



Vaccine Center staff database



introduction to Database - CCCS215

Vaccine Center staff database

Section : A2

Presented by

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Distribution of Duties

for the project

name	Layal	Afnan	Omnia	Bedoor
Phase1	list of tables	Description	Description	information needs
Phase2	ER-Relational	ER-Relational	ER-Relational	ER-Relational
Phase3	Normalization	Normalization	Normalization	Normalization
Phase4	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 are several Vaccine Centres.
- Every Vaccine center has a different location.
- Vaccine Centres are identified by a ID , name and location.
- Vaccine Center has several medical staff .
- The medical staff consists 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

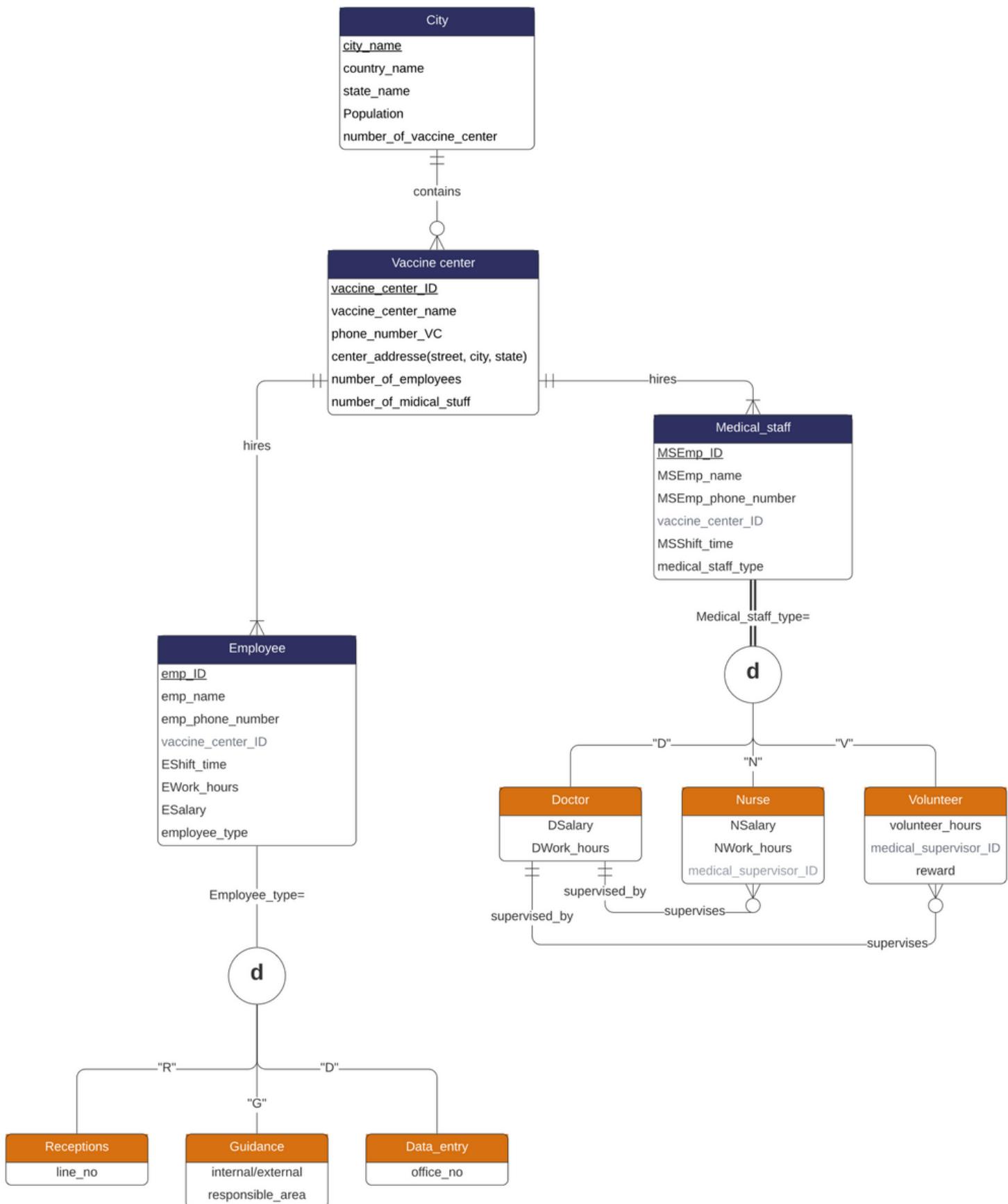
data entry (subtype)

