**Company Database Schema**

Here is the schema of a company database, please implement it on any RDBMS you like and then try to create the following requests (queries): "create only the dependent table with all data and relations"

**Employee**:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Fname** | **Lname** | **SSN** | **BDATE** | **Addresss** | **Sex** | **Salary** | **Superssn** | **Dno** |
| Ahmed | Ali | 112233 | 1/1/1965 | 15 Ali fahmy St.Giza | M | 1300 | 223344 | 10 |
| Kamel | Mohamed | 223344 | 15/10/1970 | 38 Mohy el dien abo el Ezz St.Cairo | M | 1800 | 321654 | 10 |
| Hanaa | Sobhy | 123456 | 18/3/1973 | 38 Abdel Khalik Tharwat St. Downtown.Cairo | F | 800 | 223344 | 10 |
| Amr | Omran | 321654 | 14/9/1963 | 44 Hilopolis.Cairo | M | 2500 | null | null |
| Noha | Mohamed | 968574 | 1/2/1975 | 55 Orabi St. El Mohandiseen .Cairo | F | 1600 | 321654 | 20 |
| Edward | Hanna | 512463 | 19/8/1972 | 18 Abaas El 3akaad St. Nasr City.Cairo | M | 1500 | 321654 | 30 |
| Mariam | Adel | 669955 | 12/6/1982 | 269 El-Haram st. Giza | F | 750 | 512463 | 20 |
| Maged | Raoof | 521634 | 6/4/1980 | 18 Kholosi st.Shobra.Cairo | M | 1000 | 968574 | 30 |

**Department**

|  |  |  |  |
| --- | --- | --- | --- |
| **Dname** | **DNum** | **MGRSSN** | **MGRStart date** |
| DP1 | 10 | 223344 | 1/1/2005 |
| DP2 | 20 | 968574 | 1/3/2006 |
| DP3 | 30 | 512463 | 1/6/2006 |

**Works for**

|  |  |  |
| --- | --- | --- |
| **ESSN** | **Pno** | **Hours** |
| 223344 | 100 | 10 |
| 223344 | 200 | 10 |
| 223344 | 300 | 10 |
| 112233 | 100 | 40 |
| 968574 | 400 | 15 |
| 968574 | 700 | 15 |
| 968574 | 300 | 10 |
| 669955 | 400 | 20 |
| 223344 | 500 | 10 |
| 669955 | 700 | 7 |
| 669955 | 300 | 10 |
| 512463 | 500 | 10 |
| 512463 | 600 | 25 |
| 521634 | 500 | 10 |
| 521634 | 600 | 20 |
| 521634 | 300 | 6 |
| 521634 | 400 | 4 |

**Project**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Pname** | **Pnumber** | **Plocation** | **City** | **Dnum** |
| AL Solimaniah | 100 | Cairo\_Alex Road | Alex | 10 |
| Al Rabwah | 200 | 6th of October City | Giza | 10 |
| Al Rawdah | 300 | Zaied City | Giza | 10 |
| Al Rowad | 400 | Cairo\_Faiyom Road | Giza | 20 |
| Al Rehab | 500 | Nasr City | Cairo | 30 |
| Pitcho american | 600 | Maady | Cairo | 30 |
| Ebad El Rahman | 700 | Ring Road | Cairo | 20 |

**Dependent**

|  |  |  |  |
| --- | --- | --- | --- |
| **ESSN** | **Dependent\_name** | **Sex** | **Bdate** |
| 112233 | Hala Saied Ali | F | 18/10/1970 |
| 223344 | Ahmed Kamel Shawki | M | 27/3/1998 |
| 223344 | Mona Adel Mohamed | F | 25/4/1975 |
| 321654 | Ramy Amr Omran | M | 26/1/1990 |
| 321654 | Omar Amr Omran | M | 30/3/1993 |
| 321654 | Sanaa Gawish | F | 16/5/1973 |
| 512463 | Sara Edward | F | 15/9/2001 |
| 512463 | Nora Ghaly | F | 22/6/1976 |

**\* Try to create the following Queries:**

1. Display the Department id, name and id and the name of its manager.

select dnum,dname,concat(fname,' ',lname) as "Full Name",ssn

from departments,employee

where mgrssn=ssn;

1. Display the name of the departments and the name of the projects under its control.

select dname,pname from departments d, project p

where d.dnum=p.dnum;

