

SMART WATER MANAGEMENT

```
const int TRIG_PIN = 2;

pin const int ECHO_PIN = 3;

pin const int PUMP_PIN = 4;

pin const int LED_PIN = 5;


void setup()
{
  Serial.begin(9600);

  pinMode(TRIG_PIN, OUTPUT);
  pinMode(ECHO_PIN, INPUT);
  pinMode(PUMP_PIN, OUTPUT);
  pinMode(LED_PIN, OUTPUT);
}


void loop()
{
  long duration, distance;


  digitalWrite(TRIG_PIN, LOW);
  delayMicroseconds(2);
  digitalWrite(TRIG_PIN,
HIGH);
  delayMicroseconds(10);
  digitalWrite(TRIG_PIN, LOW);
```

```
duration = pulseIn(ECHO_PIN, HIGH);
```

```
distance = duration * 0.034 / 2;
```

```
Serial.print("Distance: ");
```

```
Serial.print(distance);
```

```
Serial.println(" cm");
```

```
if (distance < 20)
```

```
{
```

```
    digitalWrite(PUMP_PIN, HIGH); digitalWrite(LED_PIN, HIGH);
```

```
}
```

```
else
```

```
{
```

```
    digitalWrite(PUMP_PIN, LOW);
```

```
    digitalWrite(LED_PIN, LOW);
```

```
}
```

```
    delay(1000);
```

```
}
```

CONCEPT OF CODE:

Here, we define four integer constants (`TRIG_PIN`, `ECHO_PIN`, `PUMP_PIN`, and `LED_PIN`) with specific values corresponding to the pins in the virtual environment. These pins are used to control and interact with the virtual components.

- `Serial.begin(9600);`: This starts communication with the serial monitor at a baud rate of 9600. You can use the `Serial.println()` function to send data to the serial monitor for debugging or monitoring purposes.

- `pinMode(..., ...);`: This function is used to set the mode of a pin. In this case, it is used to specify that `TRIG_PIN` is an output, `ECHO_PIN` is an input, `PUMP_PIN` is an output, and `LED_PIN` is an output.

- The next set of instructions sends a trigger pulse to the virtual ultrasonic sensor, waits for the echo, and calculates the distance based on the pulse duration.

- The code then checks if the distance is less than 20 cm. If it is, it turns on the virtual pump and LED. Otherwise, it turns them off.

- Finally, there's a delay of 1000 milliseconds (1 second) before the loop starts again. This is to provide some stability and prevent rapid, unnecessary measurements.

This code simulates a water level monitoring system using a virtual ultrasonic sensor, a pump, and an LED. It's designed to turn on the pump and LED when

the water level is below 20 cm and turn them off otherwise. The measurements are displayed on the serial monitor for observation.

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