

DEVELOPMENT OF WATER MANAGEMENT(WATER LEAKAGE DETECTION)

INTRODUCTION:

Water leakage detection using Python is a modern and innovative approach to address one of the most pressing challenges in water resource management and infrastructure maintenance. Python, a versatile and widely-used programming language, has become an indispensable tool for engineers, researchers, and data analysts to develop efficient and cost-effective solutions for identifying and mitigating water leaks.

Water leakage detection can be a complex task that involves various

sensors and technologies. Below is a simplified Python script example for detecting water leakage using a moisture sensor. This script assumes you have a moisture sensor connected to your microcontroller (e.g., Raspberry Pi or Arduino) and it will alert you when moisture is detected, indicating a potential water leakage.

REQUIREMENT:

1. Wiring:

Connect the moisture sensor to your microcontroller. The specifics of wiring may vary depending on the type of moisture sensor you are using.

2. Install Required Libraries:

You may need to install additional libraries depending on your hardware and requirements.

3. Python Script:

Here's a basic Python script to detect water leakage using a moisture sensor:

python

Copy code

```
import RPi.GPIO as GPIO # If using Raspberry Pi
import time
MOISTURE_SENSOR_PIN = 17 # GPIO pin where the moisture sensor is connected
# Initialize GPIO
```

```
GPIO.setmode(GPIO.BCM) # If using
Raspberry Pi

GPIO.setup(MOISTURE_SENSOR_PIN,
GPIO.IN)

try:
    while True:
        if
            GPIO.input(MOISTURE_SENSOR_PIN)
            == GPIO.LOW:
                print("Water detected! Potential
leakage.")

        else:
            print("No water detected.
Everything is dry.")

        time.sleep(1)

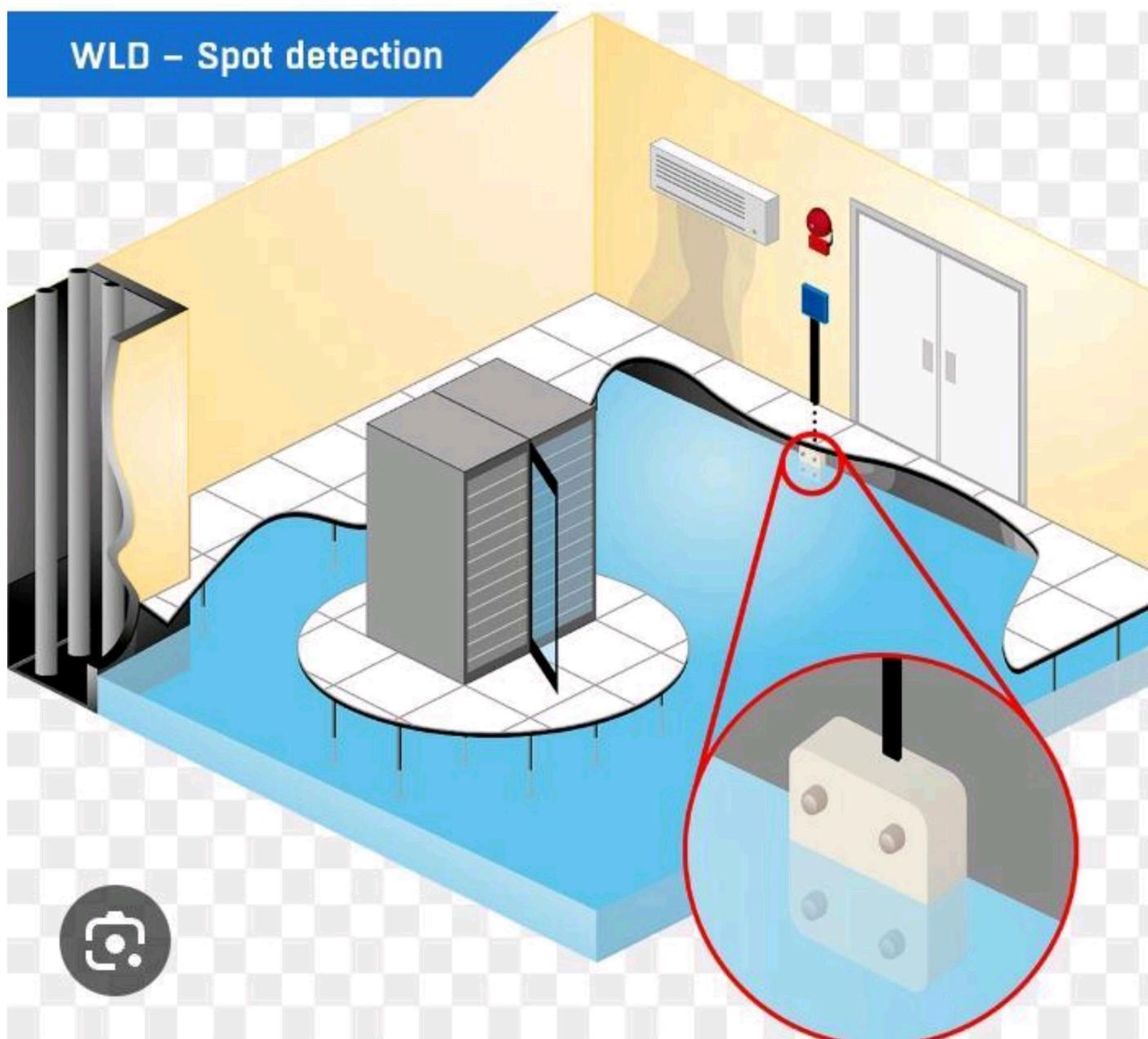
except KeyboardInterrupt:
```

GPIO.cleanup()

This code sets up a GPIO pin for the moisture sensor and continuously checks its state. If the sensor detects moisture (water leakage), it will print a message indicating a potential leak. If no moisture is detected, it will print a message indicating that everything is dry.

Again, this is a very basic example, and in a real-world application, you would likely want to implement more advanced features, such as sending alerts via email or text message, logging data, and integrating with other sensors or monitoring system.

WLD – Spot detection



PROGRAM:

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import RPi.GPIO as GPIO # If using  
Raspberry Pi  
import time
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```
MOISTURE_SENSOR_PIN = 17 # GPIO  
pin where the moisture sensor is  
connected
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# Initialize GPIO
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GPIO.setmode(GPIO.BCM) # If using  
Raspberry Pi
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GPIO.setup(MOISTURE_SENSOR_PIN,  
GPIO.IN)
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try:
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    while True:
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        if
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```
            GPIO.input(MOISTURE_SENSOR_PIN)  
            == GPIO.LOW:
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                print("Water detected! Potential  
leakage.")
```

```
    else:  
        print("No water detected.  
Everything is dry.")  
        time.sleep(1)
```

except KeyboardInterrupt:

```
    GPIO.cleanup()
```

OUTPUT1:

When water is detected (indicating a potential leak):

Water detected! Potential leakage.

...

OUTPUT2:

No water detected. Everything is dry.

...

CONCLUSION:

In order to save water for the future world, the IoT Based Water Saving and Leakage Detection and Manager for apartments and homes has been built. Important results of each study, including the most promising wearable devices and sensors for building safety surveillance applications and trends are presented.