1. Display the full data about all the dependence associated with the name of the employee they depend on him/her.

select dependent.\*,concat(fname,' ',lname) as "Full Name"

from dependent,employee

where essn=ssn;

1. Display (Using Union Function)
   1. The name and the gender of the dependence that's gender is Female and depending on Female Employee.
   2. And the male dependence that depends on Male Employee.

select dependent\_name,d.sex

from dependent d,employee e

where d.sex='F' and e.sex='F'

union

select dependent\_name,d.sex

from dependent d,employee e

where d.sex='M' and e.sex='M';

1. Display the Id, name and location of the projects in Cairo or Alex city.

select pnumber,pname,plocation from project

where city in ('Cairo','Alex');

1. Display the Projects full data of the projects with a name starts with **"a"** letter.

select \* from project

where pname ilike 'a%';

1. display all the employees in department 30 whose salary from 1000 to 2000 LE monthly

select \* from employee

where dno=30 and salary between 1000 and 2000;

1. Retrieve the names of all employees in department 10 who works more than or equal10 hours per week on "AL Rabwah" project.

select concat(fname,' ',lname) as "Full Name"

from employee,project,works\_for

where ssn=essn and pnumber=pno and dno=10 and hours>=10 and pname='Al Rabwah';

1. Find the names of the employees who directly supervised with Kamel Mohamed.

select concat(e.fname,' ',e.lname) as "Full Name"

from employee e,employee em

where e.superssn=em.ssn and em.fname='Kamel';

1. For each project, list the project name and the total hours per week (for all employees) spent on that project.

select pname,sum(hours) as "hours per week"

from project,works\_for

where pnumber=pno

group by pname;

1. Retrieve the names of all employees and the names of the projects they are working on, sorted by the project name.

select fname,pname from employee,project,works\_for

where ssn=essn and pnumber=pno

order by pname;

1. Display the data of the department which has the smallest employee ID over all employees' ID.

select departments.\* from employee ,departments

where dno=dnum and ssn=(select min(ssn) from employee);

1. For each department, retrieve the department name and the maximum, minimum and average salary of its employees.

select dname,max(salary) as"Max Salary",min(salary) as"Min Salary",avg(salary) as "Average Salary"

from departments,employee

where dnum=dno

group by dname;

1. List the last name of all managers who have no dependents.

select lname

from employee

where ssn in (select mgrssn from departments where mgrssn is not null)

and ssn not in (select essn from dependent);

1. For each department-- if its average salary is less than the average salary of all employees-- display its number, name and number of its employees.

select dnum,dname,count(ssn) as "Number Of Employees"

from departments,employee

where dnum=dno

group by dnum

having avg(salary)<(select avg(salary)from employee);

1. Retrieve a list of employees and the projects they are working on ordered by department and within each department, ordered alphabetically by last name, first name.

select e.fname,e.lname,d.dname,p.pname

from employee e,departments d,project p,works\_for w

where e.dno=d.dnum and e.ssn=w.essn and w.pno=p.pnumber

order by d.dname,e.lname,e.fname;

1. For each project located in Cairo City , find the project number, the controlling department name ,the department manager last name ,address and birthdate.

select p.pnumber,d.dname,e.lname,e.address,e.bdate

from project p,departments d,employee e

where p.dnum=d.dnum and d.mgrssn=e.ssn

and city='Cairo';

Note : In PostgreSQL : when referring to a two word column like “MGRStart Date” , the name should be put between double quotations and make sure that capitalization is similar to the actual column name because anything put between quotations is case sensitive.

**Data Manipulating Language:**

1. Insert your personal data to the employee table as a new employee in department number 30, SSN = 102672, Superssn = 112233.
2. Insert another employee with, personal data your friend as new employee in department number 30, SSN = 102660, but don’t enter any value for salary or supervisor number to him.
3. In the department table insert new department called "DEPT IT", with id 100, employee with SSN = 112233 as a manager for this department. The start date for this manager is '1-11-2006'
4. Do what is required if you know that: Mrs.Noha Mohamed(SSN=968574) moved to be the manager of the new department (id = 100), and they give you (use your SSN from question1) her position (Dept. 20 manager)
   1. First try to update her record in the department table
   2. Update your record to be department 20 manager.
   3. Update your friend data (entered in question2) to be in your teamwork (supervised by you)
5. Unfortunately, the company ended the contract with Mr. Kamel Mohamed (SSN=223344) so try to delete his data from your database in case you know that your friend will be temporarily in his position.

