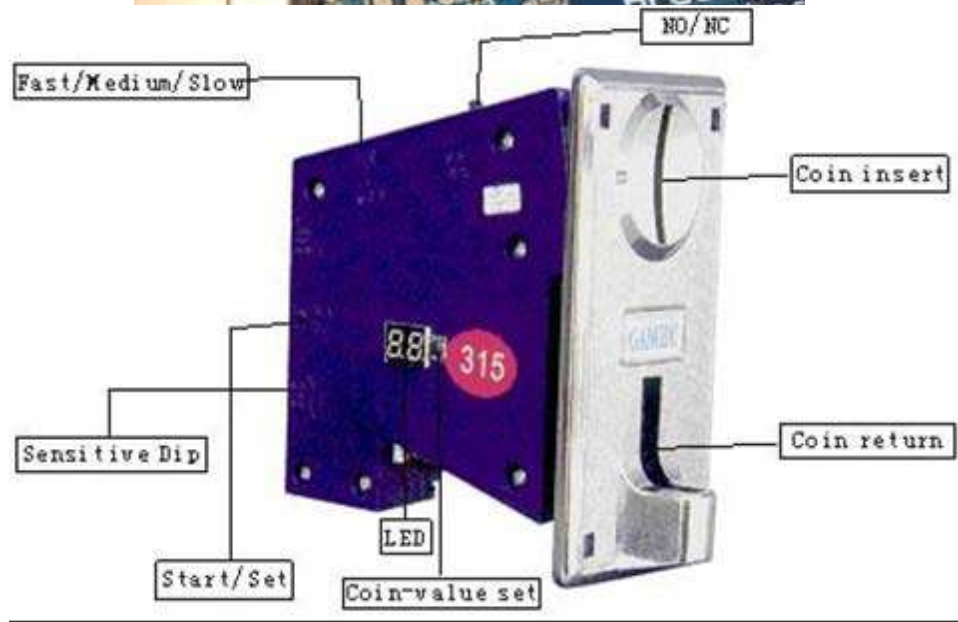


Fig 4.coin acceptor module

1st displays message on LCD as “Insert Coin. User inserts a coin in machine. User inserts a coin in coin box. It passes through the path where sensors are situated. If coin is accepted, passes signal to valve. If coin is rejected then exist coin from machine.

