KINGDOM OF SAUDI ARABIA
Ministry of Education
Al-Imam Mohammad University
College of Computer & Information Sciences

المملكة العربية السعودية
وزارة التعليم
جامعة الإمام محمد بن سعود الإسلامية
كلية علوم الحاسب والمعلومات

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Introduction to Databases (CS- 370)

Section: 171

Healthy Hospital DB

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1.Introduaction:

This report gives a complete design for a Healthy Hospital database starting from the Entity-Relationship diagram, then mapping it to a Relation database schema. Also, there will be a SQL section, including data manipulation language and data definition language statements. Finally, we will exhibit screenshots of some quires of our database system.

2. Problem description:

You have been asked to design a database for Healthway Hospital. Healthway depends on a large number of persons for its continued success. There are four groups of people on whom the hospital is most dependent: employees, physicians, patients, and volunteers. Of course, some common attributes are shared by all of these persons: Person_ID (identifier), Name, Birth_Date, and Address (City/ Zip code/ Phone).

Each of the four groups has at least one unique attribute of its own. Employees have a Date_Hired, volunteers have a skill, physicians have a specialty and mobile#, and patients have a contact_date. Additional personnel in the hospital community do not belong to one of these four groups (their numbers are relatively small). However, a particular person may belong to two (or more) of these groups at any given time (for example, Patient and Volunteer).

Each patient has one (and only one) physician responsible for that patient. A given physician may not be responsible for a patient at a given time or may be responsible for one or more patients. Patients are divided into two groups: resident and outpatient. Each resident has a date_admitted attribute. Each outpatient is scheduled for zero or more visits. The entity visit has two attributes: date (partial identifier) and comments. Notice that an instance of the visit cannot exist without an outpatient owner entity. Employees are subdivided into three groups: nurse, staff, and technician. Only nurses have the attribute certificate, which indicates the qualification. Only staff has the attribute job_class, and only technicians have the attribute skill. Each nurse is assigned to one (and only one) care center. Examples of care centers are Maternity, Emergency, and Cardiology. Attributes of the care center are Name (identifier) and Location. A care center may have one or more nurses assigned to it. Also for each care center, one of the nurses assigned to that care center is appointed nurse_in_charge. A nurse cannot be appointed nurse_in_charge of a care center unless she or he has an RN certificate.

Each technician is assigned to one or more laboratories. Attributes of the laboratory include Name (identifier) and Location. A laboratory must have at least one technician assigned to it and may have any number of technicians assigned. There may be no beds assigned to a care center, or a care center may have one or more beds (up to any number) assigned to it. The only attribute of bed is Bed_Id (identifier). Bed_Id is a composite attribute, with components Bed# and Room#. Each resident patient must be assigned to a bed. A bed may or may not have a resident patient assigned to it at a given time.

