SMART WATER SYSTEM

Hardware description:

- RASBERRY PI
- ULTRASONIC SENSOR
- WATER QUALITY SENSOR
- INTERNET CONNECTION

Install required libraries:

Ensure we have necessary python libraries installed.we may need to install RASBERRY PI,GPIO library

PYTHON PROGRAM:

```
Import RPi.GPIO as GPIO

Import time

# Add the necessary libraries for water quality sensors

# Import other libraries for data sharing and mobile app integration


# Set the GPIO mode

GPIO.setmode(GPIO.BCM)


# Define GPIO pins for the ultrasonic sensor

TRIG = 23

ECHO = 24


# Define GPIO pins for water quality sensor(s)

WQ_SENSOR_PIN = 25  # Replace with the actual GPIO pin


# Set up GPIO pins
```

```
GPIO.setup(TRIG, GPIO.OUT)
GPIO.setup(ECHO, GPIO.IN)
GPIO.setup(WQ_SENSOR_PIN, GPIO.IN)

Try:
    While True:
        # Trigger the ultrasonic sensor
        GPIO.output(TRIG, False)
        Time.sleep(2)  # Allow for settling
        GPIO.output(TRIG, True)
        Time.sleep(0.00001)
        GPIO.output(TRIG, False

        While GPIO.input(ECHO) == 0:
         Pulse_start = time.time()

        While GPIO.input(ECHO) =1
        Pulse_end = time.time()
        Pulse_duration = pulse_end  -  pulse_start
        Water_level = pulse_duration * 17150  #           Speed of sound = 34300 cm/s (in this case,
it’s divided by 2)

        # Read data from water quality sensor
        Wq_data = GPIO.input(WQ_SENSOR_PIN)  # Replace with actual code to read water quality
data

        Print(“Water Level (in cm): {:.2f}”.format(water_level))
        Print(“Water Quality Data: {}”.format(wq_data))
```

```
        # Send data to the data-sharing platform and mobile app

Time.sleep(1)  # Delay between readings

Except KeyboardInterrupt:
    GPIO.cleanup()
```

Example Output :

```
Water Level (in cm): 15.50
Water Quality Data: 1
Water Level (in cm): 15.48
Water Quality Data: 0
Water Level (in cm): 15.52
Water Quality Data: 1
Water Level (in cm): 15.49
Water Quality Data: 0
```

Run the program:

Run the python script on your RASBERRY PI or IoT device and run it will monitoring water level and send data.