



Vaccine Center staff database



introduction to Database - CCCS215

# Vaccine Center staff database

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# Distribution of Duties

for the project

name	Layal	Afnan	Omnia	Bedoor
<b>Phase1</b>	list of tables	Description	Description	information needs
<b>Phase2</b>	ER-Relationl	ER-Relationl	ER-Relationl	ER-Relationl
<b>Phase3</b>	Normalization	Normalization	Normalization	Normalization
<b>Phase4</b>	Create tables	Inserting data in tables	Queries	Stored Procedures



# Description :

Many medical centers nowadays have trouble with collecting and arranging data and staff information due to COVID-19 vaccination program that includes many doctors, nurses, staff, volunteers and others who may not have to be permanently work inside the medical center. So, that led us to conduct a database that confine the staff and employees inside the facility and update their state continuously.



# Information needs

## Clarification

- There several Vaccine Centres.
- Every Vaccine center have a different location.
- Vaccine Centres are identified by a ID , name and location.
- Vaccine Center has several medical stuff .
- The medical stuff contains of doctors, nurses and volunteers each has unique ID .
- Each doctor is responsible of several nurses and volunteers, identified by group ID.
- Vaccine Center has several employees.
- The employees there who in reception they make sure of the appointment, there is who responsible for guiding people to the right direction and there who enter the Information of people in Absher that they took the dose.



# list of tables

## **City:**

city name  
Population  
state  
Country  
number of vaccine centers

## **vaccine center:**

vaccine center ID  
vaccine center name  
phone number  
center address  
number of employees  
number of medical stuff

## **Employee (supertype)**

Employee ID  
name  
phone number  
vaccine center  
shift time  
work hours  
salary  
employee type

## **medical stuff (supertype)**

Employee ID  
name  
phone number  
vaccine center  
shift time  
medical stuff type