Hint: (Check if Mr. Kamel has dependents, works as a department manager, supervises any employees or works in any projects and handle these cases).

1. And your salary has been upgraded by 20 percent of its last value.

**Try to create the following Queries:**

1. Display all the employees Data.
2. Display the employee First name, last name, Salary and Department number.
3. Display all the projects names, locations and the department which is responsible about it.
4. If you know that the company policy is to pay an annual commission for each employee with specific percent equals 10% of his/her annual salary. Display each employee full name and his annual commission in an ANNUAL COMM column (alias).
5. Display the employees Id, name who earns more than 1000 LE monthly.
6. Display the employees Id, name who earns more than 10000 LE annually.
7. Display the names and salaries of the female employees
8. Display each department id, name which managed by a manager with id equals 96

1- Display all the employees Data.

SELECT \* FROM Employee;

2- Display the employee First name, last name, Salary and Department number.

SELECT fname, lname, Salary, dno FROM Employee;

3- Display all the projects names, locations and the department which is responsible about it.

SELECT pname, plocation, dnum from project;

4- If you know that the company policy is to pay an annual commission for each employee with specific percent equals 10% of his/her annual salary. Display each employee full name and his annual commission in an ANNUAL COMM column (alias).

SELECT CONCAT(fname, ' ', lname) AS FullName,

Salary \* 0.1 AS "ANNUAL COMM"

FROM Employee;

5- Display the employees Id, name who earns more than 1000 LE monthly.

SELECT ssn, CONCAT(fname, ' ', lname) AS FullName

FROM Employee

WHERE Salary > 1000;

6- Display the employees Id, name who earns more than 10000 LE annually.

SELECT ssn, CONCAT(fname, ' ', lname) AS FullName

FROM Employee

WHERE Salary \* 12 > 10000;

7- Display the names and salaries of the female employees

SELECT fname, lname, Salary

FROM Employee

WHERE sex = 'Female';

8- Display each department id, name which managed by a manager with id equals 968574.

SELECT dnum, dname

FROM Departments

WHERE mgrssn = 968574;

9- Display the IDs, names and locations of the pojects which controlled with department 10.

SELECT pnumber, pname, Location

FROM Project

WHERE dnum= 10;

**Data Manipulating Language:**

1-Insert your personal data to the employee table as a new employee in department number 30, SSN = 102672, Superssn = 112233

insert into employee(fname,lname,ssn,bdate,address,sex,salary,superssn,dno) values('Bainh','Alaa',162679,'1999-09-15','Elmahalla AlGharbia','F',2700,112233,30);

2-Insert another employee with, personal data your friend as new employee in department number 30, SSN = 102660, but don’t enter any value for salary or supervisor number to him

insert into employee(fname,lname,ssn,bdate,address,sex,dno) values('Esraa','Aboray',10986,'1997-11-22','Elmahalaa AlGharbia','F',30);

3- In the department table insert new department called "DEPT IT", with id 100,

employee with SSN = 112233 as a manager for this department. The start date

insert into departments (dname,dnum,mgrssn,"MGRStart Date") values ('DEPT

IT',100,112233,'2006-11-01');

4- Do what is required if you know that: Mrs.Noha Mohamed(SSN=968574) moved to be the manager of the new department (id = 100), and they give you (use your SSN from question1) her position (Dept. 20 manager)

* 1. First try to update her record in the department table

update departments set mgrssn=968574 where dnum=100;

* 1. Update your record to be department 20 manager.

update departments set mgrssn=102672 where dnum=20;

* 1. Update your friend data (entered in question2) to be in your teamwork (supervised by you)

update employee set superssn=102672 where ssn=102660;

5-Unfortunately, the company ended the contract with Mr. Kamel Mohamed (SSN=223344) so try to delete his data from your database in case you know that your friend will be temporarily in his position.

update Employee set Superssn=102660 where Superssn= 223344;

delete from dependent where essn=223344;

delete from works\_for where essn=223344;

delete from employee where ssn=223344;

6-And your salary has been upgraded by 20 percent of its last value.

UPDATE employee set salary= (salary\*1.2) where fname='bainh';