SQL Script for Hospital and Blood Bank Management

This presentation will guide you through a comprehensive SQL script for managing hospital and blood bank data. We'll cover basic operations like creating tables, inserting data, and querying information, as well as more advanced techniques for data analysis and manipulation.

Introduction

This SQL script is designed for managing and analyzing data related to hospitals and blood banks. It includes table creation, data insertion, and a wide variety of queries to perform basic and advanced operations. These queries are tailored to extract meaningful insights, update data, and maintain the relationships between hospitals and blood banks.

Description

1. **Table Structure**: The script defines two tables:
   - `Hospital`: Stores information about hospitals, including their name, location, contact details, and unique identifiers.
   - `BloodBank`: Contains details about blood banks, such as name, location, nodal officer, and email.
2. **Data Insertion**: Sample records for both tables are provided, simulating real-world scenarios for testing and demonstration.
3. **Basic Queries**: Operations like selecting all records, filtering by specific attributes, updating fields, and deleting records are included.
4. **Advanced Queries**: These include aggregate functions, joins, subqueries, and grouping to derive deeper insights. Examples include finding states with the most hospitals, identifying duplicate provider IDs, and calculating the average length of hospital names.
5. **Relationships**: Queries establish connections between hospitals and blood banks, such as finding hospitals with associated blood banks or retrieving records for hospitals and blood banks in the same district.
6. **View Creation**: A view named `HospitalBloodBankView` consolidates hospital and blood bank details, enabling easy retrieval for reporting.

Purpose

- **Database Management**: Provides a foundation for organizing and managing hospital and blood bank data efficiently.

- **Data Analysis**: Facilitates analysis of key metrics, such as the number of hospitals and blood banks per state, duplication of provider IDs, and location-based insights.

- **Operational Use**: Supports tasks like updating contact details, adding new records, and maintaining data integrity.

- **Decision Support**: Enables stakeholders to identify regions with insufficient healthcare facilities or blood banks, aiding resource allocation and policy-making.

Data Overview

1. **Hospital Table**:

    - **Columns**: hospital_index, provider_id, hospital_name, address, city, state, zip_code, county_name, phone_number, and email.

    - **Sample Data**:

        - TAWAS ST JOSEPH HOSPITAL, located in Michigan (MI).

        - MEMORIAL HEALTHCARE, located in Owosso, MI.

2. **BloodBank Table**:

    - **Columns**: blood_bank_index, blood_bank_name, state, district, city, address, pincode, email, nodal_officer.

    - **Sample Data**:

        - G.B. Pant Hospital Blood Bank in Port Blair, Andaman and Nicobar Islands.

        - Red Cross Blood Bank in Mumbai, Maharashtra.

3. **Relationships**:

    - The script assumes a potential mapping between hospitals and blood banks through a HospitalBloodBank table (not explicitly created in this script but referenced in queries).

4. **Insights Possible**:

    - Number of facilities in each region.

    - States with no hospitals or blood banks.

    - Patterns of healthcare resource distribution.

-- Retrieve all blood banks in a specific state

SELECT * FROM BloodBanks WHERE State = 'Andaman And Nicobar Islands';

Result Grid | Filter Rows: Search | Edit: | Export/Import:

Sr_No	BloodBankName	State	District	City	Address	Pincode	LastInspect...
1	G.B. Pant Hospital Blood bank	ANDAMAN AND NICOBAR ISLANDS	SOUTH ANDAMAN	Port Blair	Atlanta Point, Near Cellular Jail	744104	NULL
2	I.N.H.S. Dhanvantri	ANDAMAN AND NICOBAR ISLANDS	SOUTH ANDAMAN	Port Blair	Ashvini Nagar, Port Blair	744103	NULL
3	Pillar Health Centre Blood Bank	ANDAMAN AND NICOBAR ISLANDS	SOUTH ANDAMAN	Port Blair	Lamba Line, P.O. Junglighat	744104	NULL
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

