



# INSTITUTE OF ENGINEERING AND TECHNOLOGY

## LUCKNOW



### DEPARTMENT OF ELECTRONICS AND INSTRUMENTATION

### SECOND YEAR

### SESSION: 2019-2020

### A MINI PROJECT REPORT

### ON

### “BOTTPAY”

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# Introduction

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There was a time when no dustbins were installed in villages or metro cities. Then people were used to throw their garbage at random places, which creates the unhealthy environment/cause death of animals by eating plastics. Soon dustbins were installed at villages/Cities/Public places. But still some people used to throw garbage due to some reasons-

- Dustbins are installed at long distances.
- Many times people feel lazy to go to the dustbin and throw garbage at random place in a hurry.
- Some people are not aware of the harm of garbage storing in open area for a long time.



# Object

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Regarding all of the above issues, we are developing an electronic machine which motivate people to take a step to make our environment healthy. To use this electronic machine we have to firstly pay bottle corresponding to bottle quantity machine will pay some money to person.

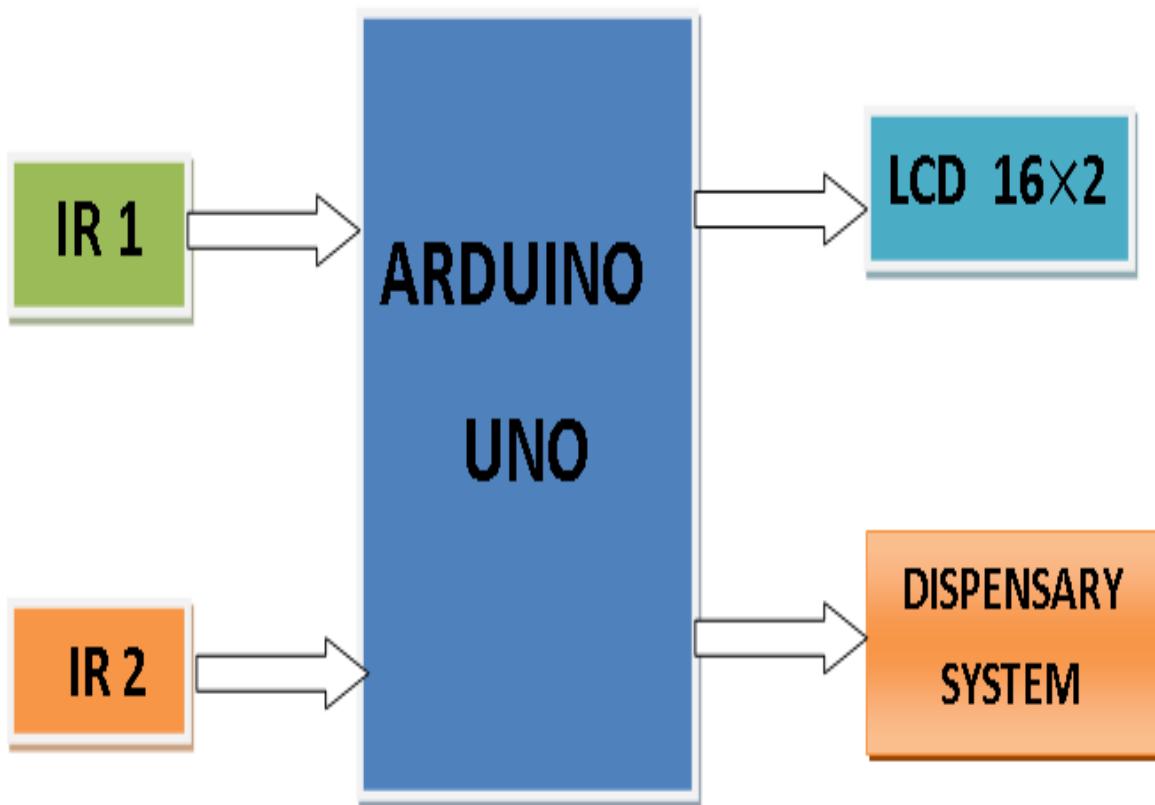
It will help people to be motivated to throw dust only in dustbins in different ways as follows:-

- The device will be under the management of any NGO or Nagar Nigam.
- there is one more important of this project that ---

**We saw many children on crossroad begging or collecting garbage like- plastic,etc for money. After our project being installed at the crossroad they can collect the plastic or garbage and put into our machine and in return of garbage they can earn money. This will help those poor families and children to earn money and live a good life by helping making our city cleaner.**

# Block Diagram

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# Element Required

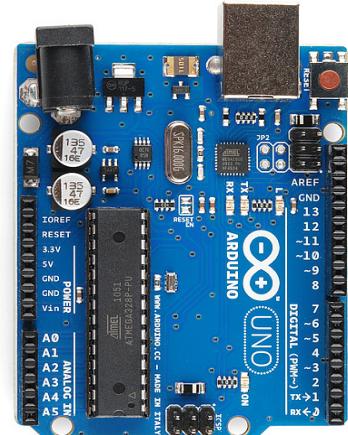
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## ARDUINO UNO

The **Arduino Uno** is an [open-source microcontroller board](#) based on the [Microchip ATmega328P](#) microcontroller.

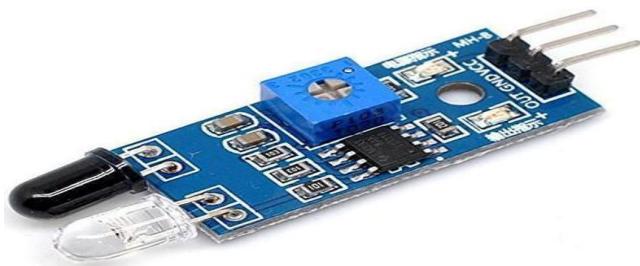
### Technical specifications

- [Microcontroller: Microchip ATmega328P](#) <sup>[7]</sup>
- Operating Voltage: 5 Volts
- Input Voltage: 7 to 20 Volts
- Digital I/O Pins: 14 (of which 6 can provide PWM output)
- Analog Input Pins: 6
- DC Current per I/O Pin: 20 mA
- DC Current for 3.3V Pin: 50 mA
- [Flash Memory](#): 32 KB of which 0.5 KB used by [bootloader](#)
- [SRAM](#): 2 KB
- [EEPROM](#): 1 KB
- Clock Speed: 16 MHz
- Length: 68.6 mm
- Width: 53.4 mm
- Weight: 25 g



# *IR SENSOR*

An [infrared sensor](#) is an electronic device, that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of an object as well as detects the motion.

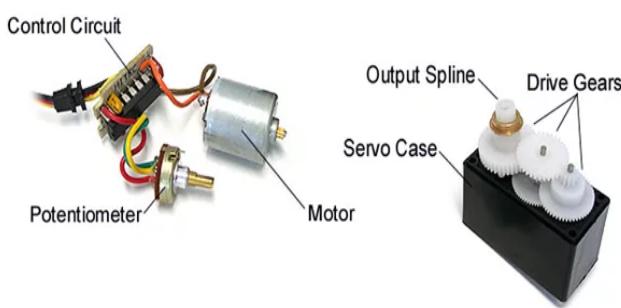


- Operating Voltage: **3.0V – 5.0V**
- Detection range: **2cm – 30cm (Adjustable using potentiometer)**
- Current Consumption:at **3.3V : ~23 mA, at 5.0V: ~43 mA**
- Active output level: **Outputs Low logic level when obstacle is detected**
- On board Obstacle Detection LED indicator

# Servo Motor

A **servomotor** is a [rotary actuator](#) or [linear actuator](#) that allows for precise control of angular or linear position, velocity and acceleration.<sup>[1]</sup> It consists of a suitable motor coupled to a sensor for position feedback. It also requires a relatively sophisticated controller, often a dedicated module designed specifically for use with servomotors.

Servos are controlled by sending an electrical pulse of variable width, or **pulse width modulation** (PWM), through the control wire. There is a minimum pulse, a maximum pulse, and a repetition rate. A servo motor can usually only turn 90° in either direction for a total of 180° movement.



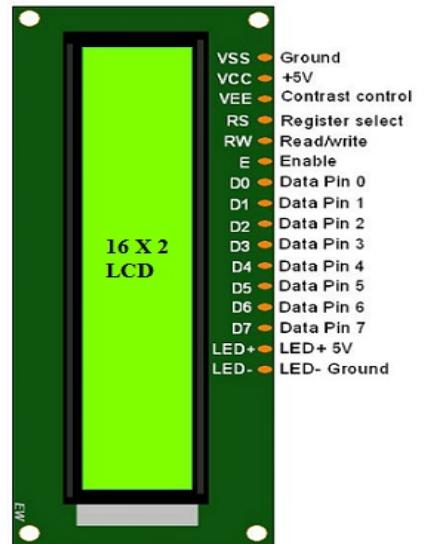
## Technical Details

- Power: 4.8V - 6V DC max (5V works well)
- Average Speed: 60 degrees in 0.20 sec (@ 4.8V), 60 degrees in 0.16 sec (@ 6.0V)
- Weight: 62.41g
- Torque: At 4.8V: 8.5 kg-cm / 120 oz-in, and at 6V: 10 kg-cm / 140 oz-in.
- Size mm: (L x W x H) 40.7 x 19.7 x 42.9

