AUTOMATIC WATER DISPENSER USING SERVO

**Objective**

To build an automatic water dispensing system that uses an **ultrasonic sensor** to detect the presence of an object (like a hand or glass) and activates a **servo motor** to dispense water. This touchless mechanism promotes hygiene and water conservation.

**Required Components**

|  |  |
| --- | --- |
| **Component** | **Quantity** |
| **Arduino Uno** | **1** |
| **Ultrasonic Sensor** | **1** |
| **Servo Motor** | **1** |
| **Buzzer / LED (optional)** | **1** |
| **Jumper Wires** | **Several** |

**Working Principle**

1. The ultrasonic sensor continuously measures the distance in front of it.
2. When it detects an object (like a hand or glass) within 50 cm, the system:
   * Activates the servo to pour water (moves to 90°).
   * Turns on a buzzer / LED (optional).
3. When the object is removed, the system:
   * Returns the servo to its original position (0°).
   * Turns off the buzzer/ LED

**CODE**

#include <Servo.h>

Servo water;

long times;

int distance;

void setup() {

pinMode(2,OUTPUT);

pinMode(3,INPUT);

// pinMode(5,OUTPUT); //buzzer / LED

water.attach(6);

water.write(0);

Serial.begin(9600);

}

void loop() {

digitalWrite(2,LOW);

delayMicroseconds(2);

digitalWrite(2,HIGH);

delayMicroseconds(10);

digitalWrite(2,LOW);

times=pulseIn(3,HIGH);

distance=times\*0.034/2;

Serial.println(distance);

if(distance<20){

digitalWrite(5, HIGH); // when a glass comes closer the servo moves 90 degree

water.write(90);

}

else{

digitalWrite(5, LOW); // will be in normal position

water.write(0);

delay(1000);

}

}

**Relevance**

In the **post-pandemic** world, **contactless** systems have become essential in public and private spaces. This project is relevant for:

* **Hygienic water dispensing** in homes, schools, offices, or public areas.
* Preventing **cross-contamination** through physical contact.
* Teaching basic **automation**, **sensor interfacing**, and **servo control** using Arduino.
* Serving as a foundational step toward smart appliances.