## **receptions (subtype)**

Line No

## **Doctor (subtype)**

salary  
work hours

## **guidance (subtype)**

internal/external  
Responsible area

## **volunteer (subtype)**

volunteer hours  
Medical Supervisor  
reward

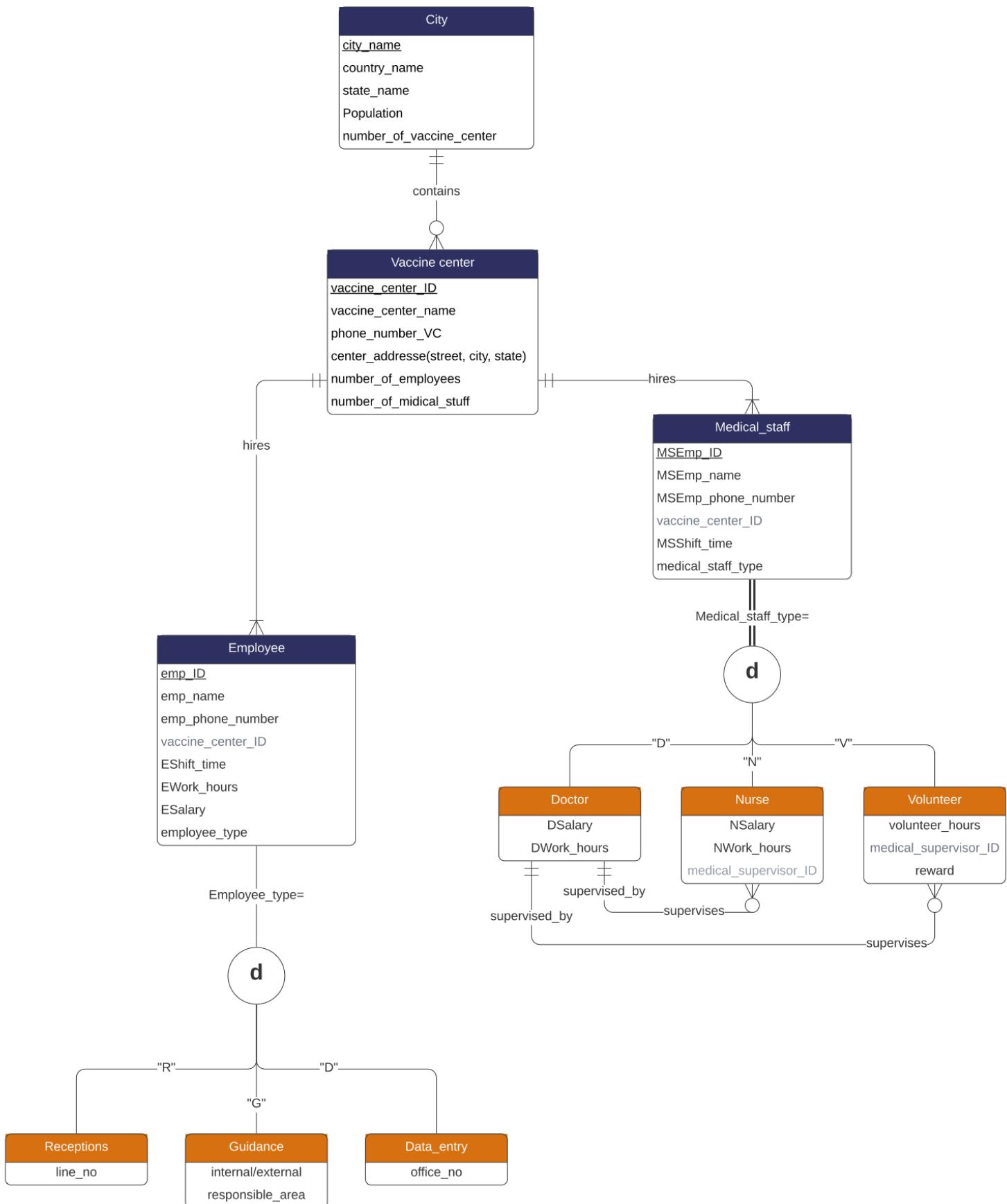
## **data entry (subtype)**

Office No

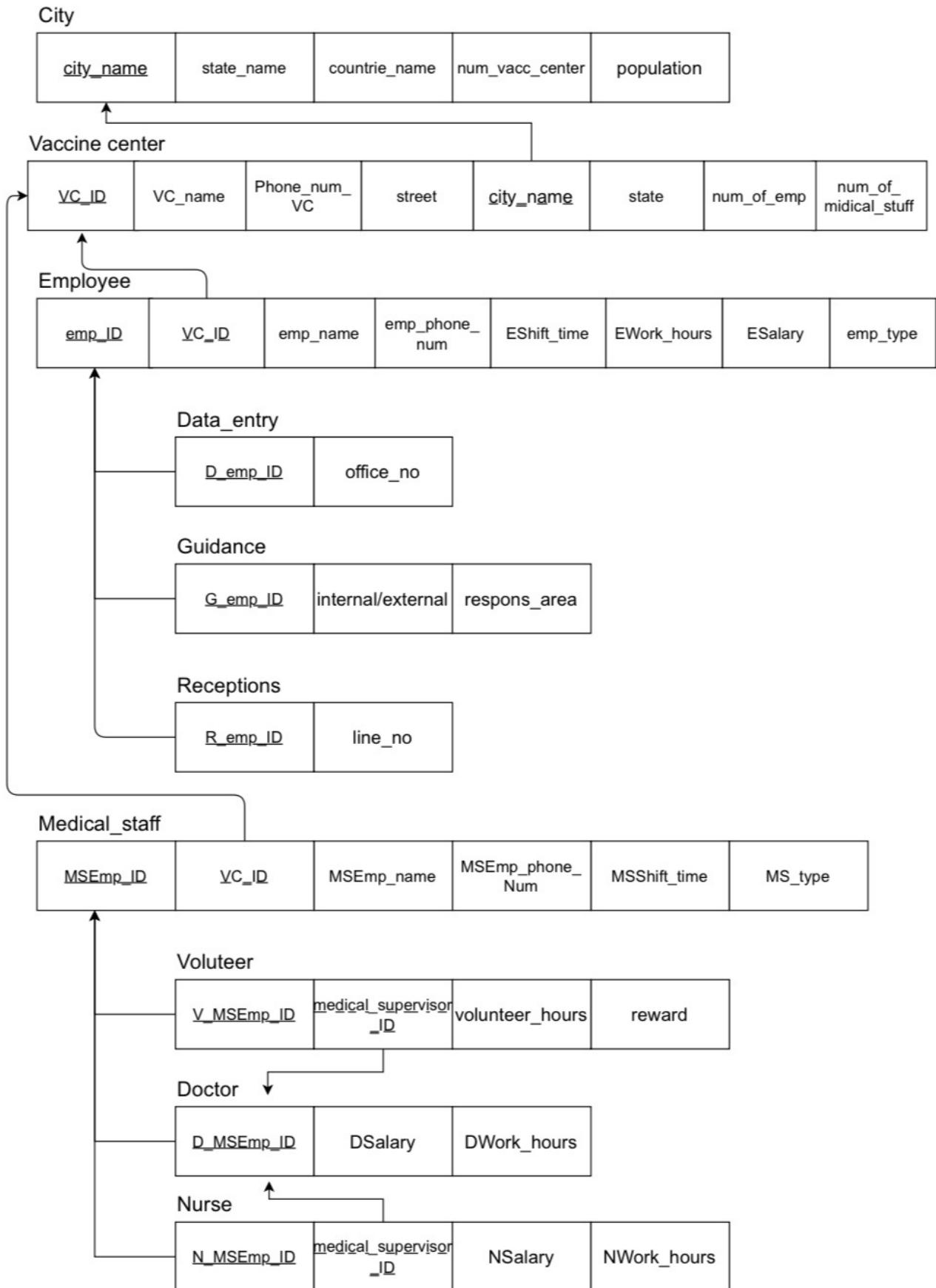
## **nurse (subtype)**

Salary  
Medical Supervisor  
work hours

# Entities-relationships



# Relational schema



# Normalization



## Functional Dependencies

**City\_name** → state\_name ,country\_name , number\_ VaccineCenter, population

**VaccineCenter\_ID, city\_name** → VaccineCenter\_street, VaccineCenter\_state

**VaccineCenter\_ID** → VaccineCenter\_name,phone\_num\_ VaccineCenter, num\_of\_emp, num\_of\_midical\_stuff

**emp\_ID, VC\_ID** → emp\_shift\_time, emp\_type

**emp\_ID, emp\_work\_hours** → emp\_salary

**emp\_ID, emp\_type** → Work\_hours

**emp\_ID** → emp\_name, emp\_phone\_ num

**Data\_emp\_ID** → office\_no

**Guidance\_emp\_ID** → internal/external,response\_ area

**Receptions\_emp\_ID** → line\_no

**MedicalStaffEmp\_ID, VaccineCenter\_ID** → MedicalStaffShift\_time, MS\_type

**MedicalStaffEmp\_ID, work\_hours** → salary

**MedicalStaffEmp\_ID, emp\_type** → Work\_hours

**MedicalStaffEmp\_ID** → MedicalStaffEmp\_name, MedicalStaffEmp\_phone\_ Num

**Volunteer\_ID** → medical\_supervisor \_ID, volunteer\_hours

**Doctor\_ID** → DoctorWork\_hours

**Nurse\_ID** → medical\_supervisor \_ID, NurseWork\_hours

# Normalization



## Un-normalized Form

### **City**

(city\_name, state\_name, country\_name, num\_vacc\_center, population)

### **Vaccine\_center**

(VC\_ID, city\_name, VC\_name, Phone\_num\_ VC, street, state, num\_of\_emp, num\_of\_ midcal\_stuff)