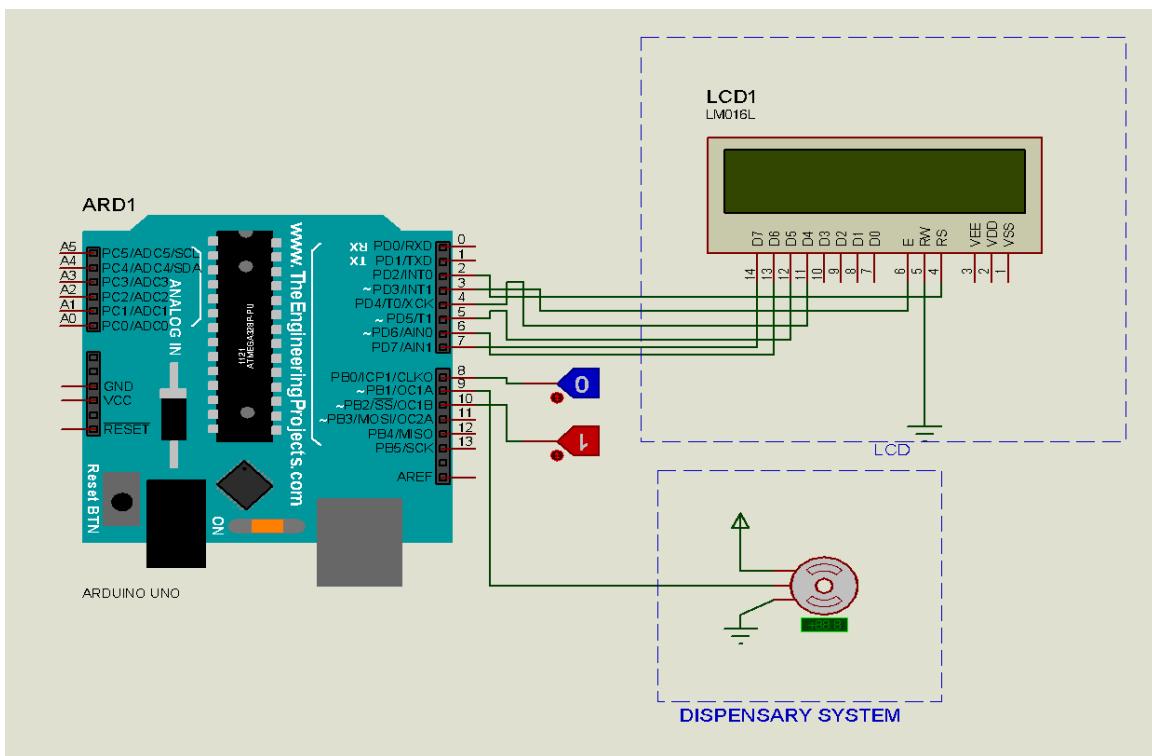
# *LCD(Liquid Crystal Display)*

The term LCD stands for liquid crystal display. It is one kind of electronic display module used in an extensive range of applications like various circuits & devices like mobile phones, calculators, computers, TV sets, etc. These displays are mainly preferred for multi-segment light-emitting diodes and seven segments. The main benefits of using this module are inexpensive; simply programmable, animations, and there are no limitations for displaying custom characters, special and even animations, etc.

- The operating voltage of this LCD is 4.7V-5.3V
- It includes two rows where each row can produce 16-characters.
- The utilization of current is 1mA with no backlight
- Every character can be built with a  $5 \times 8$  pixel box
- The alphanumeric LCDs alphabets & numbers
- Its display can work on two modes like 4-bit & 8-bit
- These are obtainable in Blue & Green Backlight
- It displays a few custom generated characters



# Circuit Diagram



## References

1. <https://www.arduino.cc>
  2. <https://circuitdigest.com/article/servo-motor-basics>
  3. <https://www.elprocus.com/ever-wondered-lcd-works/>
  4. <https://youtu.be/ufwN65j4kWo>

