**Practical Database Template**

For this project you will write the code for creating all the tables in a database including primary keys, foreign keys and everything that you may need for the database.

The database can be very basic ranging from 3 tables to as many that you would like to add.

The key thing about this database is that it should be relatively ready for someone to use. The target user could be an an individual using it for their own personal use, or a start-up or other small business that needs such a database to use.

Some ideas could be a database for doing taxes or personal finances, a database for an ecommerce site, a database for a chatbot application and so on.

The criteria for the project:

* .SQL file containing the code to create all the tables in the database, including specification of primary keys, foreign keys and so on.
  + Can contain Views for the DB
* .SQL file containing some queries and views that a user could potentially use on the DB.
  + Should contain comments (e.g., --comment) explaining the use of each query.
* A VERY BRIEF readme.MD containing an overall description of the database and how it may be used, including queries, and how to update it. (if you’re not using GitHub yet then do the readme.MD in a word file, google doc, text file etc.,)
* An ERD is NOT required, but you can include it if you want by generating it in pgadmin4 or whatever tool you want to use.

You have a lot of latitude to do this assignment how you see fit.

The project should be hosted on GitHub. I will show everyone how to create the repository and push it to GitHub

Due Date: January 2, 2024

**---------PRACTICAL DATABASE TEMPLATE -------------**

**—-----------------**

**EMPLOYEE MANAGEMENT is a part of human resource management. The employee management problem of my company in Vietnam could previously be expressed as follows:**

**I set up 6 tables including: phongban, diadiem, nhanvien, dean, thannhan, phan cong.**

**—-------------------**

**----command to create table 'phongban' for database, primary key = maphg -----**

**CREAT TABLE quanlynhanvien.phongban**

**(**

**tenphg varchar(40),**

**maphg int,**

**trphg varchar(9),**

**ng\_nhanchuc date,**

**CONSTRAINT pk\_maphg, diadiem**

**CREAT TABLE quanlynhanvien.diadiem\_phg**

**(**

**maphg int,**

**diadiem varchar(50),**

**CONSTRAINT pk\_diadiemphg PRIMARY KEY (maphg, diadiem)**

**);**

**----------**

**-- command to create table 'nhanvien' for database, primary key = manv**

**CREAT TABLE quanlynhanvien.nhanvien**

**(**

**honv varchar(20),**

**tenlot varchar(20),**

**namenv varchar(20),**

**manv varchar(9),**

**ngsinh date,**

**dchi varchar(100),**

**fade varchar(3),**

**luong float,**

**ma\_nql varchar(9),**

**phg int,**

**CONSTRAINT pk\_nhanvien PRIMARY KEY (manv)**

**);**

**-- command to create 'dean' state for database, primary key = mada —**

**CREAT TABLE quanlynhanvien.dean**

**(**

**tenda varchar(100),**

**mada int,**

**ddiem\_da varchar(50),**

**Phong int,**

**CONSTRAINT pk\_dean PRIMARY KEY (mada)**

**);**

**-- command to create table 'thannhan' for database, primary key = ma\_nvien, tentn**

**—**

**CREAT TABLE quanlynhanvien.thannhan**

**(**

**ma\_nvien varchar(9),**

**tentn varchar(50),**

**fade varchar(3),**

**ngsinh date,**

**arounde varchar(20),**

**CONSTRAINT pk\_thannhan PRIMARY KEY (ma\_nvien, tentn)**

**);**

**-- command to create table 'phancong' for database, primary key = ma\_nvien, soda**

**—**

**CREAT TABLE quanlynhanvien.phancong**

**(**

**ma\_nvien varchar(9),**

**soda int,**

**time date,**

**CONSTRAINT pk\_phancong PRIMARY KEY (ma\_nvien, soda)**

**);**

**------------finished creating boards for the database**

**—---**

**There are two ways to create constraints in SQL, the first is to add the constraint when creating the table using the CREATE TABLE statement. The second way to create a constraint is to use the ALTER TABLE statement, which is often used to edit an existing constraint or add a new one.**

**Here we use the second method.**

**—------**

**—---TO CREATE FOREIGN KEYS FOR THE TABLES—-**

**-- 1. create foreign key for two table 'phongban' and 'ddiem\_phg' (one- to -many)**

### **ALTER TABLE diadiem\_phg ADD CONSTRAINT fk\_phongban\_ddiem\_phg FOREIGN KEY (maphg) REFERENCES phongban(maphg)**

**-- 2. create foreign medicine for 2 states 'nhanvien - phong ban' (many-to-one)**

### **ALTER TABLE nhanvien ADD CONSTRAINT fk\_nhanvien\_phongban FOREIGN KEY (phg) REFERENCES phongban(maphg)**

**-- 3. create external department for 2 states 'staff - department (officer 1 - n) need to change again (ma\_nql or manv)**