3. Entity Relationship diagram:

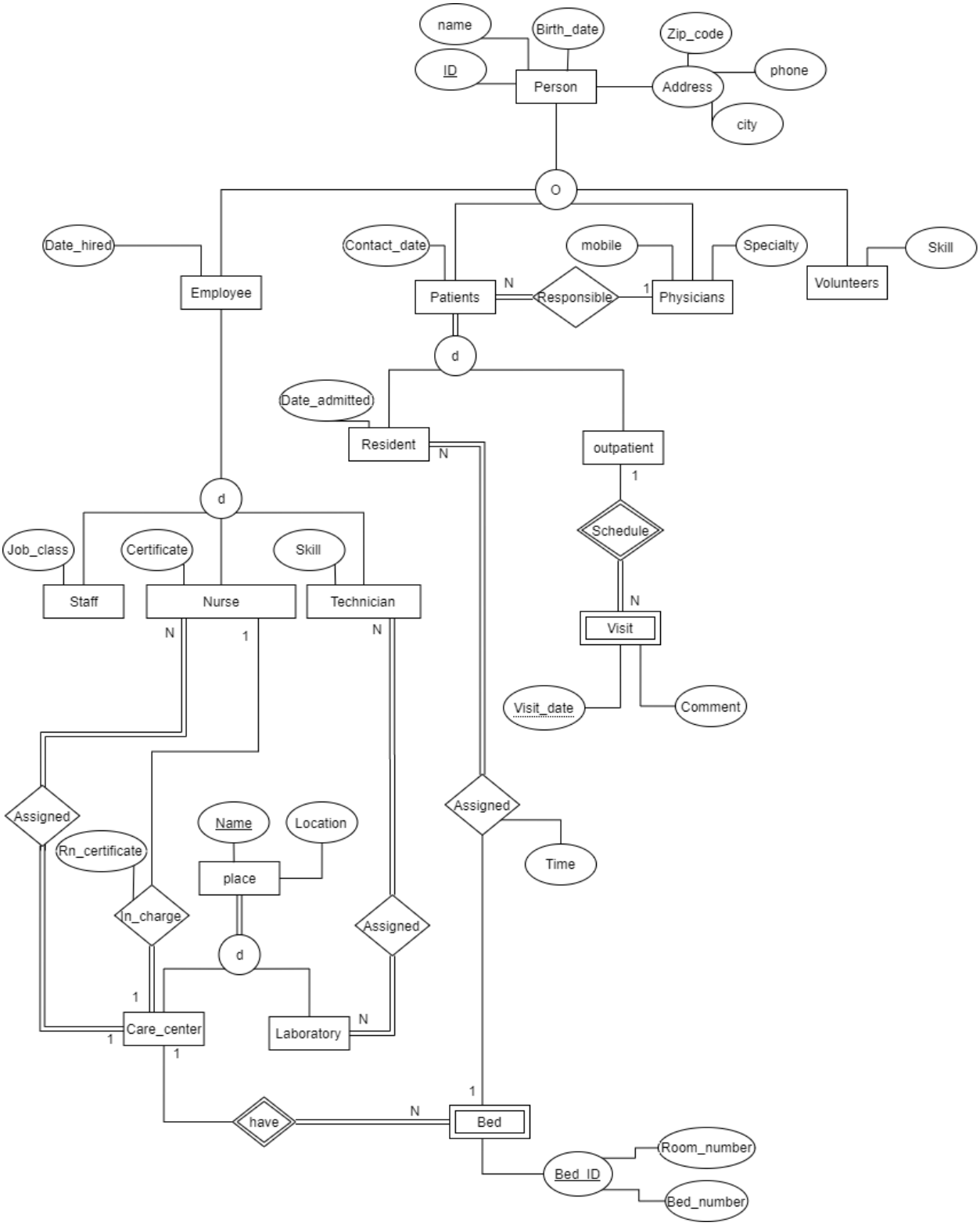

Figure 1: EER diagram

4. Relation database schema:

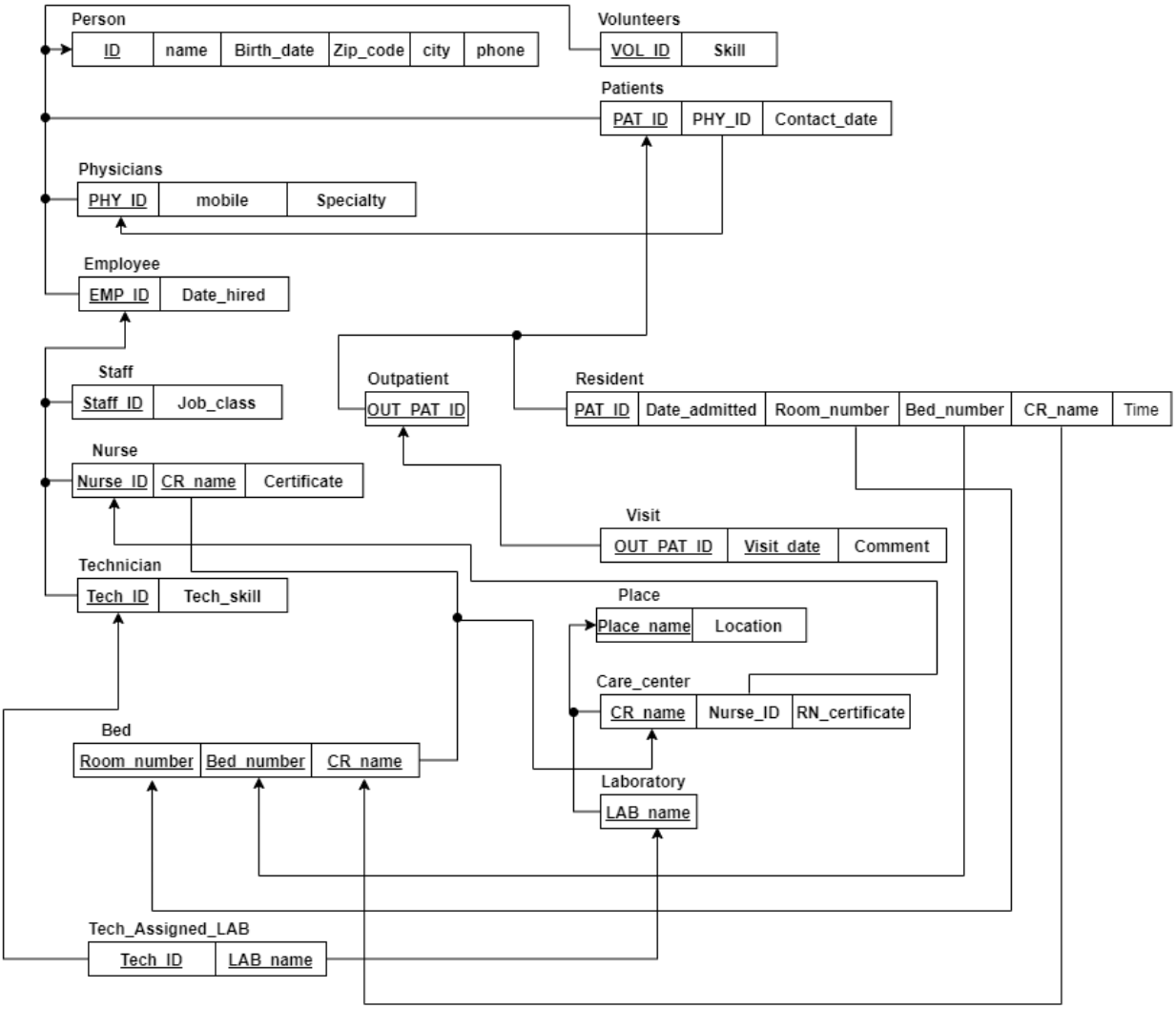

Figure 2:Relation database schema

5. SQL:

5.1 DDL statements:

5.1.1 Create Schema:

```
CREATE SCHEMA HEALTHYHOSPITALPROJECT;
```

5.1.2 Create Tables:

```
CREATE TABLE  PERSON
  (        ID NUMBER NOT NULL ,
           NAME NVARCHAR2(30) NOT NULL ,
           BIRTH_DATE DATE,
           ZIP_CODE NUMBER,
           CITY NVARCHAR2(30),
           PHONE NVARCHAR2(30),
           CONSTRAINT "PERSON_PK" PRIMARY KEY (ID)
  );
```

```
CREATE TABLE  VOLUNTEERS
  (        VOL_ID NUMBER NOT NULL ,
           SKILL NVARCHAR2(30) NOT NULL ,
           CONSTRAINT "VOLUNTEERS_PK" PRIMARY KEY
(VOL_ID)
  );
```

```
CREATE TABLE  PHYSICIANS
  (        PHY_ID NUMBER NOT NULL ,
           MOBILE NVARCHAR2(30),
           SPECIALTY NVARCHAR2(30) NOT NULL ,
            CONSTRAINT "PHYSICIANS_PK" PRIMARY KEY
(PHY_ID)


  );
```

```
CREATE TABLE  PATIENTS
  (        PAT_ID NUMBER NOT NULL ,
           PHY_ID NUMBER,
           CONTACT_DATE DATE NOT NULL ,
            CONSTRAINT "PATIENTS_PK" PRIMARY KEY
(PAT_ID)


  );
```

```
CREATE TABLE  EMPLOYEE
  (        EMP_ID NUMBER NOT NULL ,
           DATE_HIRED DATE NOT NULL ,
            CONSTRAINT "EMPLOYEE_PK" PRIMARY KEY
(EMP_ID)


  );
```

```
CREATE TABLE  PLACE
  (        PLACE_NAME NVARCHAR2(30) NOT NULL ,
           LOCATION NVARCHAR2(30) NOT NULL ,
            CONSTRAINT "PLACE_PK" PRIMARY KEY
(PLACE_NAME)


  );
```

```
CREATE TABLE  LABORATORY
  (        LAB_NAME NVARCHAR2(30) NOT NULL ,
           CONSTRAINT "LABORATORY_PK" PRIMARY KEY
(LAB_NAME)

  );
```

```
CREATE TABLE  CARE_CENTER
  (        CR_NAME NVARCHAR2(30) NOT NULL ,
           NURSE_ID NUMBER,
