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SDG 6: Water treatment system

Data Retrieval

1. Retrieving all water quality data for a specified location

SELECT

L.Location\_Name,

WQ.pH,

WQ.turbidity,

WQ.Contaminant\_level,

WQ.treatment\_status

FROM

Water\_Quality WQ

INNER JOIN

Location L ON WQ.location\_id = L.id

WHERE

L.Location\_Name = 'Vaal Dam';

2. SQL command to list all locations with Moderate water quality

SELECT

L.Location\_Name,

L.Region,

WQ.treatment\_status

FROM

Water\_Quality WQ

INNER JOIN

Location L ON WQ.location\_id = L.id

WHERE

WQ.treatment\_status = 'Needs Attention';

3. SQL command to retrieve water quality data collected by a specific government organization

SELECT

L.Location\_Name,

T.treatment\_Date,

WQ.pH,

WQ.turbidity,

WQ.Contaminant\_level,

WQ.treatment\_status

FROM

Water\_Quality WQ

INNER JOIN

Treatment T ON WQ.location\_id = T.Location\_ID

INNER JOIN

Location L ON T.Location\_ID = L.id

WHERE

T.method = 'Dept of Water and Environmental Affairs';

4. SQL command to retrieve average pH and contaminant levels for each Region

SELECT

L.Region,

AVG(WQ.pH) AS Avg\_pH,

AVG(CASE WHEN WQ.Contaminant\_level = 'Low' THEN 0

WHEN WQ.Contaminant\_level = 'Moderate' THEN 1

WHEN WQ.Contaminant\_level = 'High' THEN 2

ELSE NULL END) AS Avg\_Contaminant\_Level

FROM

Water\_Quality WQ

INNER JOIN

Location L ON WQ.location\_id = L.id

GROUP BY

L.Region;

5. SQL command to identify and retrieve locations with high turbidity

SELECT

L.Location\_Name,

L.Region,

WQ.turbidity

FROM

Water\_Quality WQ

INNER JOIN

Location L ON WQ.location\_id = L.id

WHERE

WQ.turbidity > 10.0;

6. Count command in SQL

This command counts the total amount of water quality tests that need attention due to high turbidity or contaminant levels.

SELECT

COUNT(\*) AS Attention\_Needed

FROM

Water\_Quality

WHERE

treatment\_status = 'Needs Attention';

Sure! Here are additional SQL queries that can provide deeper insights into your water treatment system database, using the sample data you provided.

7. Retrieve water usage data for a specific user

SELECT

U.Username,

WU.usage\_date,

WU.volume

FROM

water\_usage WU

INNER JOIN

Users U ON WU.User\_id = U.id

WHERE

U.Username = 'field\_agent\_1';

8. List all locations with a "Good" water quality status

SELECT

L.Location\_Name,

L.Region,

WQ.treatment\_status

FROM

Water\_Quality WQ

INNER JOIN

Location L ON WQ.location\_id = L.id

WHERE

WQ.treatment\_status = 'Good';

9. Find all treatments that are pending

SELECT

L.Location\_Name,

T.treatment\_Date,

T.method

FROM

Treatment T

INNER JOIN

Location L ON T.Location\_ID = L.id

WHERE

T.status = 'Pending';

10. Calculate the total water usage for each user

SELECT

U.Username,

SUM(WU.volume) AS Total\_Usage

FROM

water\_usage WU

INNER JOIN

Users U ON WU.User\_id = U.id

GROUP BY

U.Username;

11. Retrieve the most recent water quality measurement for each location

SELECT

L.Location\_Name,

WQ.pH,

WQ.turbidity,

WQ.Contaminant\_level

FROM

Water\_Quality WQ

INNER JOIN

Location L ON WQ.location\_id = L.id

WHERE

WQ.measurement\_date = (SELECT MAX(measurement\_date)

FROM Water\_Quality WHERE location\_id = L.id);

12. Identify locations with multiple water treatment methods

SELECT

L.Location\_Name,

COUNT(DISTINCT T.method) AS Treatment\_Count

FROM

Treatment T

INNER JOIN

Location L ON T.Location\_ID = L.id

GROUP BY

L.Location\_Name

HAVING

COUNT(DISTINCT T.method) > 1;

13. Retrieve water quality data for a specific date range

SELECT

L.Location\_Name,

WQ.pH,

WQ.turbidity,

WQ.Contaminant\_level

FROM

Water\_Quality WQ

INNER JOIN

Location L ON WQ.location\_id = L.id

WHERE

WQ.measurement\_date BETWEEN '2023-06-01' AND '2023-09-30';

14. Count the total number of water sources per region

SELECT

L.Region,

COUNT(WS.id) AS Total\_Sources

FROM

water\_sources WS

INNER JOIN

Location L ON WS.location = L.Location\_Name

GROUP BY

L.Region;

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15. List all users and their roles

SELECT

U.Username,

U.Role

FROM

Users U;