### **Employee**

(emp\_ID, VC\_ID, emp\_name, emp\_phone\_ num, EShift\_time, EWork\_hours, ESalary, emp\_type)

### **Data\_entry**

(D\_emp\_ID, office\_no)

### **Guidance**

(G\_emp\_ID, internal/external, respons\_area)

### **Receptions**

(R\_emp\_ID, line\_no)

### **Medical\_staff**

(MSEmp\_ID, VC\_ID, MSEmp\_name, MSEmp\_phone\_ Num, MSShift\_time, MS\_type)

### **Volunteer**

(V\_MSEmp\_ID, medical\_supervisor \_ID, volunteer\_hours, reward)

### **Doctor**

(D\_MSEmp\_ID, DSalary, DWork\_hours)

### **Nurse**

(N\_MSEmp\_ID, medical\_supervisor \_ID, NSalary, NWork\_hours)

**1NF**

Is in NF1 already

# Normalization



## 2NF

### **City**

(city\_name, state\_name, country\_name, num\_vacc\_center, population)

### **Vaccine\_center\_location**

(VC\_ID, city\_name, street, state)

### **Vaccine\_center**

(VC\_ID, VC\_name, Phone\_num\_ VC, num\_of\_emp, num\_of\_ midical\_stuff)

### **Employee\_work**

(emp\_ID, VC\_ID, EShift\_time, EWork\_hours, ESalary, emp\_type)

### **Employee\_info**

(emp\_ID, emp\_name, emp\_phone\_ num)

### **Data\_entry**

(D\_emp\_ID, office\_no)

### **Guidance**

(G\_emp\_ID, internal/external, respons\_area)

### **Receptions**

(R\_emp\_ID, line\_no)

### **Medical\_staff\_work**

(MSEmp\_ID, VC\_ID, MSShift\_time, MS\_type)

### **Medical\_staff\_info**

(MSEmp\_ID, MSEmp\_name, MSEmp\_phone\_ Num)

### **Volunteer**

(V\_MSEmp\_ID, medical\_supervisor \_ID, volunteer\_hours, reward)

### **Doctor**

(D\_MSEmp\_ID, DSalary, DWork\_hours)

### **Nurse**

(N\_MSEmp\_ID, medical\_supervisor \_ID, NSalary, NWork\_hours)

# Normalization



## 3NF

### **City**

(city\_name, state\_name, country\_name, num\_vacc\_center, population)

### **Vaccine\_center\_location**

(VC\_ID, city\_name, street, state)

### **Vaccine\_center**

(VC\_ID, VC\_name, Phone\_num\_VC, num\_of\_emp, num\_of\_midiical\_stuff)

### **Employee\_work**

(emp\_ID, VC\_ID, EShift\_time, emp\_type)

### **Employee\_Salary**

(emp\_ID, work\_hours, salary)

### **Employee\_Type**

(emp\_ID, emp\_type, Work\_hours)

### **Employee\_info**

(emp\_ID, emp\_name, emp\_phone\_num)

### **Data\_entry**

(D\_emp\_ID, office\_no)

### **Guidance**

(G\_emp\_ID, internal/external, respons\_area)

### **Receptions**

(R\_emp\_ID, line\_no)

### **Medical\_staff\_work**

(MSEmp\_ID, VC\_ID, MSShift\_time, MS\_type)

### **Medical\_staff\_salary**

(MSEmp\_ID, work\_hours, salary)

### **Medical\_staff\_Type**

(MSEmp\_ID, emp\_type, Work\_hours)

### **Medical\_staff\_info**

(MSEmp\_ID, MSEmp\_name, MSEmp\_phone\_Num)

### **Volunteer**

(V\_MSEmp\_ID, medical\_supervisor\_ID, volunteer\_hours)

### **Doctor**

(D\_MSEmp\_ID, DWork\_hours)

### **Nurse**

(N\_MSEmp\_ID, medical\_supervisor\_ID, NWork\_hours)

# Implementation of the relational DB



## Create tables

TABLE CITY

Column	Null?	Type
CITYNAME	NOT NULL	VARCHAR2(30)
STATENAME	NOT NULL	VARCHAR2(30)
COUNTRYNAME	NOT NULL	VARCHAR2(30)
NUMVC	NOT NULL	NUMBER(6,0)
POPULATION	-	NUMBER(10,0)

[Download CSV](#)

5 rows selected.