           RN_CERTIFICATE CHAR(1) NOT NULL ,
           CONSTRAINT "CARE_CENTER_PK" PRIMARY KEY
(CR_NAME)

  );
```

```
CREATE TABLE  OUTPATIENT
  (        OUT_PAT_ID NUMBER NOT NULL ,
           CONSTRAINT "OUTPATIENT_PK" PRIMARY KEY
(OUT_PAT_ID)

  );
```

```
CREATE TABLE  BED
  (        ROOM_NUMBER NUMBER NOT NULL ,
           BED_NUMBER NUMBER NOT NULL ,
           CR_NAME NVARCHAR2(30) NOT NULL ,
           CONSTRAINT "BED_PK" PRIMARY KEY
(ROOM_NUMBER, BED_NUMBER, CR_NAME)

  );
```

```
CREATE TABLE  RESIDENT
  (        PAT_ID NUMBER NOT NULL ,
           DATE_ADMITTED DATE NOT NULL ,
           ROOM_NUMBER NUMBER,
           BED_NUMBER NUMBER,
           CR_NAME NVARCHAR2(30) NOT NULL ,
           TIME NVARCHAR2(30),
            CONSTRAINT "RESIDENT_PK" PRIMARY KEY
(PAT_ID)
  );
```

```
CREATE TABLE  VISIT
  (        OUT_PAT_ID NUMBER NOT NULL ,
           VISIT_DATE DATE NOT NULL ,
           V_COMMENT NVARCHAR2(150),
            CONSTRAINT "VISIT_PK" PRIMARY KEY
(OUT_PAT_ID, VISIT_DATE)

  );
```

```
CREATE TABLE  NURSE
  (        NURSE_ID NUMBER NOT NULL ,
           CERTIFICATE NVARCHAR2(30) NOT NULL ,
           CR_NAME NVARCHAR2(60),
            CONSTRAINT "NURSE_PK" PRIMARY KEY
(NURSE_ID)


  );
```

```
CREATE TABLE  STAFF
  (        STAFF_ID NUMBER NOT NULL ,
           JOB_CLASS NVARCHAR2(30) NOT NULL ,
            CONSTRAINT "STAFF_PK" PRIMARY KEY
(STAFF_ID)


  );
```

```
CREATE TABLE  TECHNICIAN
  (        TECH_ID NUMBER NOT NULL ,
           TECH_SKILL NVARCHAR2(30) NOT NULL ,
           CONSTRAINT "TECHNICIAN_PK" PRIMARY KEY
(TECH_ID)


  );
```

```
CREATE TABLE  TECH_ASSIGNED_LAB
  (        TECH_ID NUMBER NOT NULL ,
           LAB_NAME NVARCHAR2(30) NOT NULL ,
           CONSTRAINT "TECH_ASSIGNED_LAB_PK"
PRIMARY KEY (TECH_ID, LAB_NAME)


  );
```