**ALTER TABLE phongban ADD CONSTRAINT fk\_phongban\_nhanvien FOREIGN KEY (trphg) REFERENCES nhanvien(manv)**

**-- 4. Create a foreign policy for 2 states 'thannhan - nhanvien' (quan he 1-n)**

### **ALTER TABLE thannhan ADD CONSTRAINT fk\_thannhan\_nhanvien FOREIGN KEY (ma\_nvien) REFERENCES nhanvien(manv)**

**-- 5. create foreign science for 2 states 'phancong - nhanvien' (quan he 1-n)**

**ALTER TABLE phancong ADD CONSTRAINT fk\_phancong\_nhanvien FOREIGN KEY (ma\_nvien) REFERENCES nhanvien(manv)**

**-- 6. create foreign science for 2 states 'phancong - dean' (quan he 1-n)**

**ALTER TABLE phancong ADD CONSTRAINT fk\_phancong\_dean FOREIGN KEY (soda) REFERENCES dean(mada)**

**-- 7. I'll give advice to the employee**

**ALTER TABLE nhanvien ADD CONSTRAINTt fk\_nhanvien\_nhanvien FOREIGN KEY (ma\_nql) REFERENCES nhanvien(manv)**

**----------------------**

**------INPUT DATA FOR THE TABLES-----**

**-- 1. Enter the data for 'phongban' table**

**INSERT INTO quanlynhanvien.phongban (namephg, maphg, trphg, ng\_nhanchuc) VALUES**

**('Manager',1,NULL,'1971-06-19'),**

**('Organization',2,NULL,'2001-01-15'),**

**('Executive',4,NULL,'1985-01-01'),**

**('Research',5,NULL,'1978-05-22')**

**-- 2. Enter the data for 'diadiem\_phg'**

**INSERT INTO quanlynhanvien.diadiem\_phg (maphg, diadiem)VALUES**

**(1,'Vung Tau'),**

**(2,'HCMC'),**

**(2,'Nha Trang'),**

**(4,'HCMC'),**

**(5,'Hanoi'),**

**(5,'HCMC')**

**-- 3 Enter the data for table 'nhanvien'**

**INSERT INTO quanlynhanvien.nhanvien (honv, tenlot, namenv, manv, ngsinh, dchi, pha, luong, ma\_nql, phg) VALUES**

**('Cao','Si','Ki','123123456','1986-08-09','123 Le Loi - District 1 - HCMC','Male',15000,NULL,5),**

**('Dinh','Ba','Tien','123456789','1955-01-09','731 Tran Hung Dao - District 1 - HCMC','Nam',30000,NULL,5),**

**('Truong','Le','Doan','147852369','1986-05-15','22/41/1 Nguyen hue-Dítric 1-HCMC','Male',20000,NULL, 5),**

**('LE', 'ANH','DUNG','123112345','1961-07-25', 9 Xa Dan - Dítrict 3 - Hanoi', 'Male',35000, NULL, 1),**

**--------------------------------------------**

**--------------Frequently Asked Questions-----**

**--1.List employees (MANV,HONV, TENLOT,TENNV) working in 'NC' department**

**SELECT MANV, HONV, TENLOT, TENNV**

**FROM NHANVIEN**

**WHERE PHONG = 'NC'**

**--2.List employees with salary over 3,000,000**

**SELECT MANV, HONV, TENLOT, TENNV**

**FROM NHANVIEN**

**WHERE MLUONG > 3000000**

**--3 List the full names of employees and the names of the –departments they belong to with salaries from 2,000,000 to 3,000,000**

