PHASE 4

SMART WATER MANAGEMENT

TEAM MEMBERS:

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WORK ASSIGNED:

In this part we will continue building your project.

Continue building the project by developing the data-sharing platform.

Use web development technologies (e.g., HTML, CSS, JavaScript) to create a platform that displays real-time water consumption data.

Design the platform to receive and display water consumption data from IoT sensors and promote water conservation efforts.

OBJECTIVE:

- To develop a smart water system using IoT to help users conserve water, save money, and improve water management efficiency.
- To monitor water levels in tanks and reservoirs in real time.
- To automatically turn on and off pumps and other water control devices based on water levels and other factors.
- To detect and prevent water leaks.
- To provide users with real-time data about their water usage and water management system.
- To help users set water usage goals and track their progress.
- To promote water conservation efforts and raise awareness of the importance of water conservation.

The project also helps to raise awareness of the importance of water conservation by providing users with information about water scarcity and the environmental impacts of water waste.

We created both APP and WEBSITE for our project ‘’SMART WATER MANAGEMENT”. We also provided a hyperlink in the end of this document to visit our App and website.

APP DEVELOPMENT:

We created an app for our project SMART WATER MANAGEMENT. Which it monitors the level of the water surface in the tank. If the threshold level of water surface decrease then our project will make the motor to turn ON by using our app. It can be accessed by the remote user anytime and anywhere.

PYTHON CODE FOR IMPLEMENTATION IN FIREBASE:

```
import firebase_admin
 import sys
 import time
 from firebase_admin import credentials,db
 c=credentials.Certificate('C:/Users/havoc/Downloads/water-monitor-  e86eb-firebase-adminsdk-1ww9s-31fd2fd2f0.json')
 firebase_admin.initialize_app(c,{'databaseURL':'https://water-monitor-e86eb-default-rtdb.firebaseio.com/'})
 L=db.reference('water_level/tank1')
 L.set('25')
```

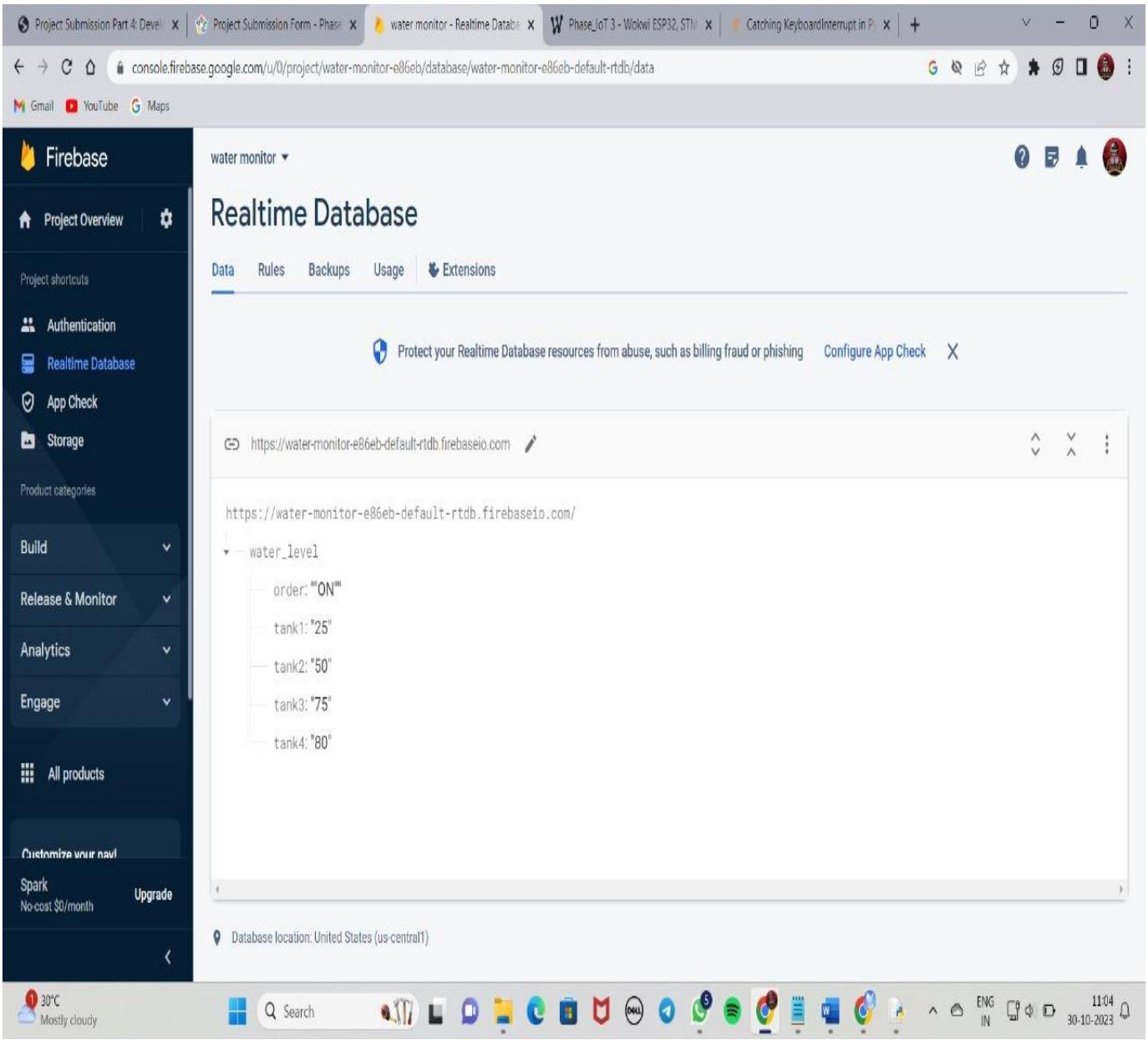
CODE EXPLAINATION:

The code we provided is a Python script that uses the Firebase Admin SDK to write data to a Firebase Realtime Database. The code first imports the necessary libraries, including firebase_admin, sys, time, and db. Then, it creates a credential object using the certificate file that you downloaded from Firebase. Next, it initializes the Firebase Admin SDK with the credential object and the database URL. The code then

creates a reference to the water_level/tank1 node in the database. Finally, it uses the set() method to write the value "25" to the node.

REALTIME WATER LEVEL IN TANK:

Here we donate the level of the water level in tank. We donated the levels like 25 for tank 1, 50 for tank 2, 75 for tank 3, 80 for tank 4. We indicate the levels in Firebase website. The following Picture will describes our work in the firebase application.



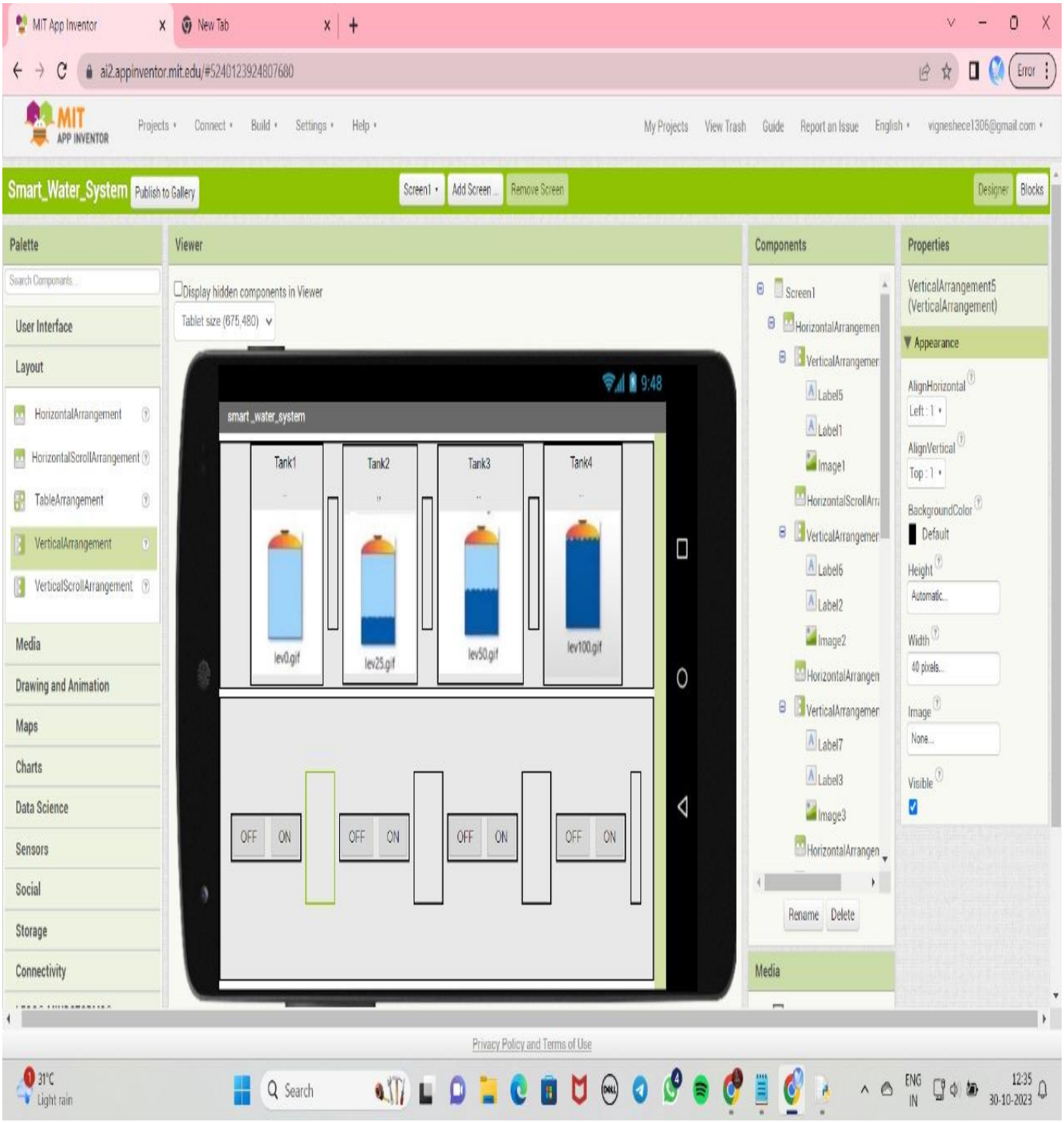
WEBSITE DEVELOPMENT

As we mentioned above, we created a website for our project “SMART WATER SYSTEM”. The following pictures will describe our work to create the website.

STEP 1:

Designing our website. In the above picture we split the screen into 4 because we are using 4 tanks to measure the water level. After that we paste our Firebase URL and firebase token.

STEP2:

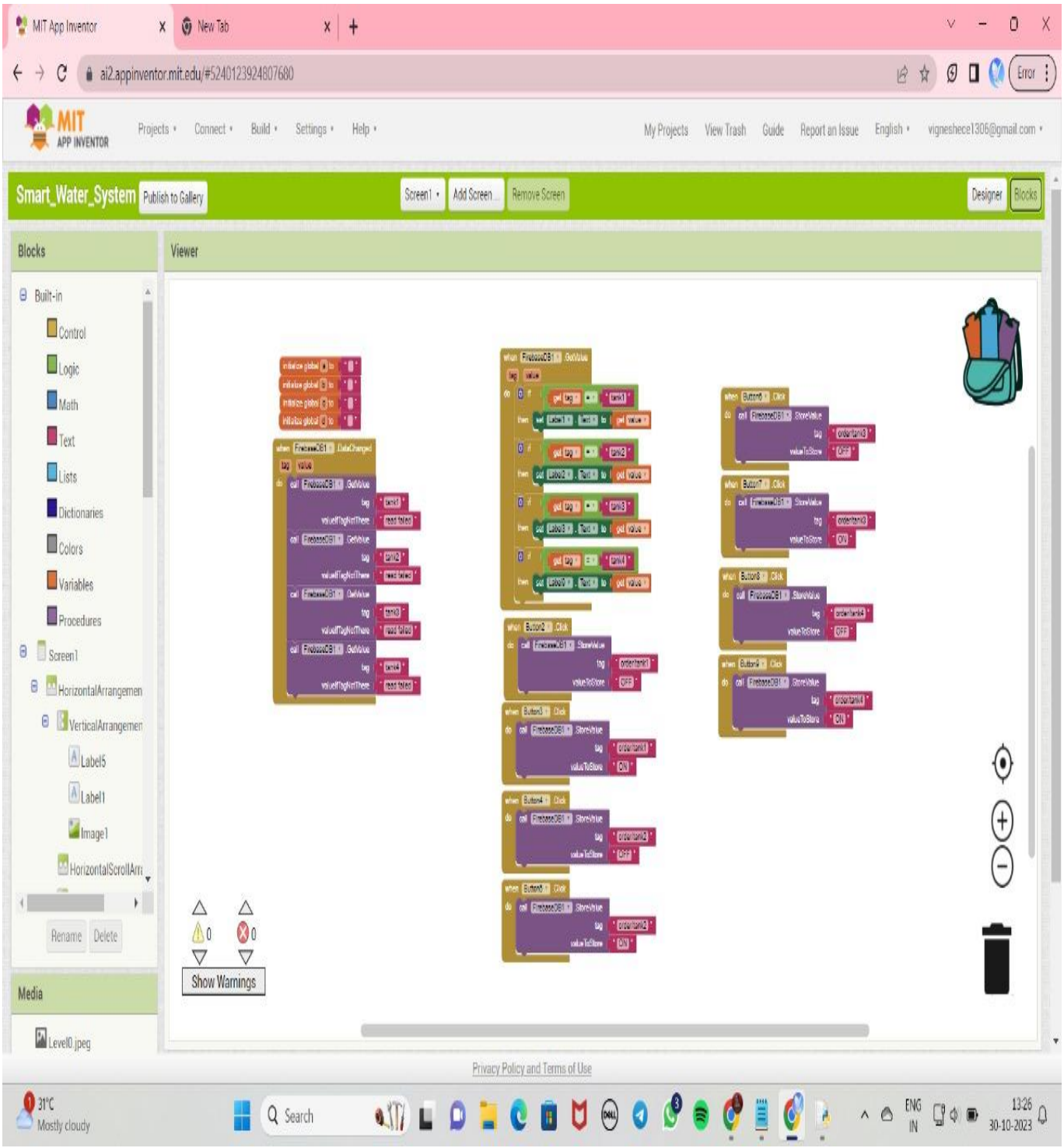


After that we uploading our image in that 4 columns. The following picture will describe the water level in the tank. The ON and OFF button describes the motor function, Which is accessible for the remote user in our application.

