CODE EXPLAINATION:

```
#include <LiquidCrystal.h>
```

Header file For LCD Build in functions.

```
LiquidCrystal lcd(10,9,5,4,3,2);
```

Defining Arduino Pins for LCD

```
const int trigPin = 11;
const int echoPin = 12;
const int trigPi = 7;
const int echoPi = 8;
const int trigP = 18;
const int echoP = 19;
```

We have use three ultrasonic sensor. Here define the pins for each sensor's echo and trigger. We named these sensors pins as trigPin and echoPin for first sensor, trigPi and echoPi for second sensor, trigp and echoP for third sensor.

```
long duration;
int lenght;
int width;
int area;
int height;
int volume;
```

Here we declare variable for our program, duration for store time to transmit wave and receive wave.

```
void setup() {
  // setup code here, to run once:
    analogWrite(6,100);
    lcd.begin(16,2);
    pinMode(trigPin, OUTPUT); // Sets the trigPin as an Output
    pinMode(echoPin, INPUT); // Sets the echoPin as an Input
    pinMode(trigPi, OUTPUT);
    pinMode(echoPi, INPUT);
    pinMode(trigP, OUTPUT);
    pinMode(echoP, INPUT);
    Serial.begin(9600); // Starts the serial communication
 }
```

'Void Setup()' this is a default function , this function will run just one time. This function is use to setup which pin of sensor's we want to use as input and which for output.

Lcd.begin(16,2) because this LCD display is 16x2 LCD, it just display 2 Rows of 16 characters.

Serial.begin(9600) it will start serial communication with Arduino.

```
void loop() {
lcd.clear();
```

The code is this function will run until when this function not get any exit. Lcd.clear() this function will clear the display.

```
long duration, distance,distance_w,area,height,volume;
 digitalWrite(trigPin,HIGH);
 delayMicroseconds(1000);
 digitalWrite(trigPin, LOW);
 duration=pulseIn(echoPin, HIGH);
 int t=duration/2;
  float v = 1/29.1;
  distance = v*t;
  length =29-distance;
```

digitalWrite(trigPin,High) by this function we high the trigger pin sensor, And throw a wave in space.

delayMicrosecond(1000) by this function we transmitting the wave for 1000 micro second and then we will stop the wave transmitting by digitalWrite(trigPin,Low)

duration is a variable it store the time to transmit wave and receive wave by 'Pulsein(echoPin,High)' it high the echo pin of the sensor.

length= 29-v*t;

duration/2 because at first the wave transmit and reflected with the object and come back to the receiver so the wave travel same distance twice so we divide it by two to find actual time.

29-v*t because initially the layout length is 29 we subtract 29 so that, we get zero initially when we don't put any object.

This all same process will apply in width and height also.

```
  lcd.setCursor(0,0);
  lcd.print("L=");
  lcd.setCursor(2,0);
  lcd.print(distance);
  lcd.setCursor(5,0);
  lcd.print("CM");
```

```
// code for width
digitalWrite(trigPi,HIGH);
 delayMicroseconds(1000);
 digitalWrite(trigPi, LOW);
 duration=pulseIn(echoPi, HIGH);
 width=28-(duration/2)/29.1;
  lcd.setCursor(7,0);
  lcd.print(" w=");
  lcd.setCursor(10,0);
  lcd.print(width);
```

```
  lcd.setCursor(13,0);
  lcd.print("CM");

//code for height
 digitalWrite(trigP,HIGH);
 delayMicroseconds(1000);
 digitalWrite(trigP, LOW);
 duration=pulseIn(echoP, HIGH);
 height =15-(duration/2)/29.1;
  lcd.setCursor(0,1);
  lcd.print("H= ");
  lcd.setCursor(2,1);
  lcd.print(height);
  lcd.setCursor(5,1);
  lcd.print("CM");
delay(3000);
lcd.clear();

//code for Area
  area=width*length;
  lcd.setCursor(0,0);
  lcd.print("AREA= ");
  lcd.setCursor(6,0);
  lcd.print(area);
  lcd.setCursor(10,0);
  lcd.print("CM^2");

//code for Volume
  volume=width*length*height;
  lcd.setCursor(0,1);
  lcd.print("VOLM= ");
  lcd.setCursor(6,1);
  lcd.print(volume);
```

This code for Display in LCD screen, the Display we have used it can rows of 16 characters in one time. So we have to arrange it.

Lcd.setCursor(0,1) beginning of display first column and second row.

Lcd.print(" we can print anything in LCD by this function");

Lcd.print(variable) also can print direct variable's value.

```
    lcd.setCursor(10,1);
    lcd.print("CM^3");
delay(3000);
}
```

Here the code of our project we tried to explain this on easy way. So that anyone can understand this code.