Facilities Monitoring

To develop a mobile application that can store data locally and synchronize it with a server when an internet connection is available.

1. Mobile App Framework:

   - For iOS: Swift (for native development) or use a cross-platform framework like Flutter or React Native.

   - For Android: Kotlin (for native development) or use a cross-platform framework like Flutter or React Native.

2. Database:

   - SQLite: A lightweight, embedded database that allows you to store data locally on the mobile device. Most mobile platforms provide libraries or APIs for working with SQLite.

3. Offline Data Storage:

   - Shared Preferences (for Android) or UserDefaults (for iOS): For storing simple key-value pairs.

   - Realm or CoreData: For more complex data models and relationships.

4. Networking:

   - Retrofit (for Android) or Alamofire (for iOS): These are popular libraries for making HTTP requests to interact with your server when an internet connection is available.

5. Synchronization:

   - Implement a background service or task that periodically checks for an internet connection and uploads local data to the server. You can use platform-specific background processing mechanisms or third-party libraries like WorkManager (Android) or Background Tasks (iOS).

6. Server:

   - Choose a server-side technology stack to receive, process, and store data from your mobile app. Common options include:

     - Node.js with Express

     - Ruby on Rails

     - Django (Python)

     - ASP.NET (C#)

     - Firebase (if you prefer a backend-as-a-service)

7. Data Serialization:

   - Use JSON for data serialization when communicating between the mobile app and the server. This is a common and lightweight format for data exchange.

8. API Security:

   - Implement secure communication protocols like HTTPS for data transmission and consider using token-based authentication (e.g., JWT) to secure your API endpoints.

9. Local Data Encryption (optional):

   - If your app handles sensitive data, consider implementing data encryption to protect user data stored on the device.

10. Version Control:

    - Use a version control system like Git to manage your source code.

Create the Android App:

Develop an Android app using Java or Kotlin.
Use a local database (e.g., SQLite) or local storage (e.g., SharedPreferences) to store the data when the device is offline.
Implement a user interface to input, edit, and manage the data.

Offline Data Storage:

Design your app to save data locally when there's no internet connection. Make sure to provide the capability to create, read, update, and delete data records.

Network Connectivity Check:

Implement a mechanism to periodically check for an internet connection. You can use the ConnectivityManager to check network availability.

Data Synchronization:

When an internet connection is detected, initiate the data synchronization process. You can use a background service or a scheduled task to periodically sync data.

Excel File Update:

To update an existing Excel file, you can use a library like Apache POI (for Java) or Kotlin Excel API to read and write Excel files. Make sure the Excel file is stored in a location accessible to your app.

API or Server:

If the Excel file is stored on a remote server, you will need to create an API or a server-side script to handle the updates. The Android app can send HTTP requests to the server with the data to be updated.

Data Transfer:

Transfer the locally stored data to the server using HTTP requests or another appropriate communication protocol (e.g., RESTful API, WebSocket).

POWER

M1- M7 (ONCE PER SHIFT ONLY) | Main Meter - Day Only (7-8 AM Reading)

Date	dd-MM-YYYY
Shift	DAY 1, SWG 1, GRAVE1, GRAVE 2
Tech No.	Employee No.
Date/Time Encode	dd/MM/YYYY 12 Hour Format
Meter Reading(kw.hr)	1234
Remarks	Text

H2 GAS

Date	dd-MM-YYYY
Shift	DAY 1, SWG 1, GRAVE1, GRAVE 2
Tech No.	Employee No.
Date/Time Encode	dd/MM/YYYY 12 Hour Format
Temperature (Requirement : below 50 Â°C)	Int/Decimal
Pressure (Ordering Level = 3.75 MPa or 500 psi Critical Level = 1.5 MPa or 200 psi)	Int/Decimal
Primary Pressure gauge BH2 (Requirement 95 to 100 psi)	Int
Primary Pressure gauge Pallet (Requirement 95 to 100 psi)	Int
Secondary Pressure gauge BH2 (Requirement 60 to 65 psi)	Int
Secondary Pressure gauge Pallet (Requirement 60 to 65 psi)	Int
Nitrogen (Pressure Setting : 50 psi)	Int

