**NANMUDHALVAN IOT TEAM PROJECT**

**TITLE :SMART WATER FOUNTAINS**

**TEAM NAME : Proj\_228481\_Team\_1**

**Phase 1: Problem Definition and Design Thinking**

**Project Definition:** The project aims to enhance public water fountains by implementing IoT sensors to control water flow and detect malfunctions. The primary objective is to provide real-time information about water fountain status to residents through a public platform. This project includes defining objectives, designing the IoT sensor system, developing the water fountain status platform, and integrating them using IoT technology and Python.

**Objectives:**

Our goal is to design a smart water fountain that can monitor the water quality and Automatically replace water when polluted(not healthy) or running out. We will use sensors To measure the water quality. Common water quality measurement factors include Temperature, Ph-value, conductance, turbidity and hardness [3]. Considering the pollution at Home can only affect limited factors, we choose temperature, Ph-value and conductance to Be the three properties used for calculating water quality in our water fountain. These data Will be collected, calculated, and reflected to the user in terms of “Good”, “Average” and “Bad”. The water fountain is also designed to self-filter the water every time when water is Pumped through the submersible water pump.

**Working principle:**

The working principle of a smart water fountain project involves sensors detecting a user or pet’s presence, triggering a water pump to circulate water from a reservoir, potentially through a filtration system, and controlling water flow and temperature based on user preferences. Connectivity allows remote control and monitoring via a mobile app.

**Design Thinking:**

Design thinking for a smart water fountains project involves a human-centered approach to address the needs of users while integrating innovative technology. Here’s a simplified overview of the process:

1. **Empathize**:

Understand user needs: Conduct surveys, interviews, and observations to gather insights into what people expect from water fountains.

Identify pain points: Discover common problems users face with existing fountains, such as cleanliness, accessibility, or usability.

1. **Define**:

Create a clear problem statement: Summarize the key issues and opportunities identified during the empathy phase.

Develop user personas: Create detailed profiles of the typical users, their preferences, and challenges.

1. **Ideate**:

Brainstorm solutions: Organize ideation sessions with cross-functional teams to generate creative ideas for smart water fountains.

Use techniques like mind mapping, brainstorming, and sketching to explore possibilities.

1. **Prototype**:

Build a low-fidelity prototype: Create a basic model or simulation of the smart water fountain to test and refine the concept.

Incorporate user feedback: Gather input from potential users to improve the prototype’s design.

1. **Test**:

Conduct user testing: Have real users interact with the prototype to evaluate its functionality and usability.

Gather feedback: Use feedback to make iterative improvements to the design and functionality.

1. **Develop**:

Engineer the smart water fountain: Collaborate with experts to develop the actual product, incorporating technology like sensors, filters, and displays.

Ensure scalability and reliability: Design for long-term operation and maintenance.

1. **Implement**:

Deploy the smart water fountains in relevant public spaces, considering factors like foot traffic and accessibility.

Monitor and maintain the fountains to ensure they work as intended.

1. **Evaluate**:

Continuously collect data on usage, user satisfaction, and maintenance needs.

Make refinements based on real-world performance and user feedback.

1. **Scale**:

Expand the deployment of smart water fountains to additional locations based on the success of the initial implementation.

Consider partnerships with municipalities or organizations to increase reach.

1. **Iterate**:

Keep listening to user feedback and evolving the smart water fountain design to meet changing needs and expectations.

Throughout this process, keep the user experience at the forefront and aim to create a smart water fountain that not only provides clean and accessible drinking water but also enhances the overall experience for users through technology and thoughtful design.

**CONCLUSION**:

By following these design steps we aim to develop an innovative, reliable and sustainable IOT-based smart water fountain system. Through this process ,keep the user experience at the forefront and aim to create a smart water fountain that not only provides clean and accessible drinking water but also enhances the overall experience for users through technology and thoughtful design