5.1.3 Add Constraints:

```
ALTER TABLE  VOLUNTEERS ADD CONSTRAINT "VOLUNTEERS_FK" FOREIGN KEY (VOL_ID)
        REFERENCES  "PERSON" (ID);
ALTER TABLE  PHYSICIANS ADD CONSTRAINT "PHYSICIANS_FK" FOREIGN KEY (PHY_ID)
        REFERENCES  "PERSON" (ID) ;
ALTER TABLE  PATIENTS ADD CONSTRAINT "PATIENTS_FK" FOREIGN KEY (PAT_ID)
        REFERENCES  "PERSON" (ID) ;
ALTER TABLE  PATIENTS ADD CONSTRAINT "PAT_PHY_FK" FOREIGN KEY (PHY_ID)
        REFERENCES  PHYSICIANS (PHY_ID) ;
ALTER TABLE  EMPLOYEE ADD CONSTRAINT "EMPLOYEE_FK" FOREIGN KEY (EMP_ID)
        REFERENCES  "PERSON" (ID) ;
ALTER TABLE  LABORATORY ADD CONSTRAINT "LABORATORY_FK" FOREIGN KEY (LAB_NAME)
        REFERENCES  PLACE (PLACE_NAME) ;
ALTER TABLE  CARE_CENTER ADD CONSTRAINT "CARE_CENTER_FK" FOREIGN KEY (CR_NAME)
        REFERENCES  PLACE (PLACE_NAME) ;
ALTER TABLE  OUTPATIENT ADD CONSTRAINT "OUTPATIENT_FK" FOREIGN KEY (OUT_PAT_ID)
        REFERENCES  PATIENTS (PAT_ID) ;
ALTER TABLE  BED ADD CONSTRAINT "BED_CON" FOREIGN KEY (CR_NAME)
        REFERENCES  CARE_CENTER (CR_NAME) ;
ALTER TABLE  RESIDENT ADD CONSTRAINT "RESIDENT_ROOM_FK" FOREIGN KEY (ROOM_NUMBER,BED_NUMBER,CR_NAME)
        REFERENCES  BED (ROOM_NUMBER,BED_NUMBER,CR_NAME) ;
ALTER TABLE  RESIDENT ADD CONSTRAINT "RESIDENT_FK" FOREIGN KEY (PAT_ID)
        REFERENCES  PATIENTS (PAT_ID) ;
```

```
ALTER TABLE  RESIDENT ADD CONSTRAINT "RESIDENT_ROOM_FK" FOREIGN KEY (ROOM_NUMBER,BED_NUMBER,CR_NAME)
        REFERENCES  BED (ROOM_NUMBER,BED_NUMBER,CR_NAME) ;
ALTER TABLE  RESIDENT ADD CONSTRAINT "RESIDENT_FK" FOREIGN KEY (PAT_ID)
        REFERENCES  PATIENTS (PAT_ID) ;
ALTER TABLE  VISIT ADD CONSTRAINT "VISIT_FK" FOREIGN KEY (OUT_PAT_ID)
        REFERENCES  OUTPATIENT (OUT_PAT_ID) ;
ALTER TABLE  NURSE ADD CONSTRAINT "CR_FK" FOREIGN KEY (CR_NAME)
        REFERENCES  CARE_CENTER (CR_NAME) ;
ALTER TABLE  NURSE ADD CONSTRAINT "NURSE_CON" FOREIGN KEY (NURSE_ID)
        REFERENCES  EMPLOYEE (EMP_ID) ;
ALTER TABLE  STAFF ADD CONSTRAINT "STAFF_FK" FOREIGN KEY (STAFF_ID)
        REFERENCES  EMPLOYEE (EMP_ID) ;
ALTER TABLE  TECHNICIAN ADD CONSTRAINT "TECHNICIAN_FK" FOREIGN KEY (TECH_ID)
        REFERENCES  EMPLOYEE (EMP_ID) ;
ALTER TABLE  TECH_ASSIGNED_LAB ADD CONSTRAINT "TECH_ASSIGNED_FK_LAB" FOREIGN KEY (LAB_NAME)
        REFERENCES  LABORATORY (LAB_NAME) ;
ALTER TABLE  TECH_ASSIGNED_LAB ADD CONSTRAINT "TECH_ASSIGNED_LAB_FK" FOREIGN KEY (TECH_ID)
        REFERENCES  TECHNICIAN (TECH_ID) ;
ALTER TABLE  CARE_CENTER ADD CONSTRAINT "NUR_FK_KEY" FOREIGN KEY (NURSE_ID)
        REFERENCES  NURSE (NURSE_ID) ;
```