Nitrogen cylinder pressure reading (Requirement : Alarm Level = 500 psi Critical Level = 200 psi)	Int
TIME	12 Hour Format
Remarks	Text

N2(Liquid)

Date	dd-MM-YYYY
Shift	DAY 1, SWG 1, GRAVE1, GRAVE 2
Tech No.	Employee No.
Date/Time Encode	dd/MM/YYYY 12 Hour Format
N2 LEVEL mm of H2O	Int
INVENTORY in Gallons	Int/Decimal
INVENTORY in mÂ³	Int/Decimal
PRESSURE in PSI (160 max)	Int
% Volume	Int
PPM (30 max)	Int/Decimal
Vaporizer Use No.1 / No.2	1 or 2
Time	12 Hour Format
Remarks	Text

DE-IONIZED WATER

Date	dd-MM-YYYY
Shift	DAY 1, SWG 1, GRAVE1, GRAVE 2
Tech No.	Employee No.
Date/Time Encode	dd/MM/YYYY 12 Hour Format

DI water (gallons)	Int
DI Flow (gpm)	Int
Resistivity - Bdg 1 (M ohm)	Int/Decimal
Resistivity - Bdg 2 (M ohm)	Int/Decimal
TIME	12 Hour Format
Remarks	Text

DEEP WELL NO. 01 | DEEP WELL NO. 02

Date	dd-MM-YYYY
Shift	DAY 1, SWG 1, GRAVE1, GRAVE 2
Tech No.	Employee No.
Date/Time Encode	dd/MM/YYYY 12 Hour Format
Voltage (V) TIME Remarks	Int
Current (A)	Int
Hour Meter (hrs)	Int/Decimal
Water Draw (cu.m)	Int/Decimal
TIME	12 Hour Format
Remarks	Text

DI ACF

Date	dd-MM-YYYY
Shift	DAY 1, SWG 1, GRAVE1, GRAVE 2
Tech No.	Employee No.
Date/Time Encode	dd/MM/YYYY 12 Hour Format

Time	12 Hour Format
Pump No.	
Initial Meter Reading	
Final Meter Reading	
Rinse Start Time	
Rinse Finish Time	
Pressure (psi)	
Micron Filter Pressure (psi)	
Remarks	Text

DI ANION BED 01 REGEN | DI ANION BED 02 REGEN

Date	dd-MM-YYYY
Shift	DAY 1, SWG 1, GRAVE1, GRAVE 2
Tech No.	Employee No.
Date/Time Encode	dd/MM/YYYY 12 Hour Format
Back Wash Flowrate (LPH)	
Back Wash Time (min)	
Settling Time (min)	
Chem - Water Injection Flowrate (LPH)	
Chem - Water Injection Time (min)	
Slow Rinse Flowrate (LPH)	
Slow Rinse Time (min)	
Fast Rinse Flowrate (LPH)	
Fast Rinse Time (min)	
pH	
Conductivity (micro Siemens)	

Amount of Chemical Used	
Remarks	

DI CATION BED 01 REGEN | DI CATION BED 02 REGEN

Date	dd-MM-YYYY
Shift	DAY 1, SWG 1, GRAVE1, GRAVE 2
Tech No.	Employee No.
Date/Time Encode	dd/MM/YYYY 12 Hour Format
Back Wash Flowrate (LPH)	
Back Wash Time (min)	
Settling Time (min)	
Chem - Water Injection Flowrate (LPH)	
Chem - Water Injection Time (min)	
Slow Rinse Flowrate (LPH)	
Slow Rinse Time (min)	
Fast Rinse Flowrate (LPH)	
Fast Rinse Time (min)	
Amount of Chemical Used	
Remarks	