TABLE VACCINE\_CENTER

Column	Null?	Type
VCID	NOT NULL	NUMBER(6,0)
VCNAME	NOT NULL	VARCHAR2(30)
VCPHONEENUM	-	NUMBER(10,0)
NUMEMP	NOT NULL	NUMBER(10,0)
NUMMS	NOT NULL	NUMBER(10,0)

[Download CSV](#)

5 rows selected.

TABLE VACCINE\_CENTER\_LOCATION

Column	Null?	Type
VCID	-	NUMBER(6,0)
CITYNAME	-	VARCHAR2(30)
STREET	NOT NULL	VARCHAR2(30)
STATE	NOT NULL	VARCHAR2(30)

[Download CSV](#)

4 rows selected.

TABLE DOCTOR

Column	Null?	Type
MSID	-	NUMBER(6,0)
MSWORKHOURS	NOT NULL	NUMBER(3,0)

[Download CSV](#)

2 rows selected.

TABLE VOLUNTEER

Column	Null?	Type
MSID	-	NUMBER(6,0)
MSUPERVISORID	NOT NULL	NUMBER(6,0)
VOLHOUR	NOT NULL	NUMBER(3,0)

[Download CSV](#)

3 rows selected.

TABLE EMPLOYEE

Column	Null?	Type
EMPID	NOT NULL	NUMBER(6,0)
EMPNAME	NOT NULL	VARCHAR2(30)
EMPPHONENUM	NOT NULL	NUMBER(10,0)

[Download CSV](#)

3 rows selected.

TABLE EMPLOYEE\_WORK

Column	Null?	Type
EMPID	-	NUMBER(6,0)
VCID	-	NUMBER(6,0)
EMPSHIFT	NOT NULL	VARCHAR2(30)
EMPTYTYPE	NOT NULL	VARCHAR2(30)

[Download CSV](#)

4 rows selected.

TABLE EMPLOYEE\_SALARY

Column	Null?	Type
EMPID	-	NUMBER(6,0)
WORKHOURS	NOT NULL	NUMBER(3,0)
SALARY	NOT NULL	NUMBER(5,0)

[Download CSV](#)

3 rows selected.

TABLE EMPLOYEE\_TYPE

Column	Null?	Type
EMPID	-	NUMBER(6,0)
WORKHOURS	-	NUMBER(3,0)
EMPTYTYPE	NOT NULL	VARCHAR2(30)

[Download CSV](#)

3 rows selected.

TABLE MEDICALSTAFF

Column	Null?	Type
MSID	NOT NULL	NUMBER(6,0)
MSNAME	NOT NULL	VARCHAR2(30)
MSPHONENUM	NOT NULL	NUMBER(10,0)

[Download CSV](#)

3 rows selected.

TABLE MEDICALSTAFF\_WORK

Column	Null?	Type
MSID	-	NUMBER(6,0)
VCID	-	NUMBER(6,0)
MSSHIFT	NOT NULL	VARCHAR2(30)
MSTYPE	NOT NULL	VARCHAR2(30)

[Download CSV](#)

4 rows selected.

TABLE MEDICALSTAFF\_SALARY

Column	Null?	Type
MSID	-	NUMBER(6,0)
MSWORKHOURS	NOT NULL	NUMBER(3,0)
SALARY	NOT NULL	NUMBER(5,0)

[Download CSV](#)

3 rows selected.

TABLE MEDICALSTAFF\_TYPE

Column	Null?	Type
MSID	-	NUMBER(6,0)
MSWORKHOURS	-	NUMBER(3,0)
MSTYPE	NOT NULL	VARCHAR2(30)

[Download CSV](#)

3 rows selected.