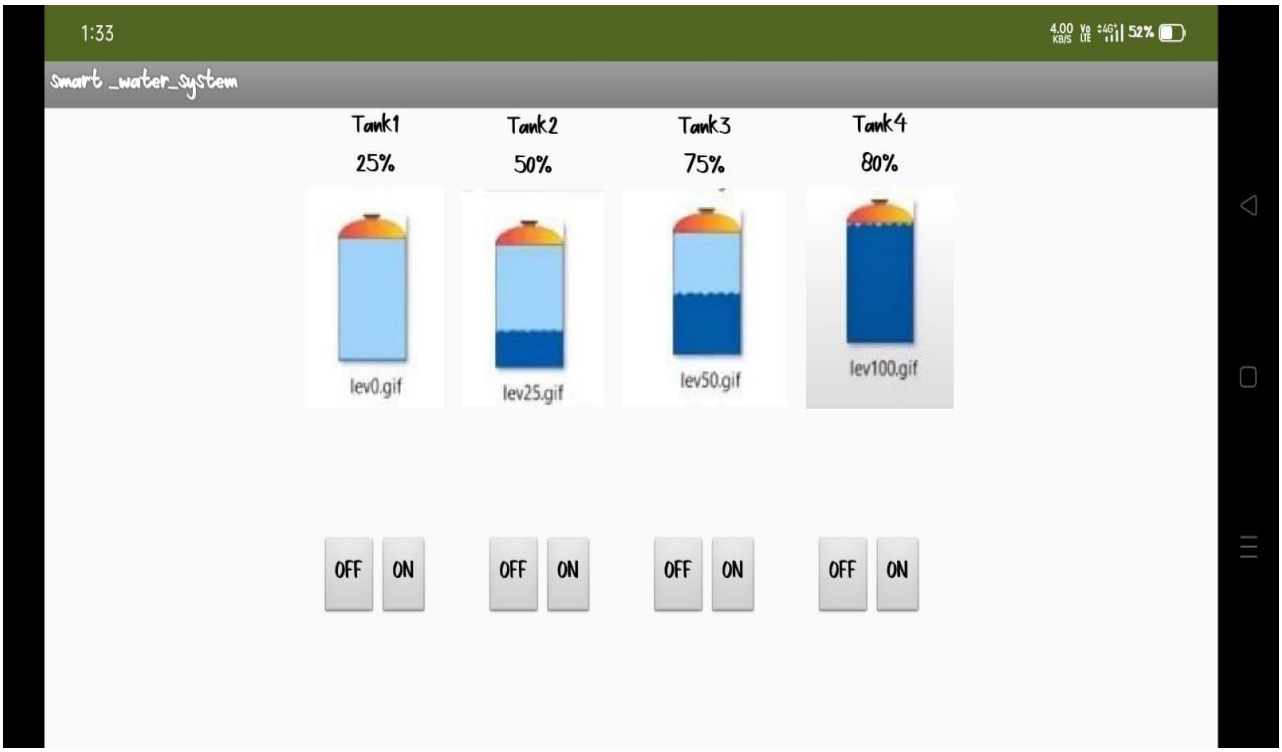
STEP 3:

Then we went to the block section and completing the code for creating an application to be accessed by the remote user.

We are building the code for 4 tanks consisting of different water levels in each tank.



USER INTERFACE:



- ✓ The above picture shows a screenshot of your project, "Water System Management Using IoT".
- ✓ The project uses IoT technology to monitor and manage water levels in tanks.The screenshot shows a dashboard with four tiles, one for each tank.
- ✓ The tiles show the tank name, current water level, and a percentage bar indicating how full the tank is. There is also a toggle switch for each tank that can be used to turn the water pump on or off.
- ✓ The project uses an Arduino microcontroller and a variety of sensors, including water level sensors, temperature sensors, and pressure sensors. The sensors collect data about the water tanks and send it to the Arduino microcontroller.
- ✓ The microcontroller then processes the data and sends it to the cloud using a Wi-Fi module. The cloud server stores the data and provides access to it through a web application. The web

application allows users to view the current water levels in their tanks and turn the water pumps on and off.

- ✓ The project can be used to improve water management efficiency and reduce water waste. For example, the project can be used to automatically turn on the water pump when a tank is low on water and turn it off when the tank is full.
- ✓ This can help to ensure that there is always enough water available, even when there is high demand.

CONCLUSION:

The "Water System Management Using IoT" project is a successful demonstration of how IoT technology can be used to improve water management efficiency and reduce water waste. The project uses a variety of sensors and an Arduino microcontroller to collect data about water levels, temperature, and pressure in tanks. This data is then sent to the cloud using a Wi-Fi module and stored on a cloud server. A web application allows users to view the data and control the water pumps.

"KEEP YOUR WATER TANK ON TAP WITH OUR APP"

HYPERLINK:

https://ai2.appinventor.mit.edu/#5240123924807680