DI DUAL BED 01 | DI DUAL BED 02

Date	dd-MM-YYYY
Shift	DAY 1, SWG 1, GRAVE1, GRAVE 2
Tech No.	Employee No.
Date/Time Encode	dd/MM/YYYY 12 Hour Format
Flow Rate (LPH)	

ACF Pressure IN (psi)	
Cation Pressure In (psi)	
Cation Pressure Out (psi)	
Cation pH	
Anion Tank Conductivity (micro mhos)	
Anion Tank pH	
Remarks	

DI FILTER REPLACEMENT

Date	dd-MM-YYYY
Shift	DAY 1, SWG 1, GRAVE1, GRAVE 2
Tech No.	Employee No.
Date/Time Encode	dd/MM/YYYY 12 Hour Format
Filter Location	
Quantity Replaced	
Size of Filter Cartridge	
Remarks	

DI MIXED BED 01

Date	dd-MM-YYYY
Shift	DAY 1, SWG 1, GRAVE1, GRAVE 2
Tech No.	Employee No.
Date/Time Encode	dd/MM/YYYY 12 Hour Format
Back Wash Flowrate (gpm)	
Back Wash Time (min)	

Settling Time (min)	
Casutic Draw Flowrate (gpm)	
Caustic Draw Time (min)	
Slow Rinse 1 Flowrate (gpm)	
Slow Rinse 1 Time (min)	
Acid Draw Flowrate (gpm)	
Acid Chem Draw Time (min)	
Slow Rinse2 Flowrate (gpm)	
Slow Rinse 2 Time (min)	
Fast Rinse Flowrate (gpm)	
Fast Rinse Time (min)	
Draining down (min) Air Mixing (min)	
Final Rinse Flowrate (gpm)	
Final Rinse Time (min)	
pH	
Resisitivity (mega ohms)	
Amount of Acid Chemical Used	
Amount of Base Chemical Used	
Remarks	

DI MIXED BED 01-REGEN

Date	dd-MM-YYYY
Shift	DAY 1, SWG 1, GRAVE1, GRAVE 2
Tech No.	Employee No.
Date/Time Encode	Date/Time Encode
N2 LEVEL mm of H2O	Int
INVENTORY in Gallons	Int/Decimal

INVENTORY in m³	Int/Decimal
PRESSURE in PSI (160 max)	Int
% Volume	Int
PPM (30 max)	Int/Decimal
Vaporizer Use No.1 / No.2	1 or 2
Time	12 Hour Format
Remarks	Text

DI MIXED BED 02

Date	dd-MM-YYYY
Shift	DAY 1, SWG 1, GRAVE1, GRAVE 2
Tech No.	Employee No.
Date/Time Encode	Date/Time Encode
Flow Rate (gpm)	
Resisitivity (mega ohms)	
pH	
UV - hour meter (hrs)	
Micron Filter No.	
Pressure (psi)	
Feedwater Tank Level	
DI Pump No.	
Flowrate	
Totalizer Reading	
Remarks	

DI MIXED BED 02-REGEN

Date	dd-MM-YYYY
Shift	DAY 1, SWG 1, GRAVE1, GRAVE 2
Tech No.	Employee No.
Date/Time Encode	Date/Time Encode
Back Wash Flowrate (gpm)	
Back Wash Time (min)	
Settling Time (min)	
Casutic Draw Flowrate (gpm)	
Caustic Draw Time (min)	
Slow Rinse 1 Flowrate (gpm)	
Slow Rinse 1 Time (min)	
Acid Draw Flowrate (gpm)	
Acid Chem Draw Time (min)	
Slow Rinse2 Flowrate (gpm)	
Slow Rinse 2 Time (min)	
Fast Rinse Flowrate (gpm)	
Fast Rinse Time (min)	
Draining down (min) Air Mixing (min)	
Final Rinse Flowrate (gpm)	
Final Rinse Time (min)	
pH	
Resisitivity (mega ohms)	
Amount of Acid Chemical Used	
Amount of Base Chemical Used	
Remarks	