TABLE GUIDANCE

Column	Null?	Type
EMPID	-	NUMBER(6,0)
INTERNALOREXTERNAL	NOT NULL	VARCHAR2(30)
RESPONSAREA	NOT NULL	VARCHAR2(30)

[Download CSV](#)

3 rows selected.

TABLE VOLUNTEER

Column	Null?	Type
MSID	-	NUMBER(6,0)
MSUPERVISORID	NOT NULL	NUMBER(6,0)

[Download CSV](#)

2 rows selected.

TABLE DATAENTRY

Column	Null?	Type
EMPID	-	NUMBER(6,0)
OFFICENO	NOT NULL	NUMBER(3,0)

[Download CSV](#)

2 rows selected.

TABLE RECEPTIONS

Column	Null?	Type
EMPID	-	NUMBER(6,0)
LINENO	NOT NULL	NUMBER(3,0)

[Download CSV](#)

2 rows selected.

# Implementation of the relational DB



## Inserting data in tables

CITYNAME	STATENAME	COUNTRYNAME	NUMVC	POPULATION
Makkah	Makkah	Saudi Arabia	18	1597000
Jeddah	Makkah	Saudi Arabia	39	3976000
Taif	Makkah	Saudi Arabia	37	175000
Riyadh	Riyadh	Saudi Arabia	129	7677000
Jazan	Jazan	Saudi Arabia	26	105193

[Download CSV](#)

5 rows selected.

VCID	VCNAME	VCPHONENUM	NUMEMP	NUMMS
960	alzaher Health Center	125433077	620	220
965	kuday Health Center	125341375	405	178
970	Abdoulmajed Health Center	126208207	550	331
975	Obhur Health Center	126562619	493	210
980	King Faisal Hospital	127447222	13020	1051

[Download CSV](#)

5 rows selected.

VCID	CITYNAME	STREET	STATE
960	Makkah	alzaher st	Makkah
965	Makkah	Kuday st	Makkah
970	Jeddah	Prince Abdulmajeed st	Makkah
975	Jeddah	Prince Abdullah AlFiasal st	Makkah
980	Taif	Prince Majed Ibn Abd AlAziz st	Makkah

[Download CSV](#)

5 rows selected.

EMPID	VCID	EMPSHIFT	EMPTYTYPE
960333	960	Evening	data entry
960344	960	morning	guidance
975888	975	Evening	receptions
975668	975	morning	data entry
980654	980	Evening	guidance
980731	980	morning	receptions

[Download CSV](#)

EMPID	INTERNALOREXTERNAL	RESPONSAREA
960344	INTERNAL	first floor
980654	EXTERNAL	second floor

[Download CSV](#)

2 rows selected.

MSID	MSUPERVISORID	VOLHOUR
965477	965420	4
980531	980832	2

[Download CSV](#)

2 rows selected.

EMPID	WORKHOURS	SALARY
960333	10	8000
960344	11	3000
975888	8	4000
975668	7	7500
980654	9	2000
980731	6	5500

[Download CSV](#)

6 rows selected.

EMPID	WORKHOURS	EMPTYTYPE
960333	10	data entry
960344	11	guidance
975888	8	receptions
975668	7	data entry
980654	9	guidance
980731	6	receptions

[Download CSV](#)

6 rows selected.

MSID	MSNAME	MSPHONENUM
965420	rania	565647231
965477	roaa	544487231
970430	mahdi	582333142
970490	manal	588832218
980866	qasim	566634217
980832	asmaa	508882221
980531	dana	589764321

[Download CSV](#)

7 rows selected.

MSID	MSWORKHOURS	SALARY
965420	11	15000
965477	4	1000
970430	10	13000
970490	9	10000
980866	12	16000
980832	8	11000
980531	2	500

[Download CSV](#)

7 rows selected.