Office No

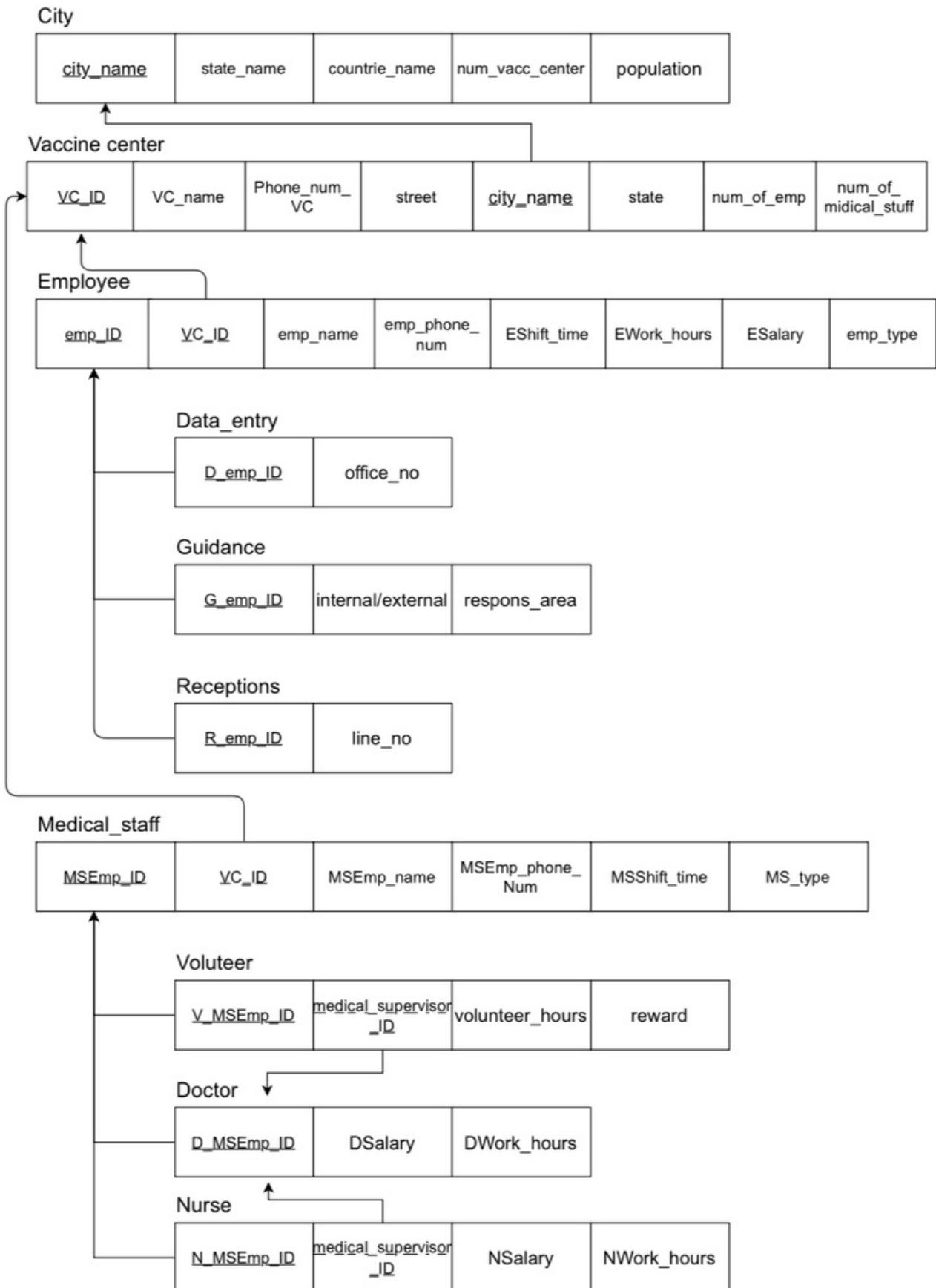
nurse (subtype)

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_midical_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_midiical_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_midical_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)
EMPNNAME	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 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)

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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

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5 rows selected.

EMPID	VCID	EMPSHIFT	EMPTYPE
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](#)

7 rows selected.

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	EMPTYPE
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	rания	565647231
965477	روأة	544487231
970430	ماهدي	582333142
970490	مانال	588832218
980866	قاسم	566634217
980832	asmaa	508882221
980531	دانا	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	MSUPERVISORID	MSWORKHOURS
970490	970430	10
980832	980866	11

[Download CSV](#)

2 rows selected.

MSID	MSWORKHOURS
965420	11
970430	10
980866	11

[Download CSV](#)

3 rows selected.

EMPID	LINENO
975888	4
980731	1

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

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

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

MSID	VCID	MSShift	MSTYPE
965420	965	morning	doctor
965477	965	Evening	volunteer
978430	970	morning	doctor
970490	970	Evening	nurse
980866	980	morning	doctor
980032	980	Evening	nurse
980831	980	Evening	volunteer

Download CSV
7 rows selected.

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