```
#include <Servo.h>
Servo myServo;

#define SensorPin A0                    //pH meter Analog output to Arduino Analog Input 0
#define Offset 0.00                     //deviation compensate
#define LED 9
#define samplingInterval 20
#define printInterval 800
#define ArrayLenth    40        //times of collection
int pHArray[ArrayLenth];      //Store the average value of the sensor feedback
int pHArrayIndex=0;
void setup(void)
{
   myServo.attach(13);
   pinMode(LED,OUTPUT);
   Serial.begin(9600);
   Serial.println("pH meter experiment!");        //Test the serial monitor
}
void loop(void)
{
   static unsigned long samplingTime = millis();
   static unsigned long printTime = millis();
   static float pHValue,voltage;
   if(millis()-samplingTime > samplingInterval)
   {
         pHArray[pHArrayIndex++]=analogRead(SensorPin);
         if(pHArrayIndex==ArrayLenth)pHArrayIndex=0;
         voltage = avergearray(pHArray, ArrayLenth)*5.0/1024;
         pHValue = 3.5*voltage+Offset;
         samplingTime=millis();
   }
   if(millis() - printTime > printInterval)      //Every 800 milliseconds, print a numerical, convert the
state of the LED indicator
   {
      Serial.print("Voltage:");
            Serial.print(voltage,2);
            Serial.print("        pH value: ");
      Serial.println(pHValue,2);
            digitalWrite(LED,digitalRead(LED)^1);
            printTime=millis();
      if(pHValue<4.0){
      myServo.write(60);
```

```
        delay(1500);
        myServo.write(0);
        delay(1500);
        }
        if (digitalRead(3) == HIGH) {
        myServo.write(60);
        delay(1500);
        myServo.write(0);
        delay(1500);
    }
    }
}
double avergearray(int* arr, int number){
    int i;
    int max,min;
    double avg;
    long amount=0;
    if(number<=0){
        Serial.println("Error number for the array to avraging!/n");
        return 0;
    }
    if(number<5){      //less than 5, calculated directly statistics
        for(i=0;i<number;i++){
            amount+=arr[i];
        }
        avg = amount/number;
        return avg;
    }else{
        if(arr[0]<arr[1]){
            min = arr[0];max=arr[1];
        }
        else{
            min=arr[1];max=arr[0];
        }
        for(i=2;i<number;i++){
            if(arr[i]<min){
                amount+=min;                //arr<min
                min=arr[i];
            }else {
                if(arr[i]>max){
                    amount+=max;        //arr>max
                    max=arr[i];
```

```
            }else{
                amount+=arr[i]; //min<=arr<=max
            }
        }//if
    }//for
    avg = (double)amount/(number-2);
}//if
return avg;
}
```