**SELECT HONV+' ' +TENLOT+''+TENNV AS 'TENNV',PHONG**

**FROM NHANVIEN**

**WHERE MLUONG BETWEEN 2000000 AND 3000000**

**--4. List the full names of employees in "HCMC"**

**SELECT HONV+' ' +TENLOT+''+TENNV AS 'TENNV'**

**FROM NHANVIEN**

**WHERE DCHI LIKE'%HCMC'**

**--5. List date of birth and address of 'Dinh Ba Tien' employee**

**SELECT NOWSINH,DCHI**

**FROM NHANVIEN**

**WHERE HONV ='Dinh' and TENLOT='Ba' and TENNV='Tien'**

**--6. List of relatives under 18 years old of employees with code —'NV001'**

**SELECT HONV+' ' +TENLOT+''+TENNV AS 'TENNV'**

**FROM NHANVIEN**

**WHERE YEAR(GETDATE())-YEAR(NGAYSINH)<18 and MANV ='001'**

**--7. lists all female employees over 30 years old**

**SELECT HONV+' ' +TENLOT+' '+TENNV AS 'TENNV'**

**FROM NHANVIEN**

**WHERE YEAR(GETDATE())-YEAR(SAYSINH)>30 and PHAI='NU'**

**--8. For each department, list the department name and department —location**

**SELECT TENPHG, DIADIEM**

**FROM PHONGBAN PB,DIADIEM\_PHG DD**

**WHERE PB.MAPHG = DD.MAPHG**

**--9. List the heads of each department**

**SELECT MAPHG, HONV+' ' +TENLOT+' '+TENNV AS 'TENNV'**

**FROM PHONGBAN AS PB,NHANVIEN AS NV**

**WHERE PB.TRPHG=NV.MANV**

**--10. list TENDA, MADA, DDIEM\_DA, PHONG, TENPHG, MAPHG, TRPHG, NGNC**

**SELECT TENDA, MADA, DDIEM\_DA,DA.PHONG,TENPHG,PB.MAPHG,TRPHG,NGNC**

**FROM PHONGBAN PB, DEAN DA, DIADIEM\_PHG DD**

**WHERE PB.MAPHG=DA.PHONG and PB.MAPHG =DD.MAPHG**

**--11. List the names and addresses of all employees of the "Nghien —cuu" department**

**SELECT HONV+' ' +TENLOT+' '+TENNV AS 'TENNV', DCHI**

**FROM PHONGBAN PB,NHANVIEN NV**

**WHERE PB.MAPHG=NV.PHONG and TENPHG='NGHIEN CUU'**

**--12. List the codes and names of employees in the "Nghien Cuu" —department participating in the "Chinese News" project with —working hours of 20 hours/week.**

**SELECT NV.MANV,HONV+' ' +TENLOT+' '+TENNV AS 'TENNV'**

**FROM PHONGBAN PB,NHANVIEN NV,DEAN DA,PHANCONG PC**

**WHERE PB.MAPHG=NV.PHONG and PB.MAPHG=DA.PHONG and DA.MADA=PC.MADA and PC.MANV=NV.MANV and**

**TENPHG='NGIEN CUU' and TENDA ='TIN HOC HOA 1' and THOIGIAN =20**

**--13. List the names of female employees and the names of their –relatives**

**SELECT NV.MANV, HONV+' ' +NV.TENLOT+' '+NV.TENNV AS 'TEN NHAN', TN.TENTN AS 'TEN THAN'**

**FROM THANNHAN TN, NHANVIEN NV**

**WHERE NV.MANV=TN.MANV**

**--14. For all projects in "Ha Noi", list the project code (MADA), the —project's department code (PHONG), and the school's name —(HONV<tenlot,name).**

**--as well as the person's address (DCHI) and date of birth (NGSINH).**

**SELECT DA.MADA, DA.PHONG, HONV+' '+TENLOT+' '+TENNV AS 'TEN TRUONG PHONG', DCHI, NGHINH**

**FROM PHONGBAN PB,NHANVIEN NV,DEAN DA,PHANCONG PC**

**WHERE PB.MAPHG=DA.PHONG and DA.MADA=PC.MADA and PC.MANV=PB.TRPHG and PB.TRPHG=NV.MANV and**

**DDIEM\_DA ='HANOI'**

**--15. For each employee, list the employee's full name and the full name of that employee's direct manager**

**SELECT N1.HONV, N1.TENNV, N2.HONV AS HONQL, N2.TENNV AS TENNQL**

**FROM NHANVIEN N1 LEFT JOIN NHANVIEN N2 ON N1.MA\_NQL = N2.MANV**

**--16.For each project, list the project name (TENDA) and the total number of working hours per week for all employees participating in that project.**

**SELECT DA.MADA,TENDA, SUM(THOIGIAN) AS TONG\_TG**

**FROM DEAN DA, PHHANCONG PC, NHANVIEN NV**

**WHERE NV.MANV=PC.MANV and PC.MADA=DA.MADA**

**GROUP BY DA.MADA,TENDA**

**--17.For each employee, list the employee's full name and how many –relatives the employee has.**

**SELECT NV.MANV,HONV,TENNV, COUNT(MATN) AS TONG\_TN**

**FROM NHANVIEN NV, THANNHAN TN**

**WHERE NV.MANV=TN.MANV**

**GROUP BY NV.MANV,HONV,TENNV**

**--18. FOR each department, list the department name (TENPHG) and the average salary of the employees working for that department.**

**SELECT MAPHG,TENPHG, AVG(MLUONG) AS LUONG\_tb**

**FROM NHANVIEN NV,PHONGBAN PB**

**WHERE NV.PHONG=PB.MAPHG**

**GROUP BY MAPHG,TENPHG**

**--19. Shows the average salary of all female employees**

**SELECT AVG(MLUONG) AS LUONG\_tb**

**FROM NHANVIEN**

**WHERE PHAI='NU'**

**--20.For departments with an average salary of over 30,000, list the –department name and the number of employees in that department.**

**SELECT MAPHG,TENPHG,COUNT(MANV) AS SO\_LUONG, AVG(MLUONG) AS LUONG\_tb**

**FROM NHANVIEN NV,PHONGBAN PB**

**WHERE NV.PHONG=PB.MAPHG**

**GROUP BY MAPHG,TENPHG**

**HAVING AVG(MLUONG) >30000**