MSID	MSWORKHOURS	MSTYPE
965420	11	doctor
965477	4	volunteer
970430	10	doctor
970490	9	nurse
980866	12	doctor
980832	8	nurse
980531	2	volunteer

[Download CSV](#)

7 rows selected.

3 rows selected.

EMPID	EMPNAME	EMPPHONENUM
960333	tariq	505550577
960344	sami	565674822
975888	tala	544428491
980654	ahmed	522939841
980731	lara	550555467
975668	sara	555505775

[Download CSV](#)

6 rows selected.

[Download CSV](#)

2 rows selected.

EMPID	OFFICENO
960333	15
975668	33

[Download CSV](#)

2 rows selected.

# Implementation of the relational DB



## Queries

```
1 --queries |  
2  
3  
4 SELECT NUMVC, CITYNAME  
5 FROM CITY  
6 WHERE POPULATION BETWEEN 1000000 AND 8000000;  
7  
8
```

NUMVC	CITYNAME
18	Makkah
39	Jeddah
129	Riyadh

[Download CSV](#)

3 rows selected.

```
1 --queries |  
2  
3  
4 SELECT VCNAME, VCPHONENUM, NUMMS  
5 FROM VACCINE_CENTER  
6 ORDER BY NUMMS ASC;  
7  
8
```

VCNAME	VCPHONENUM	NUMMS
kuday Health Center	125341375	178
Obhur Health Center	126562619	210
alzaher Health Center	125433077	220
Abdoulmajed Health Center	126208207	331
King Faisal Hospital	127447222	1051

[Download CSV](#)

5 rows selected.

```
1 --queries |  
2  
3  
4 SELECT CITYNAME, STREET  
5 FROM VACCINE_CENTER_LOCATION  
6 ORDER BY CITYNAME;  
7
```

CITYNAME	STREET
Jeddah	Prince Abdulmajeed st
Jeddah	Prince Abdullah AlFiasal st
Makkah	Kuday st
Makkah	alzaher st
Taif	Prince Majed Ibn Abd AlAziz st

[Download CSV](#)

5 rows selected.

```
1 --queries |  
2  
3  
4 SELECT COUNT(EMPID), EMPTYPE  
5 FROM EMPLOYEE_WORK  
6 GROUP BY EMPTYPE;  
7
```

COUNT(EMPID)	EMPTYPE
2	receptions
2	guidance
2	data entry

[Download CSV](#)

3 rows selected.

# Implementation of the relational DB



## Queries

```
1
2 --queries |
3
4 SELECT AVG(SALARY)
5 FROM EMPLOYEE_SALARY;
6
```

AVG(SALARY)
5000

[Download CSV](#)

```
1
2 --queries
3
4 SELECT MSID
5 FROM MEDICALSTAFF_SALARY
6 WHERE SALARY IN(10000,11000, 13000);
7
```

MSID
970430
970490
980832

[Download CSV](#)  
3 rows selected.

```
1
2 --queries |
3
4 SELECT EMPLOYEE_WORK.EMPID, EMPLOYEE_WORK.EMPTYPE, EMPLOYEE_SALARY.SALARY
5 FROM EMPLOYEE_WORK
6 INNER JOIN EMPLOYEE_SALARY
7 ON EMPLOYEE_WORK.EMPID = EMPLOYEE_SALARY.EMPID;
8
```

EMPID	EMPTYPE	SALARY
960333	data entry	8000
960344	guidance	3000
975888	receptions	4000
975668	data entry	7500
980654	guidance	2000
980731	receptions	5500

[Download CSV](#)  
6 rows selected.