5.2 DML statements:

5.2.1Insertion:

```
INSERT INTO PERSON VALUES(1,'Ahmed','01/01/2020',1,'Riyadh','1111111111');
INSERT INTO PERSON VALUES(2,'Fahed','02/02/2020',2,'Jeddah','2222222222');
INSERT INTO PERSON VALUES(3,'Abdulrahman','03/03/2020',3,'Makkah','3333333333');
INSERT INTO PERSON VALUES(4,'Norah','04/04/1990',4,'Riyadh','444444444');
INSERT INTO PERSON VALUES(5,'Fatima','05/05/2000',5,'Riyadh','5555555555');
INSERT INTO PERSON VALUES(6,'Mohammed','02/06/1997',6,'Madinah','6666666666');
INSERT INTO PERSON VALUES(7,'Abdulllah','05/12/1994',7,'Jeddah','7777777777');
INSERT INTO PERSON VALUES(8,'Saleh','12/03/2000',8,'Riyadh','8888888888');
INSERT INTO PERSON VALUES(9,'Abdulaziz','10/20/1999',9,'Riyadh','9999999999');
INSERT INTO PERSON VALUES(10,'Ahmed','02/01/1889',10,'Madinah','0555555555');
INSERT INTO PERSON VALUES(11,'abdulaziz','05/03/1991',1232,'Riyadh','0594837485');
INSERT INTO PERSON VALUES(12,'abdulah','12/11/1999',3245,'Riyadh','0594884499');
INSERT INTO PERSON VALUES(13,'reema','08/12/1999',3245,'Hail','0588773323');
INSERT INTO PERSON VALUES(14,'khalid','03/12/1973',2342,'Riyadh','0584736273');
INSERT INTO PERSON VALUES(15,'Fahad','01/12/1980',3983,'Riyadh','0555555555');
INSERT INTO PERSON  VALUES(16,'Omar','12/16/1999',16 ,'Riyadh','1616161616');
INSERT INTO PERSON  VALUES(17,'Hasan','12/17/1999',17 ,'Makkah','1717171717');
INSERT INTO PERSON  VALUES(18,'Khalid','12/18/1999',18 ,'Dammam','1818181818');
INSERT INTO PERSON  VALUES(19,'Abdullah','12/19/1989' ,19 ,'Riyadh','1919191919');
INSERT INTO PERSON  VALUES(20,'Mohammed','12/20/1989' ,20,'Riyadh','2020202020');
INSERT INTO PERSON  VALUES(21,'manal','11/05/1988' ,1234,'Riyadh','0554545454');
INSERT INTO PERSON  VALUES(22,'sara','11/05/1995' ,8762,'America','0598984829');
```

```
INSERT INTO PERSON  VALUES(23,'Moaaz','12/05/1992',5678,'riyadh','0548474728');
INSERT INTO PERSON  VALUES(24,'nasser','12/03/1992',9876,'riyadh','0599999999');
INSERT INTO PERSON  VALUES(25,'abdulaziz','03/03/1999',9876,'riyadh','0594948394');
INSERT INTO PERSON  VALUES(26,'Somaih','05/06/1998',26,'riyadh','0999999999');
INSERT INTO PERSON  VALUES(27,'Reema','05/08/1996',27,'Dammam','0556666666');
INSERT INTO PERSON  VALUES(28,'Meshal','05/06/1989',28,'Qassim','0556665556');
INSERT INTO PERSON VALUES(29,'Amjad','10/11/2001',29,'Riyadh','0553336662');
INSERT INTO PERSON VALUES(30,'Mohammed','11/23/2004',30,'Riyadh','0553337775');
INSERT INTO PERSON VALUES(31,'Hind','03/03/1989',31,'Riyadh','3131313131');
INSERT INTO PERSON VALUES(32,'Rima','03/03/1989',32,'Makkah','3232323232');
INSERT INTO PERSON VALUES(33,'Majed','09/09/1999',33,'Makkah','3333333333');
INSERT INTO PERSON VALUES(34,'Tariq','10/10/1980',34,'Jeddah','3434343434');
INSERT INTO PERSON VALUES(35,'Osamah','11/11/2011',35,'Riyadh','3131313131');
INSERT INTO PERSON VALUES(36,'Yasser','04/04/2004',36,'Makkah','3636363636');
INSERT INTO PERSON VALUES(37,'Waleed','11/16/1995',37,'Jeddah','3737373737');
INSERT INTO PERSON VALUES(38,'Ahmed','06/07/1996',38,'Jeddah','3838383838');
INSERT INTO PERSON VALUES(39,'Khlifa','08/09/1997',39,'Jeddah','3939393939');
INSERT INTO PERSON VALUES(40,'Talal','02/03/1993',40,'Makkah','4040404040');
INSERT INTO PERSON VALUES(41,'Abdulrahman','02/21/1999',123,'Riyadh','0530607040');
INSERT INTO PERSON VALUES(42,'Nawal','02/01/1991',1456,'Makkah','0540107050');
INSERT INTO PERSON VALUES(43,'Omar','05/05/1990',43,'Riyadh','4343434343');
INSERT INTO PERSON VALUES(44,'noor','01/01/2004',9876,'riyadh','0545544554');
INSERT INTO PERSON VALUES(45,'fouz','02/02/2019',8763,'riyadh','0545453219');
```

```
INSERT INTO EMPLOYEE VALUES(1,'05/02/2020');
INSERT INTO EMPLOYEE VALUES(2,'02/02/2020');
INSERT INTO EMPLOYEE VALUES(3,'03/03/2020');
INSERT INTO EMPLOYEE VALUES(4,'04/04/2020');
INSERT INTO EMPLOYEE VALUES(5,'05/05/2020');
INSERT INTO EMPLOYEE VALUES(6,'06/06/2020');
INSERT INTO EMPLOYEE VALUES(7,'07/07/2020');
INSERT INTO EMPLOYEE VALUES(8,'08/08/2020');
INSERT INTO EMPLOYEE VALUES(9,'09/09/2020');
