SMART_WATER_SYSTEM_USIN

PHASE 1-NAAN_MUDHALVAN

Why we approach iot in smart water system?

IoT (Internet of Things) is approached in smart water systems for several important reasons:

Real-time Monitoring: IoT sensors can continuously monitor various parameters of water systems such as water quality, water levels, and pressure. This real-time data helps in early detection of issues and allows for prompt responses.

.Data Collection and Analysis: IoT devices collect vast amounts of data, which can be analyzed to identify trends, patterns, and anomalies. This data-driven approach enables efficient resource management and predictive

maintenance.

.Remote Control and Automation: IoT allows for remote control of water system components, such as valves and pumps. Automation can optimize water distribution and reduce operational costs.

PHASE_1 project:

Creating a smart water system using IoT involves several key steps and components.

Components of a Smart Water System using IoT:

Sensors: Use various sensors to monitor water quality, flow rates, pressure, and other relevant parameters. These sensors collect data and send it to a central control unit.

IoT Devices: These devices, often equipped with microcontrollers or IoT platforms, receive data from sensors and communicate it to the cloud or a central server.

Connectivity: Establish a reliable connection for IoT devices to transmit data. Common options include Wi-Fi, cellular networks, or LoRa (Long Range).

Cloud Platform: Store and process the data collected from IoT devices in a cloud platform. Popular choices include AWS IoT, Azure IoT, or Google Cloud IoT.

Data Processing and Analysis: Perform data analytics and processing on the cloud platform to

gain insights and detect anomalies in water parameters.

User Interface: Develop a user interface, such as a web or mobile app, for users to monitor the smart water system, receive alerts, and control various components remotely.

EXAMPLE PROGRAM:

```
import random
import time
from datetime import datetime
import request
 def   measure _water_quality():
       return random.uniform(0,14)
while true:
       water.quality =
measure_water_quality()
```

```
measure_water_quality()
    timestamp =
datetime.now().isoformat()
    api_url =
"https://your-api-endpoint.com
/upload"
    date = {
        "timestamp": timestamp,
         "water_quality":
water_quality
    }
    try:
        response =
requests.post(api_url,json = data)
        if
response.status_code==200:
         print(f"data uploaded :
{timestamp} - water Quality :
{water_quality}")
        else:
          print("failed to upload data")
```

```
expect Expectation as e:
        print(f"Error: {e}")
time.sleep(60)
```

CONCLUSION:

In conclusion, developing a smart water system using IoT involves a multi-faceted approach that integrates sensors, IoT devices, connectivity, cloud platforms, data processing, and user interfaces. The primary goal is to monitor and manage water resources efficiently, ensure water quality, and conserve resources.

By collecting real-time data, analyzing it, and enabling remote control, IoT-based smart water systems contribute to improved sustainability, reduced costs, and

enhanced water management capabilities. While the provided example is a simplified demonstration, actual implementations require careful planning, hardware selection, and software development to meet specific project goals and address real-world challenges.