# Implementation of the relational DB



## Stored Procedures

1

This procedure for reply the information about medical staff employees from the ID we will know it, like the name of the employee and the phone number ...etc in the output.

```
2  -- Stored procedure
3
4  CREATE OR REPLACE PROCEDURE MedicalStuff_information(MS_id MEDICALSTAFF.MSID%TYPE) AS
5
6    CURSOR CURSOR_MedicalStuff IS
7      SELECT MEDICALSTAFF.MSID,MEDICALSTAFF.MSNAME,MEDICALSTAFF.MSPHONENUM,MEDICALSTAFF_WORK.VCID,MEDICALSTAFF_WORK.MSSHIFT
8      ,MEDICALSTAFF_SALARY.MSWORKHOURS,MEDICALSTAFF_SALARY.SALARY,MEDICALSTAFF_TYPE.MSTYPE
9      FROM MEDICALSTAFF,MEDICALSTAFF_WORK,MEDICALSTAFF_SALARY,MEDICALSTAFF_TYPE
10     WHERE MEDICALSTAFF.MSID=MEDICALSTAFF_WORK.MSID and MEDICALSTAFF.MSID=MEDICALSTAFF_SALARY.MSID and
11       MEDICALSTAFF.MSID=MEDICALSTAFF_TYPE.MSID and MS_id=MEDICALSTAFF.MSID ;
12
13    BEGIN
14      FOR RESULTING IN CURSOR_MedicalStuff LOOP
15        DBMS_OUTPUT.PUT_LINE('Medical Staff ID: '||RESULTING.MSID );
16        DBMS_OUTPUT.PUT_LINE('Medical Staff Name: '|| RESULTING.MSNAME);
17        DBMS_OUTPUT.PUT_LINE('Medical Staff work name: '||RESULTING.MSTYPE);
18        DBMS_OUTPUT.PUT_LINE('Medical Staff phone number: '||RESULTING.MSPHONENUM);
19        DBMS_OUTPUT.PUT_LINE('Place work ID: '||RESULTING.VCID);
20        DBMS_OUTPUT.PUT_LINE('Medical Staff shift time: '||RESULTING.MSSHIFT);
21        DBMS_OUTPUT.PUT_LINE('Medical Staff work hours: '||RESULTING.MSWORKHOURS);
22        DBMS_OUTPUT.PUT_LINE('Medical Staff salary: '||RESULTING.SALARY);
23
24      END LOOP;
25    END MedicalStuff_information;
26
27    EXEC MedicalStuff_information(965420);
28
```

Statement processed.  
Medical Staff ID: 965420  
Medical Staff Name: rania  
Medical Staff work name: doctor  
Medical Staff phone number: 565647231  
Place work ID: 965  
Medical Staff shift time: Evening  
Medical Staff work hours: 11  
Medical Staff salary: 15000

2

This procedure helps to change the shift time of the medical staff employees and inform the employee about the update of the shift time

```
2  -- Stored procedure
3
4  create or replace procedure MSSHIFT_update (MEDICALSTAFFID in MEDICALSTAFF_WORK.MSID%type,
5                                              MSSHIFT_update in MEDICALSTAFF_WORK.MSSHIFT%type) as
6
7    begin
8      update MEDICALSTAFF_WORK set MEDICALSTAFF_WORK.MSSHIFT = MSSHIFT_update
9      WHERE MSID = MEDICALSTAFFID ;
10     COMMIT;
11     DBMS_OUTPUT.PUT_LINE('MEDICAL STAFF ID '||MEDICALSTAFFID);
12     DBMS_OUTPUT.PUT_LINE('the SHIFT TIME has changed.new SHIFT TIME is '|| MSSHIFT_update);
13
14   END MSSHIFT_update;
15
16
17  SELECT *FROM MEDICALSTAFF_WORK;
18  EXECUTE MSSHIFT_update (965420, 'Evening');
```

MSID	VCID	MSSHIFT	MSTYPE
965420	965	morning	doctor
965477	965	Evening	volunteer
970430	970	morning	doctor
970490	970	Evening	nurse
980866	980	morning	doctor
980832	980	Evening	nurse
980531	980	Evening	volunteer

Download CSV  
7 rows selected.

Statement processed.  
MEDICAL STAFF ID 965420  
the SHIFT TIME has changed.new SHIFT TIME is Evening