INSERT INTO EMPLOYEE VALUES(10,'10/10/2020');
INSERT INTO EMPLOYEE VALUES(11,'11/11/2020');
INSERT INTO EMPLOYEE VALUES(12,'12/12/2020');
INSERT INTO EMPLOYEE VALUES(13,'03/03/2020');
INSERT INTO EMPLOYEE VALUES(14,'04/04/2020');
INSERT INTO EMPLOYEE VALUES(15,'05/05/2020');
```

```
INSERT INTO PLACE VALUES('OPTO','DEP#5');
INSERT INTO PLACE VALUES('ER','DEP#3');
INSERT INTO PLACE VALUES('XRAY','DEP#1');
INSERT INTO PLACE VALUES('CARD','DEP#2');
INSERT INTO PLACE VALUES('DERMA','DEP#4');
INSERT INTO PLACE VALUES('LAB1','DEP#1');
INSERT INTO PLACE VALUES('LAB2','DEP#2');
INSERT INTO PLACE VALUES('LAB3','DEP#3');
INSERT INTO PLACE VALUES('LAB4','DEP#4');
INSERT INTO PLACE VALUES('LAB5','DEP#5');
```

```
INSERT INTO LABORATORY VALUES('LAB1');
INSERT INTO LABORATORY VALUES('LAB2');
INSERT INTO LABORATORY VALUES('LAB3');
INSERT INTO LABORATORY VALUES('LAB4');
INSERT INTO LABORATORY VALUES('LAB5');
```

```
INSERT INTO CARE_CENTER VALUES('ER',NULL,'Y');
INSERT INTO CARE_CENTER VALUES('XRAY',NULL,'Y');
INSERT INTO CARE_CENTER VALUES('CARD',NULL,'Y');
INSERT INTO CARE_CENTER VALUES('OPTO',NULL,'Y');
INSERT INTO CARE_CENTER VALUES('DERMA',NULL,'Y');
```

```
INSERT INTO NURSE VALUES(1,'D','ER');
INSERT INTO NURSE VALUES(2,'D','ER');
INSERT INTO NURSE VALUES(3,'D','OPTO');
INSERT INTO NURSE VALUES(4,'D','CARD');
INSERT INTO NURSE VALUES(5,'D','DERMA');
```

```
INSERT INTO PHYSICIANS VALUES(27,'0566666666','anesthesiologist');
INSERT INTO PHYSICIANS VALUES(28,'0557778889','allergist');
INSERT INTO PHYSICIANS VALUES(29,'0558889998','psychiatrist');
INSERT INTO PHYSICIANS VALUES(26,'0555555555','Cardiologist');
INSERT INTO PHYSICIANS VALUES(30,'0557778887','AllergistWhere ');
```

```
INSERT INTO STAFF VALUES(10,'E');
INSERT INTO STAFF VALUES(7,'B');
INSERT INTO STAFF VALUES(8,'C');
INSERT INTO STAFF VALUES(6,'A');
INSERT INTO STAFF VALUES(9,'D');
```

```
INSERT INTO TECHNICIAN VALUES(13,'C');
INSERT INTO TECHNICIAN VALUES(14,'D');
INSERT INTO TECHNICIAN VALUES(15,'E');
INSERT INTO TECHNICIAN VALUES(12,'B');
INSERT INTO TECHNICIAN VALUES(11,'A');
```

```
INSERT INTO TECH_ASSIGNED_LAB VALUES(11,'LAB1');
INSERT INTO TECH_ASSIGNED_LAB VALUES(12,'LAB2');
INSERT INTO TECH_ASSIGNED_LAB VALUES(13,'LAB3');
INSERT INTO TECH_ASSIGNED_LAB VALUES(14,'LAB4');
INSERT INTO TECH_ASSIGNED_LAB VALUES(15,'LAB5');
```

```
INSERT INTO BED VALUES(1,3,'ER');
INSERT INTO BED VALUES(2,5,'DERMA');
INSERT INTO BED VALUES(3,1,'CARD');
INSERT INTO BED VALUES(4,2,'OPTO');
INSERT INTO BED VALUES(5,0,'XRAY');
```

```
INSERT INTO PATIENTS VALUES(16,27,'03/01/1999');
INSERT INTO PATIENTS VALUES(17,29,'12/07/1988');
INSERT INTO PATIENTS VALUES(18,26,'04/04/1988');
INSERT INTO PATIENTSVALUES(19,29,'09/09/1999');
INSERT INTO PATIENTS VALUES(20,26,'08/04/1989');
INSERT INTO PATIENTS VALUES(21,30,'12/01/1988');
INSERT INTO PATIENTS VALUES(22,27,'11/01/1986');
INSERT INTO PATIENTS VALUES(23,28,'06/09/1977');
INSERT INTO PATIENTS VALUES(24,30,'12/05/1995');
INSERT INTO PATIENTS VALUES(25,26,'09/09/1998');
```

```
INSERT INTO RESIDENT VALUES(21,'02/03/2020',1,3,'ER','9:00');
INSERT INTO RESIDENT VALUES(22,'05/06/2020',2,5,'DERMA','13:00');
INSERT INTO RESIDENT VALUES(23,'11/02/2020',3,1,'CARD','7:00');
INSERT INTO RESIDENT VALUES(24,'04/09/2020',4,2,'OPTO','19:00');
INSERT INTO RESIDENT VALUES(25,'01/12/2020',5,0,'XRAY','9:30');
```

```
INSERT INTO VOLUNTEERS VALUES(43,'C');
INSERT INTO VOLUNTEERS VALUES(45,'E');
INSERT INTO VOLUNTEERS VALUES(41,'A');
INSERT INTO VOLUNTEERS VALUES(42,'B');
INSERT INTO VOLUNTEERS VALUES(44,'D');
```

```
INSERT INTO OUTPATIENT VALUES(16);
INSERT INTO OUTPATIENT VALUES(17);
INSERT INTO OUTPATIENT VALUES(18);
INSERT INTO OUTPATIENT VALUES(19);
INSERT INTO OUTPATIENT VALUES(20);
```

```
INSERT INTO VISIT VALUES(16,'06/06/2020',NULL);
INSERT INTO VISIT VALUES(17,'07/07/2020',NULL);
INSERT INTO VISIT VALUES(20,'02/02/2020',NULL);
INSERT INTO VISIT VALUES(18,'08/08/2020','high fever');
INSERT INTO VISIT VALUES(19,'09/09/2020',NULL);
```