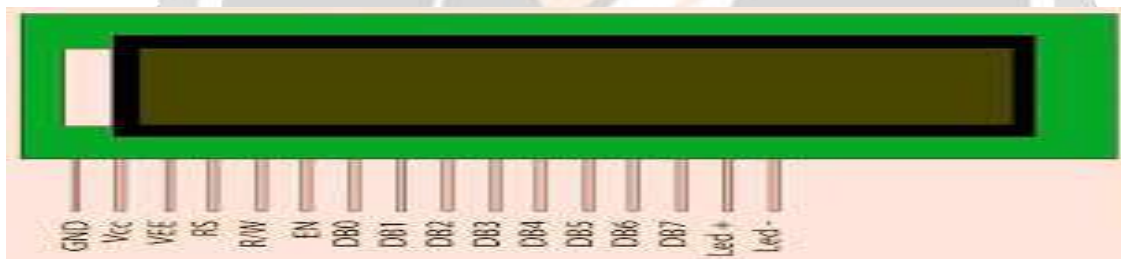
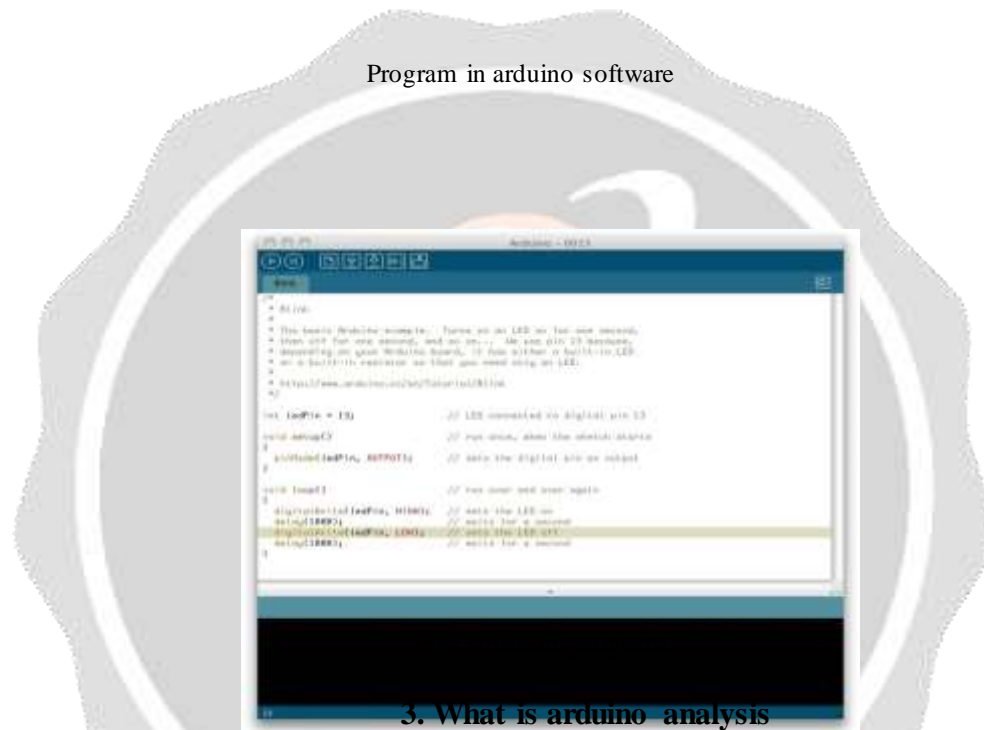


Fig 5. LCD Display

A liquid-crystal display (LCD) is a flat panel display, electronic visual display, or video display that uses the light modulating properties of liquid crystals. Liquid crystals do not emit light directly. LCDs are available to display arbitrary images (as in a general-purpose computer display) or fixed images which can be displayed or hidden, such as preset words, digits, and 7-segment displays as in a digital clock. They use the same basic technology, except that arbitrary images are made up of a large number of small pixels, while other displays have larger elements.

Fig6. Arduino analog pins and its component



In its simplest form, an Arduino is a tiny computer that you can program to process inputs and outputs going to and from the chip. The Arduino is what is known as a Physical or Embedded Computing platform, which means that it is an interactive system, that through the use of hardware and software can interact with its environment.

For example, a simple use of the Arduino would be to turn a light on for a set period of time, let's say 30 seconds, after a button has been pressed (we will build this very same project later in the book). In this example, the Arduino would have a lamp connected to it as well as a button. The Arduino would sit patiently waiting for the button to be pressed. When you press the button it would then turn the lamp on and start counting. Once it had counted 30 seconds it would then turn the lamp off and then carry on sitting there waiting for another button press. You could use this set-up to control a lamp in an under stairs cupboard.

For example. You could extend this example to sense when the cupboard door was opened and automatically turn the light on, turning it off after a set period of time. The Arduino can be used to develop stand-alone interactive objects or it can be connected to a computer to retrieve or send data to the Arduino and then act on that data (e.g. Send sensor data out to the internet). The Arduino can be connected to LED

4. TEST COIN

Coin inserted in machine such as 2 rupees coin, 5 rupees coin ,and 10 rupees coin and see the acceptance ratio of the coin

Table1. Testing Activities

Activity(coin)	No. Of Readings	TestResults
2 rupees coin	15	90%
5 rupees coin	15	90%
10 rupees coin	15	96%
2 rupees coin	50	95%
5 rupees coin	50	95%
10 rupees coin	50	100%

5.CONCLUSION:

1. In our project we conclude that acceptance ratio is almost 100% and vending machine works on arduino controller .To develop low cost water vending machine. To avoid wastage of water.

6. REFERENCE:

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