**create database self\_joins\_tp;**

**use self\_joins\_tp;**

-- Assuming we have a table named **employees** with the following structure:

**CREATE TABLE employees (**

**id INT PRIMARY KEY,**

**name VARCHAR(255),**

**manager\_id INT,**

**department VARCHAR(255),**

**hire\_date DATE,**

**salary DECIMAL(10, 2),**

**job\_title VARCHAR(255)**

**);**

INSERT INTO employees (id, name, manager\_id, department, hire\_date, salary, job\_title) VALUES

(1, 'John', NULL, 'Management', '2020-01-15', 80000.00, 'CEO'),

(2, 'Alice', 1, 'Management', '2021-05-20', 60000.00, 'COO'),

(3, 'Bob', 1, 'Management', '2021-03-10', 60000.00, 'CFO'),

(4, 'Charlie', 2, 'Engineering', '2019-07-05', 75000.00, 'Lead Engineer'),

(5, 'David', 2, 'Engineering', '2020-09-12', 70000.00, 'Software Engineer'),

(6, 'Eve', 3, 'Finance', '2022-02-28', 55000.00, 'Financial Analyst'),

(7, 'Frank', 3, 'Finance', '2022-01-10', 56000.00, 'Accountant');

1. **Retrieve a list of employees and their managers:**
2. **List the employees who do not have a manager:**
3. **Display the hierarchy for a specific employee (e.g., 'Alice'):**
4. **Find the highest-level manager (top-level) in the organization:**
5. **List the employees who are managed by 'John':**
6. **Calculate the total number of subordinates for each manager:**
7. **Find all employees who have at least one subordinate:**
8. **Retrieve a list of employees and their immediate subordinates:**
9. **Display the hierarchy for all employees in a tabular format with indentation:**

**Consider the following table**

drop table employees;

**CREATE TABLE employees (**

**EmployeeID INT PRIMARY KEY,**

**LastName VARCHAR(255),**

**FirstName VARCHAR(255),**

**Title VARCHAR(255),**

**TitleOfCourtesy VARCHAR(255),**

**BirthDate DATE,**

**HireDate DATE,**

**Address VARCHAR(255),**

**City VARCHAR(255),**

**Region VARCHAR(255),**

**PostalCode VARCHAR(255),**

**Country VARCHAR(255),**

**HomePhone VARCHAR(255),**

**Extension VARCHAR(255),**

**Photo BLOB,**

**Notes TEXT,**

**ReportsTo INT,**

**PhotoPath VARCHAR(255)**

**);**

**Insert the following rows to the table**

INSERT INTO employees (EmployeeID, LastName, FirstName, Title, TitleOfCourtesy, BirthDate, HireDate, Address, City, Region, PostalCode, Country, HomePhone, Extension, Photo, Notes, ReportsTo, PhotoPath)

VALUES

(1, 'Doe', 'John', 'Manager', 'Mr.', '1980-05-15', '2005-07-10', '123 Main St', 'New York', 'NY', '10001', 'USA', '555-123-4567', '1234', NULL, 'Some notes about John', NULL, 'john.jpg'),

(2, 'Smith', 'Jane', 'Assistant Manager', 'Ms.', '1985-03-20', '2007-02-18', '456 Elm St', 'Los Angeles', 'CA', '90001', 'USA', '555-987-6543', '5678', NULL, 'Some notes about Jane', 1, 'jane.jpg'),

(3, 'Johnson', 'Robert', 'Sales Representative', 'Mr.', '1990-09-10', '2010-04-05', '789 Oak St', 'Chicago', 'IL', '60001', 'USA', '555-567-8901', '6789', NULL, 'Some notes about Robert', 1, 'robert.jpg'),

(4, 'Williams', 'Emily', 'Sales Representative', 'Ms.', '1988-11-25', '2009-08-15', '101 Pine St', 'San Francisco', 'CA', '94101', 'USA', '555-234-5678', '3456', NULL, 'Some notes about Emily', 3, 'emily.jpg'),

(5, 'Brown', 'Michael', 'Accountant', 'Mr.', '1987-07-12', '2012-01-22', '222 Cedar St', 'Boston', 'MA', '02101', 'USA', '555-345-6789', '4567', NULL, 'Some notes about Michael', 1, 'michael.jpg'),

(6, 'Davis', 'Jennifer', 'Sales Representative', 'Ms.', '1992-02-05', '2013-06-30', '333 Maple St', 'Dallas', 'TX', '75201', 'USA', '555-789-0123', '7890', NULL, 'Some notes about Jennifer', 3, 'jennifer.jpg'),