-- Count the number of blood banks in each state

SELECT State, COUNT(*) AS BloodBankCount FROM BloodBanks GROUP BY State;

Result Grid | Filter Rows: Search | Export:

State	BloodBankCount
ANDAMAN AND NICOBAR ISLANDS	3
ANDHRA PRADESH	2
TELANGANA	2
KARNATAKA	2
DELHI	1
KERALA	4
TAMIL NADU	1

-- Find hospitals with ZIP codes starting with '48'

SELECT * FROM Hospitals WHERE ZIPCode LIKE '48%';

ProviderID	HospitalName	Address	City	State	ZIPCode	CountyName	PhoneNumber
230100	TAWAS ST JOSEPH HOSPITAL	200 HEMLOCK	TAWAS CITY	MI	48764	IOSCO	9893629301
230118	HURON MEDICAL CENTER	1100 SOUTH VAN DYKE ROAD	BAD AXE	MI	48413	HURON	9892699521
230121	MEMORIAL HEALTHCARE	826 WEST KING STREET	OWOSSO	MI	48867	SHIAWASSEE	9897235211
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

-- Join query to find blood banks and hospitals in the same city

SELECT bb.BloodBankName, bb.City AS CityName, h.HospitalNameFROM

BloodBanks bb JOIN Hospitals h ON bb.City = h.City;

BloodBankName	CityName	HospitalName
Apollo Blood Bank	Hyderabad	APOLLO HOSPITAL
Care Hospital Blood Bank	Hyderabad	APOLLO HOSPITAL
Manipal Blood Bank	Bangalore	NARAYANA HEALTH
NIMHANS Blood Bank	Bangalore	NARAYANA HEALTH
Red Cross Blood Bank	Trivandrum	KIMS HOSPITAL

Calculate the percentage of blood banks in each state

SELECT State, COUNT(*) * 100.0 / (SELECT COUNT(*) FROM BloodBanks) AS Percentage FROM BloodBanks GROUP BY State;

State	Percentage
ANDAMAN AND NICOBAR ISLANDS	14.28571
ANDHRA PRADESH	14.28571
TELANGANA	14.28571
KARNATAKA	14.28571
DELHI	7.14286
KERALA	28.57143
TAMIL NADU	7.14286

-- Retrieve the top 3 cities with the most blood banks

SELECT City, COUNT(*) AS BloodBankCount FROM BloodBanks GROUP BY
City ORDER BY BloodBankCount DESC LIMIT 3;

City	BloodBankCount
Port Blair	2
Bangalore	2
Hyderabad	2

-- Retrieve the total count of blood banks and hospitals per city

SELECT City, SUM(CASE WHEN Type = 'BloodBank' THEN 1 ELSE 0 END) AS
BloodBankCount, SUM(CASE WHEN Type = 'Hospital' THEN 1 ELSE 0 END) AS
HospitalCount FROM CombinedData GROUP BY City;

City	BloodBankCount	HospitalCount
Port Blair	2	0
Anantapur	1	0
Ananthapur	1	0
Hyderabad	2	1
Bangalore	2	1
New Delhi	1	0
Trivandrum	1	1
Kochi	1	0
Thrissur	1	0
Thalassery	1	0
Vellore	1	0
TAWAS C...	0	1
BAD AXE	0	1
OWOSSO	0	1
GAYLORD	0	1
CLEVELA...	0	1
ROCHES...	0	1
BALTIMO...	0	1
BOSTON	0	1
LOS ANG...	0	1
STANFORD	0	1
Delhi	0	1

-- Find the average number of hospitals per state

SELECT State, AVG(HospitalCount) AS AverageHospitals FROM (SELECT State, COUNT(*) AS HospitalCount FROM Hospitals GROUP BY State) AS StateHospitalCounts GROUP BY State;

State	AverageHospitals
MI	4.0000
OH	1.0000
MN	1.0000
MD	1.0000
MA	1.0000
CA	2.0000
Karnataka	1.0000
Kerala	1.0000
Telangana	1.0000
Delhi	1.0000

