VELAMMAL
INSTITUTE OF TECHNOLOGY

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DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

Project Name : Smart Water Fountain

Team Name : Proj_224781_Team_1

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PROJECT:

Creating a Smart Water Fountain using IoT (Internet of Things) involves combinations of sensors and technology to monitor and control its own operations such as water levels, leaks, water quality and remote control. Smart Water Fountains offer a number of benefits including convenience, water conservation, improved water quality and durability.

PLATFORM REQUIRED:

The following platforms are required for an IoT project Smart Water Fountain:

HARDWARE:

- **Microcontroller:** The microcontroller is the brain of the smart water fountain. It is responsible for collecting data from the sensors, controlling the pump and other actuators and communicating with the cloud platform. Here in this project we use either Arduino, Raspberry Pi of ESP32.
- **Sensors:** Sensors are used to collect data about the smart water fountain such as water level, temperature and quality. Some commonly used sensors for this project includes water level sensors, temperature sensors and pH sensors.
- **Actuators:** Actuators are used to control the physical components of the smart water fountain such as the pump and the valve. Here we are using solenoid valves and DC motors.
- **Connectivity:** The smart water fountain needs to be able to communicate with the cloud platform. This can be done using Wi-Fi, Ethernet or cellular connectivity.

SOFTWARE:

- **Operating System:** The microcontroller needs an operating system to run the IoT software. Some popular operating system includes Linux, FreeRTOS and Zephyr.
- **IoT Platform:** The IoT platform provides a cloud-based infrastructure for managing and monitoring IoT devices. Some of the popular IoT platforms include AWS IoT Core, Azure IoT Hub and Google Cloud IoT Core.
- **IoT application:** The IoT application is the software that runs on the microcontroller and communicates with the IoT platform

Web Development Technologies:

The following web technologies are required for an IoT project Smart Water Fountain:

- **Web Server:** The web server hosts the web application that allows users to control and monitor the smart water fountain. Popular web servers include Apache and Nginx.
- **Web Framework:** The web framework provides a structure for developing the web application. Some popular web frameworks include Django, Flask and Ruby on Rails.
- **Database:** The database stores data about the smart water fountain such as water level, temperature and quality. We can use either MySQL, PostgreSQL or MongoDB.
- **API:** The Application Programming Interface allows the web application to communicate with the IoT platform. The API can be developed using any programming language either Python, Node.js or Java.

Conclusion:

The Smart water Fountain IoT project is a promising new technology that has the potential to improve the efficiency and sustainability of water fountains. By using IoT technology to monitor and control the fountain, the smart water can be more responsive to user needs.