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.