

SMART WATER MANAGEMENT

Problem statement:

The aim to develop a IOT based water level monitoring and automatically Control the overflow of water. This system is used to save the water from over flowing.

Components and uses:

Ultrasonic or Pressure Sensors:

These sensors are commonly used to measure water levels. Ultrasonic sensors emit sound waves and measure the time it takes for them to bounce back to calculate the distance to the water surface. Pressure sensors use the water pressure to estimate the water level.

Microcontroller (e.g., Arduino, Raspberry Pi):

Interface the sensors with a microcontroller to collect data.

IoT Connectivity:

Use Wi-Fi, GSM, LoRa, or NB-IoT to transmit data to a central server or cloud platform.

Power Supply:

Depending on the location, you may need a power source. Consider solar panels or battery power for remote locations.

Data Processing and Visualization:

A cloud platform or server processes and stores the data. You can use tools like AWS, Azure, Google Cloud, or a dedicated IoT platform like Things Board.

Design step:

Sensor Placement:

Install the water level sensors at the desired locations. Ensure they are securely mounted and calibrated correctly.

Data Collection:

The sensors continuously collect data about water levels. Depending on the chosen technology, you may need to account for factors like temperature and atmospheric pressure that can affect the readings.

Data Transmission:

Use IoT protocols (MQTT, HTTP, etc.) to transmit the data to a central server or cloud platform.

Alerts and Notifications:

Implement alerting systems to notify users or authorities when water levels reach critical thresholds.

Data Visualization:

Create dashboards and graphs to visualize water level data in real-time. Users can access these through a web or mobile app.

Remote Control (optional):

Implement remote control capabilities to actuate pumps, valves, or alarms based on water level data.

Power Management:

Ensure that the power supply is reliable and has backup solutions if needed.

Maintenance:

Regularly inspect and maintain the sensors and communication equipment to ensure accurate and reliable data collection.

Conclusion:

A water level monitoring system in an apartment can provide peace of mind by alerting residents to potential water leaks or floods. It's particularly useful for basements or areas where water damage is a common concern. The system can help prevent costly repairs and protect valuable possessions.