(7, 'Martinez', 'Daniel', 'Sales Representative', 'Mr.', '1989-04-30', '2011-11-11', '444 Oak St', 'Miami', 'FL', '33101', 'USA', '555-890-1234', '8901', NULL, 'Some notes about Daniel', 3, 'daniel.jpg'),

(8, 'Garcia', 'Sarah', 'Accounting Manager', 'Ms.', '1983-01-08', '2008-03-25', '555 Birch St', 'Seattle', 'WA', '98101', 'USA', '555-456-7890', '1235', NULL, 'Some notes about Sarah', 5, 'sarah.jpg'),

(9, 'Harris', 'Matthew', 'Sales Representative', 'Mr.', '1991-06-18', '2014-09-14', '666 Pine St', 'Atlanta', 'GA', '30301', 'USA', '555-123-9876', '2345', NULL, 'Some notes about Matthew', 3, 'matthew.jpg'),

(10, 'Wilson', 'Jessica', 'Sales Representative', 'Ms.', '1986-12-03', '2016-07-02', '777 Cedar St', 'Houston', 'TX', '77001', 'USA', '555-234-5678', '7891', NULL, 'Some notes about Jessica', 3, 'jessica.jpg'),

(11, 'Lee', 'David', 'IT Manager', 'Mr.', '1975-08-20', '2003-12-08', '888 Elm St', 'San Diego', 'CA', '92101', 'USA', '555-789-1234', '1236', NULL, 'Some notes about David', 8, 'david.jpg'),

(12, 'Nguyen', 'Linda', 'Database Administrator', 'Ms.', '1982-04-15', '2006-05-11', '999 Oak St', 'Phoenix', 'AZ', '85001', 'USA', '555-567-8901', '5678', NULL, 'Some notes about Linda', 11, 'linda.jpg'),

(13, 'Wong', 'William', 'Software Engineer', 'Mr.', '1995-03-10', '2019-02-28', '111 Maple St', 'Denver', 'CO', '80201', 'USA', '555-123-4567', '2345', NULL, 'Some notes about William', 11, 'william.jpg'),

(14, 'Chen', 'Susan', 'Software Engineer', 'Ms.', '1994-11-08', '2018-10-15', '222 Cedar St', 'Boston', 'MA', '02101', 'USA', '555-234-5678', '7890', NULL, 'Some notes about Susan', 11, 'susan.jpg'),

(15, 'Park', 'Kevin', 'Marketing Manager', 'Mr.', '1978-09-25', '2004-06-20', '333 Pine St', 'Chicago', 'IL', '60601', 'USA', '555-456-7890', '4567', NULL, 'Some notes about Kevin', 1, 'kevin.jpg'),

(16, 'Kim', 'Helen', 'Marketing Coordinator', 'Ms.', '1989-07-07', '2015-08-10', '444 Elm St', 'Los Angeles', 'CA', '90001', 'USA', '555-345-6789', '3456', NULL, 'Some notes about Helen', 15, 'helen.jpg'),

(17, 'Liu', 'James', 'Sales Representative', 'Mr.', '1993-12-12', '2017-12-05', '555 Oak St', 'San Francisco', 'CA', '94101', 'USA', '555-789-0123', '1234', NULL, 'Some notes about James', 3, 'james.jpg'),

(18, 'Brown', 'Karen', 'Sales Representative', 'Ms.', '1984-06-30', '2008-09-15', '666 Maple St', 'Seattle', 'WA', '98101', 'USA', '555-123-9876', '5678', NULL, 'Some notes about Karen', 3, 'karen.jpg'),

(19, 'Wilson', 'Brian', 'Customer Service Manager', 'Mr.', '1976-02-18', '2002-03-10', '777 Cedar St', 'Houston', 'TX', '77001', 'USA', '555-234-5678', '7890', NULL, 'Some notes about Brian', 1, 'brian.jpg'),

(20, 'Gonzalez', 'Maria', 'Customer Service Representative', 'Ms.', '1990-05-05', '2014-04-18', '888 Birch St', 'San Diego', 'CA', '92101', 'USA', '555-456-7890', '2345', NULL, 'Some notes about Maria', 19, 'maria.jpg');

1. **Retrieve a list of employees and their managers' names.**
2. **Display the hierarchy for a specific employee (e.g., 'Jane Smith').**
3. **Find the highest-level manager (top-level) in the organization.**
4. **List the employees who are managed by 'John Doe'.**
5. **Calculate the total number of subordinates for each manager.**
6. **Find all employees who have at least one subordinate.**
7. **Retrieve a list of employees and their immediate subordinates.**
8. **Display the hierarchy for all employees in a tabular format with indentation**.
9. **Find all employees who have no subordinates.**
10. **Find the employees with the same manager.**
11. **Retrieve a list of employees and their immediate managers who are not at the top level.**