5.2.2 Update:

```
UPDATE CARE_CENTER
SET NURSE_ID=1
WHERE CR_NAME='ER';
UPDATE CARE_CENTER
SET NURSE_ID=2
WHERE CR_NAME='XRAY';
UPDATE CARE_CENTER
SET NURSE_ID=3
WHERE CR_NAME='CARD';
UPDATE CARE_CENTER
SET NURSE_ID=4
WHERE CR_NAME='OPTO';
UPDATE CARE_CENTER
SET NURSE_ID=5
WHERE CR_NAME='DERMA';
```

6. SQL queries and outputs:

Query 1:

```
501  select *
502  from "EMPLOYEE","PERSON"
503  WHERE EMP_ID=ID;
```

Results | Explain | Describe | Saved SQL | History

EMP_ID	DATE_HIRED	ID	NAME	BIRTH_DATE	ZIP_CODE	CITY	PHONE
4	04/04/2020	4	Norah	04/04/1990	4	Riyadh	444444444
5	05/05/2020	5	Fatima	05/05/2000	5	Riyadh	5555555555
13	03/03/2020	13	reema	08/12/1999	3245	Hail	0588773323
1	05/02/2020	1	Ahmed	01/01/2020	1	Riyadh	111111111
2	02/02/2020	2	Fahed	02/02/2020	2	Jeddah	2222222222
3	03/03/2020	3	Abdulrahman	03/03/2020	3	Makkah	3333333333
6	06/06/2020	6	Mohammed	02/06/1997	6	Madinah	6666666666
7	07/07/2020	7	Abdulllah	05/12/1994	7	Jeddah	7777777777
8	08/08/2020	8	Saleh	12/03/2000	8	Riyadh	8888888888
9	09/09/2020	9	Abdulaziz	10/20/1999	9	Riyadh	9999999999

Figure 3: Retrieve all the information of employees from Person and Employee tables .