DI POLISHING TANK REPLACEMENT

Date	dd-MM-YYYY
Shift	DAY 1, SWG 1, GRAVE1, GRAVE 2
Tech No.	Employee No.
Date/Time Encode	Date/Time Encode
Polishing Tank Number	
Rinsing Time Start	
Rinsing Time Finish	
Source Resistivity Before (Mohms)	
Source Resistivity After (Mohms)	
Point of Use Resistivity Before (Mohms)	
Point of Use Resistivity After (Mohms)	
Remarks	

DI TANK - BLDG 1 POINT OF USE

Date	dd-MM-YYYY
Shift	DAY 1, SWG 1, GRAVE1, GRAVE 2
Tech No.	Employee No.
Date/Time Encode	Date/Time Encode
Tank Level â‰¥0.75 (3/4)	
DI Pump No.	
Source Pressure (psi)	
Polishing Tank 1 No.	
Polishing Tank 2 No.	
UV - hour meter (hrs)	

Resistivity (Mohms)	
Remarks	

DI WATER ANALYSIS - Class B

Date	dd-MM-YYYY
Shift	DAY 1, SWG 1, GRAVE1, GRAVE 2
Tech No.	Employee No.
Date/Time Encode	Date/Time Encode
Saw Scribe Bacteria Count	
Saw Scribe Particulate Count	
Saw Scribe Total Chlorine Content	
Saw Scribe Total Solid by Evaporation	
FA Bacteria Count	
FA Particulate Count	
FA Total Chlorine Content	
FA Total Solid by Evaporation	
Remarks	

DI WATER ANALYSIS - Class C

Date	dd-MM-YYYY
Shift	DAY 1, SWG 1, GRAVE1, GRAVE 2
Tech No.	Employee No.
Date/Time Encode	Date/Time Encode
Tin Plating Total Chlorine Content	
Solder Dip Total Chlorine Content	
Can Wash Total Chlorine Content	
Remarks	

UV LIGHT STERILIZER

Date	dd-MM-YYYY
Shift	DAY 1, SWG 1, GRAVE1, GRAVE 2
Tech No.	Employee No.
Date/Time Encode	Date/Time Encode
DI WATER PLANT	
TOTAL RUNNING HOURS	
DI WATER ROOM (BLDG 1)	
TOTAL RUNNING HOURS - BLDG 1	
WAFER SAW	
TOTAL RUNNING HOURS - SAW	
Remarks	

WATER CONSUMPTION

Date	dd-MM-YYYY
Shift	DAY 1, SWG 1, GRAVE1, GRAVE 2
Tech No.	Employee No.
Date/Time Encode	Date/Time Encode
Drinking Fountain (cu.m)	
Deflash 2 (cu.m)	
DI Plant (cu.m)	
Fume Scrubbers (cu.m)	
Cooling Tower 1 to 3 (cu.m)	
Cooling Tower 04 (cu.m)	
WWTP (cu.m)	

GO3 (cu.m)	
TIME	
Remarks	

WWTP

Date	dd-MM-YYYY
Shift	DAY 1, SWG 1, GRAVE1, GRAVE 2
Tech No.	Employee No.
Date/Time Encode	Date/Time Encode
Influent Meter Reading	
Effluent Meter Reading	
pH Neutralization Tank	
Aluminum Sulfate Dosing Polymer Dosing	
Hydrochloric Acid Dosing	
Filtrate Pump	
Agitator 1	
Agitator 2	
Agitator 3	
Clarifier to Neutralization Tank	
Neutralization Tank to Aeration 1	
Neutralization Tank to Agitator Aeration 1 to Aeration 2	
Recycle to Cooling Tower	
Clarifier to Thickening Tank	
Filter Press	
Remarks	