-- Generate a report of blood banks and hospitals grouped by state and district

SELECT bb.State, bb.District, COUNT(DISTINCT bb.BloodBankName) AS TotalBloodBanks, COUNT(DISTINCT h.HospitalName) AS TotalHospitals FROM BloodBanks bb LEFT JOIN Hospitals h ON bb.State = h.State AND bb.District = h.CountyName GROUP BY bb.State, bb.District;

State	District	TotalBloodBan...	TotalHospit...
ANDAMAN AND NICOBAR ISLANDS	SOUTH ANDAMAN	2	0
ANDHRA PRADESH	ANANTAPUR	2	0
DELHI	NEW DELHI	1	1
KARNATAKA	BANGALORE	2	0
KERALA	ERNAKULAM	1	0
KERALA	KANNUR	1	0
KERALA	THIRUVANANTHAPURAM	1	1
KERALA	THRISSUR	1	0
TAMIL NADU	VELLORE	1	0
TELANGANA	HYDERABAD	2	1

Identify hospitals with no associated blood banks in the same city

SELECT * FROM Hospitals h WHERE NOT EXISTS (SELECT 1

FROM BloodBanks bb WHERE bb.City = h.City);

ProviderID	HospitalName	Address	City	State	ZIPCode	CountyName	PhoneNumber	LastUpdated	Capacity
230100	TAWAS ST JOSEPH HOSPITAL	200 HEMLOCK	TAWAS CITY	MI	48764	IOSCO	9999999999	2025-01-18 19:08:54	500
230118	HURON MEDICAL CENTER	1100 SOUTH VAN DYKE ROAD	BAD AXE	MI	48413	HURON	9892699521	2025-01-18 19:08:54	500
230121	MEMORIAL HEALTHCARE	826 WEST KING STREET	OWOSSO	MI	48867	SHIAWASSEE	9897235211	2025-01-18 19:08:54	500
230133	OTSEGO MEMORIAL HOSPITAL	825 N CENTER AVE	GAYLORD	MI	49735	OTSEGO	9897312100	2025-01-18 19:08:54	500
230150	CLEVELAND CLINIC	9500 EUCLID AVENUE	CLEVELAND	OH	44195	CUYAHOGA	2164442200	2025-01-18 19:08:54	500
230151	MAYO CLINIC	200 FIRST ST SW	ROCHESTER	MN	55905	OLMSTED	5072842511	2025-01-18 19:08:54	500
230152	JOHNS HOPKINS HOSPITAL	1800 ORLEANS STREET	BALTIMORE	MD	21287	BALTIMORE CITY	4109555000	2025-01-18 19:08:54	500
230153	MASSACHUSETTS GENERAL HOSPITAL	55 FRUIT STREET	BOSTON	MA	02114	SUFFOLK	6177262000	2025-01-18 19:08:54	500
230154	UCLA MEDICAL CENTER	757 WESTWOOD PLAZA	LOS ANGELES	CA	90095	LOS ANGELES	3108259111	2025-01-18 19:08:54	500
230155	STANFORD HOSPITAL	300 PASTEUR DRIVE	STANFORD	CA	94305	SANTA CLARA	6507234000	2025-01-18 19:08:54	500

-- Generate a report of blood banks and hospitals grouped by state

SELECT State, COUNT(DISTINCT BloodBankName) AS TotalBloodBanks, COUNT(DISTINCT HospitalName) AS TotalHospitals FROM (SELECT State, BloodBankName, NULL AS HospitalName FROM BloodBanks UNION ALL SELECT State, NULL AS BloodBankName, HospitalName FROM Hospitals) AS StateEntities GROUP BY State;

State	TotalBloodBan...	TotalHospit...
ANDAMAN AND NICOBAR ISLANDS	2	0
ANDHRA PRADESH	2	0
CA	0	2
DELHI	1	1
KARNATAKA	2	1
KERALA	4	1
MA	0	1
MD	0	1
MI	0	4
MN	0	1