

PHASE 5

SMART WATER FOUNTAIN

IOT

OBJECTIVES:

A well-designed fountain adds freshness to any public space, boosting it both socially and economically by attracting more tourists and also local residents. In this way, people from near and far will have a place for leisure, fun, or just simple relaxation.

IOT SENSOR SETUP:

- *There is one level sensor for each storage tank.*

- *This checks the available amount of water in the storage tank.*
- *Smart switching between different storage tanks and the rainwater storage tank is done through this level sensor.*
- *Flow rate sensor and Pressure change sensor are linked with water outlet to Calculate flow rate and pressure change when water outlet is running.*
- *If sensor detects a high value in flow rate and pressure change then sends an Alarm of possible leakages in the water outlet.*

MOBILE APP DEVELOPMENT:

1. Define App Features:

Determine the features you want Your app to have, such as Starting/stopping the water fountain, Adjusting water flow, checking water Levels, monitoring temperature, and Receiving notifications.

2.Select a Development Approach:

Choose whether you want to develop A native app (iOS and Android), a Hybrid app (using frameworks like Flutter or React Native), or a web App.

3.Development Tools:

For native iOS development, you'll Need Xcode and Swift. For Android, You'll need Android Studio and

Java/Kotlin. For hybrid development, tools like

Flutter, React Native, or Xamarin can Be used.

4. Connect to Raspberry Pi:

Implement communication between The mobile app and the Raspberry Pi. You can use Wi-Fi, Bluetooth, or the Internet (if your Raspberry Pi is Connected to the web).

5. Testing and Debugging:

Test the app on various devices and Simulate different scenarios to Ensure it functions correctly. Debug and fix any issues that arise During testing

6. AppStore Submission:

If you're developing a native app, Prepare it for submission to the Apple App Store and Google Play Store. Follow Their guidelines and requirements.

7.Maintenance and Updates:

Regularly update your app to fix bugs.Add new features, and ensure Compatibility with new mobile operating System versions.

RASPBERRY PI INTEGRATION:

1.Materials Needed:

- *Raspberry Pi (e.g., Raspberry Pi 4)*
- *Water fountain*
- *Water pump*

- *Sensors (e.g., water level sensor,*
- *Temperature sensor)*
- *Relay module (for controlling the Water pump)*
- *Power supply*
- *Tubing, nozzle, and water reservoir*
- *Optional: Webcam, display, or other Accessories*

2.Setup Raspberry Pi:

Install an operating system (e.g., Raspberry Pi OS). Configure network settings to Connect to the internet.

3.Connect Sensors and Water Pump:

Connect the water level sensor, Temperature sensor, and relay Module to the Raspberry Pi's GPIO Pins. Connect the water pump to the relay Module.

4.Assemble Hardware:

Set up the water fountain, reservoir,Tubing, and nozzle. Make sure all the components are Securely connected.

CODE:

```
Import java.util.Scanner;  
Class SmartWaterFountain  
{  
    Private boolean isFountainOn = false;  
    Public void turnOnFountain()  
    {  
        isFountainOn = true;  
        System.out.println("Fountain is turned  
on.");  
    }  
}
```

```
Public void turnOffFountain()  
{  
    isFountainOn = false;  
    System.out.println("Fountain is turned  
off.");  
}
```

```
Public boolean isFountainOn()  
{  
Return isFountainOn;  
}
```

```
Public static void main(String[] args)  
{  
    SmartWaterFountain fountain = new  
SmartWaterFountain();  
    Scanner scanner = new  
Scanner(System.in);
```


While (true)

{

*System.out.println("Enter 'on' to turn on
the fountain, 'off' to turn it off, or 'exit' to
quit:");*

*String input =
scanner.nextLine().toLowerCase();*

If (input.equals("on"))

{

Fountain.turnOnFountain();

}

else if (input.equals("off"))

{

Fountain.turnOffFountain();

}

else if (input.equals("exit"))

```
{  
    System.out.println("Exiting the  
program.");  
    Break;  
}  
Else  
{  
    System.out.println("Invalid input. Please  
enter 'on', 'off', or 'exit'.");  
}  
}  
Scanner.close();  
}  
}
```

OUTPUT:

Enter 'on' to turn on the fountain, 'off' to Turn it off, or 'exit' to quit: