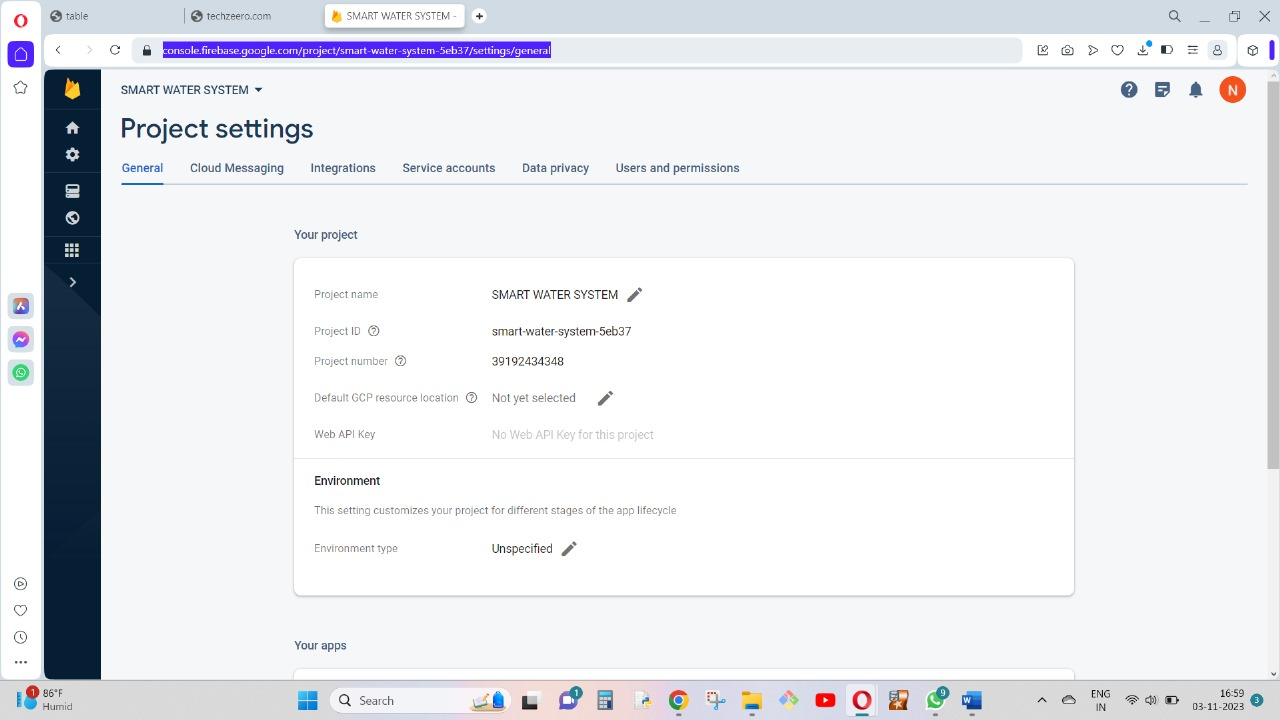
IoT PHASE 4

SMART WATER SYSTEM

**Description**

In this project, we’ve used Google Firebase to code for Smart water management System.

* To set up a console in Google Firebase we first sign in and create a new project.
* Enter the Project Name and Project ID.
* From Project Dashboard choose Database.
* Create a Real-time Database and choose start in test mode.
* Now copy your Firebase Project URL and Paste the URL in Code at FIREBASE\_HOST without “https://” and “/”.
* Now go to Settings (near project overview on the dashboard).
* Choose Project Settings > Service Account > Database Secrets.
* Copy Project Secret than Paste in code at FIREBASE\_AUTH.



**Firebase Code for Our Smart Water System Project**

import urequests

import utime

from machine import Pin

trigger = Pin(3, Pin.OUT)

echo = Pin(2, Pin.IN)

lowLED = Pin(19, Pin.OUT)

mediumLED = Pin(20, Pin.OUT)

highLED = Pin(21, Pin.OUT)

motor = Pin(22, Pin.OUT)

lowLED.high()

mediumLED.high()

highLED.high()

motor.low()

FIREBASE\_URL = smart-water-system-5eb37-default-rtdb.firebaseio.com

FIREBASE\_SECRET = S7fEfnpPBJIE1TPgjJOFRabNn1ztM3yJJGdHuIE1

def ultson():

trigger.low()

utime.sleep\_us(2)

trigger.high()

utime.sleep\_us(5)

trigger.low()

while echo.value() == 0:

signaloff = utime.ticks\_us()

while echo.value() == 1:

signalon = utime.ticks\_us()

timepassed = signalon - signaloff

distance = (timepassed \* 0.0343) / 2

print("The distance of sensor from water level is:", distance, "cm")

level = distance

if level >= 400:

lowLED.low()

mediumLED.high()

highLED.high()

motor.high()

elif 200 < level < 400:

lowLED.high()

mediumLED.low()

highLED.high()

elif level < 100:

lowLED.high()

mediumLED.high()

highLED.low()

motor.low()

# Send data to Firebase

data = {

"distance\_cm": distance,

"level": level,

}

# Construct the Firebase URL

firebase\_url = f'{FIREBASE\_URL}.json?auth={FIREBASE\_SECRET}'

# Send data to Firebase

response = urequests.put(firebase\_url, json=data)

if response.status\_code == 200:

print("Data sent to Firebase successfully")

else:

print("Failed to send data to Firebase")

while True:

ultson()

utime.sleep(5)

**Description**

FIREBASE\_URL = smart-water-system-5eb37-default-rtdb.firebaseio.com

FIREBASE\_SECRET = S7fEfnpPBJIE1TPgjJOFRabNn1ztM3yJJGdHuIE1

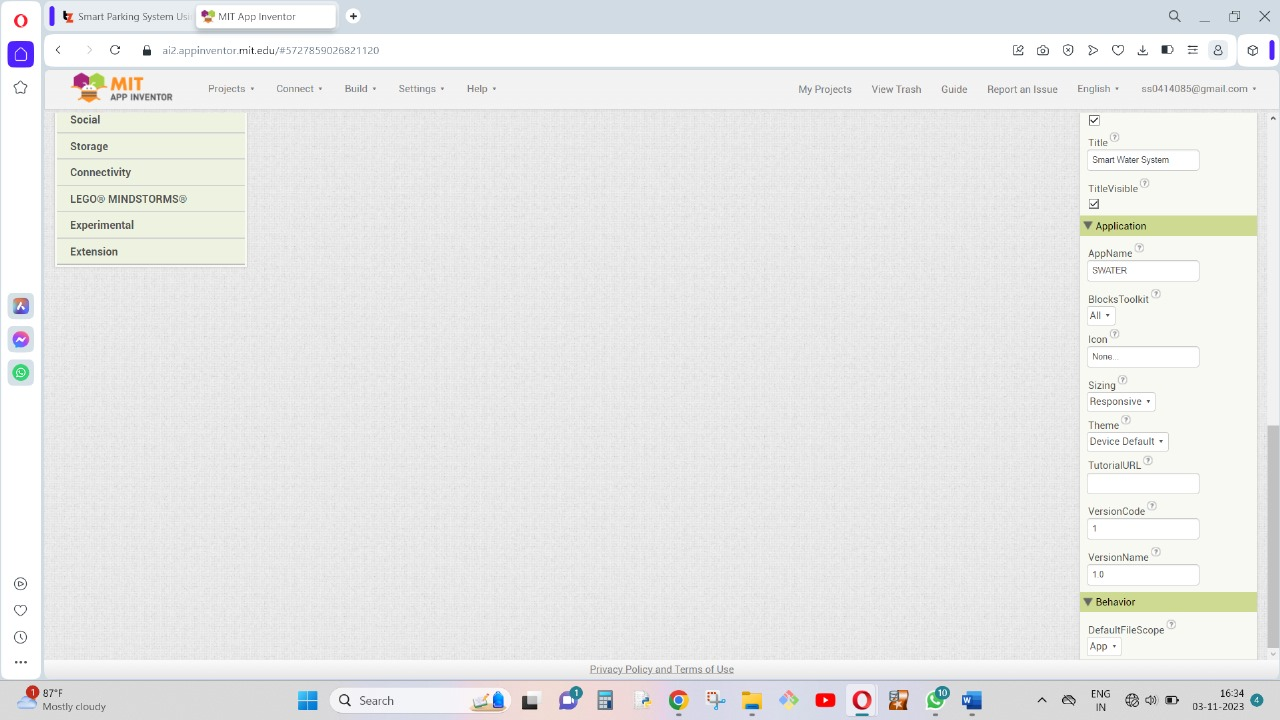
**Android App Setup Using MIT App Inventor**

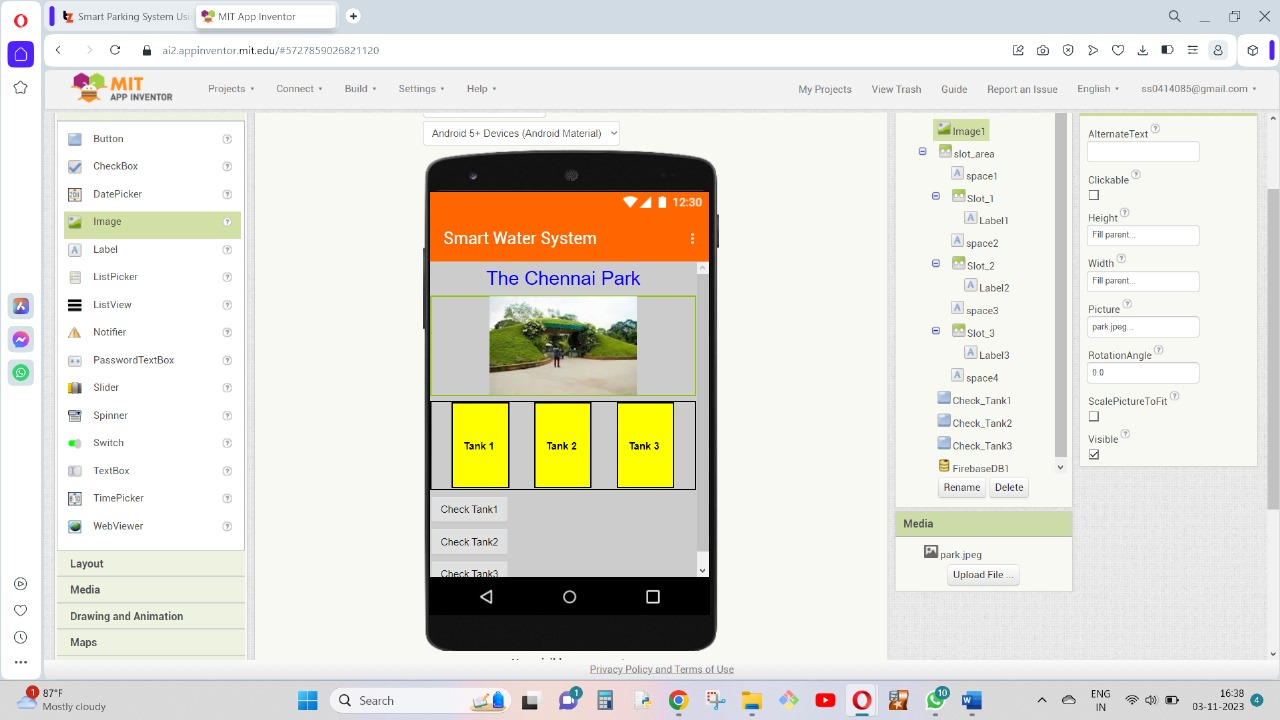
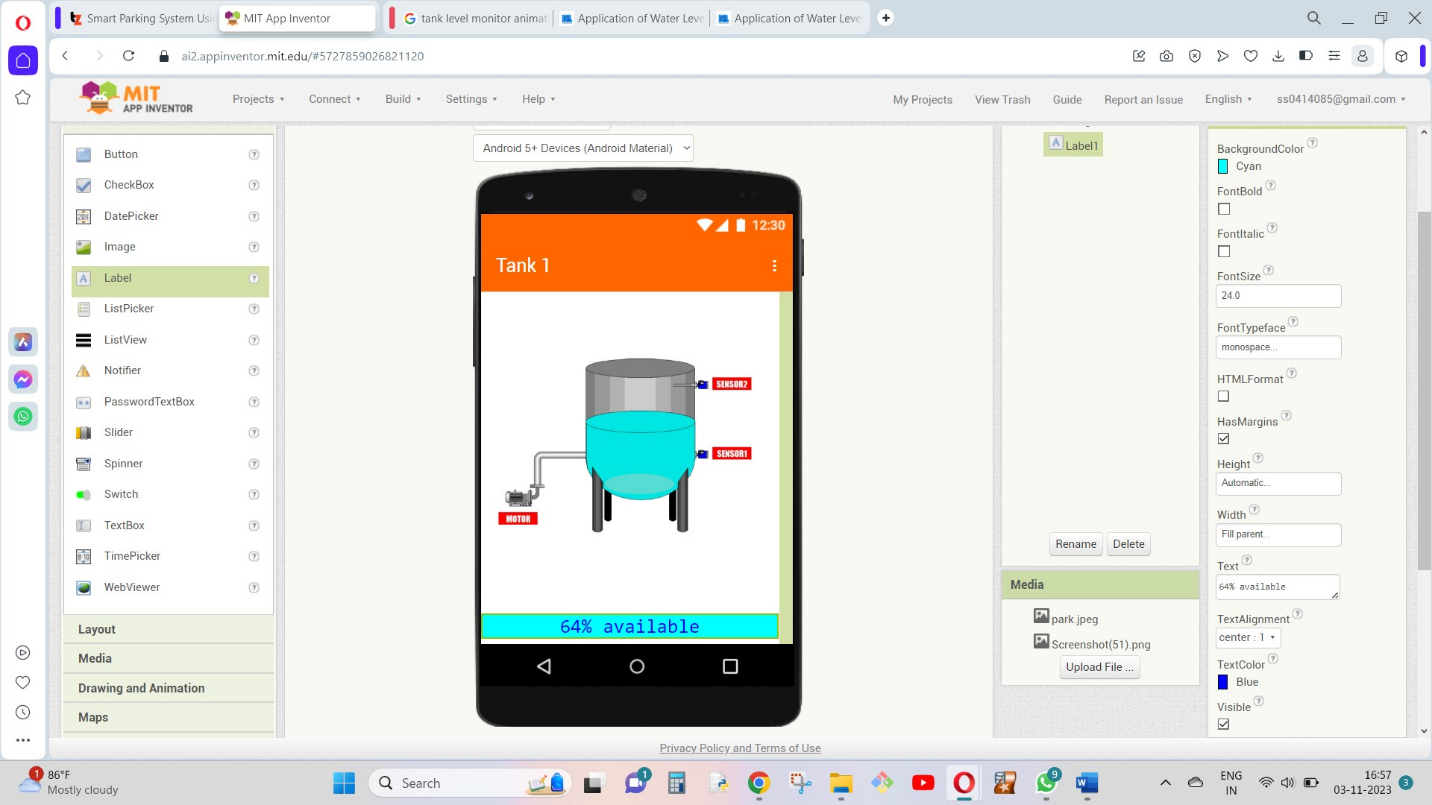
**Steps :**

* Sign in [**MIT App Inventor**](http://ai2.appinventor.mit.edu/) and import .aia file from the downloaded file.
* Open the Project and Choose FirebaseDB1 from the Components list.
* In properties Paste Firebase Projects Secret in “Firebase Token” and Firebase Project URL in “FirebaseURL”.
* Paste full URL along with “https://”.
* Project Bucket should be empty.

**Screenshots**

* MIT App Inventors developing workspace.



* The Smart Water System App interfacing screen is displayed in this picture. The tanks in the display show the level of water and monitor it through water sensors and Information data that is transferred.
* ****The Tank buttons show the level of water present in real-time to the users of the app.
*  In this picture , Water level in Tank 1 is observed as 64%. There are 2 sensors present in the tank below. Sensor 1 will detect whether the water is present in the tank and the Sensor 2 will detect the tank is full of water.