Query 2:

```
498
499
500
501  select *
502  from "EMPLOYEE","PERSON"
503  WHERE EMP_ID=ID and CITY='Riyadh';
```

Results | Explain | Describe | Saved SQL | History

EMP_ID	DATE_HIRED	ID	NAME	BIRTH_DATE	ZIP_CODE	CITY	PHONE
4	04/04/2020	4	Norah	04/04/1990	4	Riyadh	444444444
5	05/05/2020	5	Fatima	05/05/2000	5	Riyadh	5555555555
1	05/02/2020	1	Ahmed	01/01/2020	1	Riyadh	111111111
8	08/08/2020	8	Saleh	12/03/2000	8	Riyadh	8888888888
9	09/09/2020	9	Abdulaziz	10/20/1999	9	Riyadh	9999999999
12	12/12/2020	12	abdulah	12/11/1999	3245	Riyadh	0594884499
15	05/05/2020	15	Fahad	01/12/1980	3983	Riyadh	0555555555
11	11/11/2020	11	abdulaziz	05/03/1991	1232	Riyadh	0594837485
14	04/04/2020	14	khalid	03/12/1973	2342	Riyadh	0584736273

Figure 4: Retrieve all the information of employees who live in Riyadh from Employee and Person tables.

Query 3:

```
500
501  select *
502  from "CARE_CENTER",RESIDENT
503  WHERE CARE_CENTER.CR_NAME=RESIDENT.CR_NAME ;
```

Results | Explain | Describe | Saved SQL | History

CR_NAME	NURSE_ID	RN_CERTIFICATE	PAT_ID	DATE_ADMITTED	ROOM_NUMBER	BED_NUMBER	CR_NAME	TIME
ER	1	Y	21	02/03/2020	1	3	ER	9:00
DERMA	5	Y	22	05/06/2020	2	5	DERMA	13:00
XRAY	2	Y	25	01/12/2020	5	0	XRAY	9:30
CARD	3	Y	23	11/02/2020	3	1	CARD	7:00
OPTO	4	Y	24	04/09/2020	4	2	OPTO	19:00

Figure 5:Retrieve all the information of resident patients from Care_center and Resident tables.

Query 4:

```
498
499
500
501  select *
502  from NURSE , PERSON
503  WHERE  CR_NAME='ER' and NURSE_ID=ID ;
```

Results | Explain | Describe | Saved SQL | History

NURSE_ID	CERTIFICATE	CR_NAME	ID	NAME	BIRTH_DATE	ZIP_CODE	CITY	PHONE
1	D	ER	1	Ahmed	01/01/2020	1	Riyadh	111111111
2	D	ER	2	Fahed	02/02/2020	2	Jeddah	2222222222

Figure 6:Retrieve all the information of nurses who work in ER care center from Nurse and Person tables.

Query 5:

```
499
500
501  select OUTPATIENT.OUT_PAT_ID, VISIT.VISIT_DATE , VISIT.V_COMMENT, PERSON.NAME, PERSON.BIRTH_DATE, PERSON.ZIP_CODE, PERSON.CITY, PERSON.PHONE
502  from VISIT , OUTPATIENT , PERSON
503  WHERE  ID=OUTPATIENT.OUT_PAT_ID and OUTPATIENT.OUT_PAT_ID=VISIT.OUT_PAT_ID ;
```

Results Explain Describe Saved SQL History

OUT_PAT_ID	VISIT_DATE	V_COMMENT	NAME	BIRTH_DATE	ZIP_CODE	CITY	PHONE
16	06/06/2020	-	Omar	12/16/1999	16	Riyadh	1616161616
18	08/08/2020	high fever	Khalid	12/18/1999	18	Dammam	1818181818
19	09/09/2020	-	Abdullah	12/19/1989	19	Riyadh	1919191919
20	02/02/2020	-	Mohammed	12/20/1989	20	Riyadh	2020202020
17	07/07/2020	-	Hasan	12/17/1999	17	Makkah	1717171717

Figure 7: Retrieve outpatient ID, visit date, comment , outpatient name and outpatient address, from Outpatient ,Visit and Person tables.

Query 6:

```
499
500
501  select TECH_ASSIGNED_LAB.TECH_ID, TECH_ASSIGNED_LAB.LAB_NAME, TECHNICIAN.TECH_SKILL
502  from TECH_ASSIGNED_LAB , TECHNICIAN
503  WHERE  TECH_ASSIGNED_LAB.TECH_ID=TECHNICIAN.TECH_ID;
```

Results Explain Describe Saved SQL History

TECH_ID	LAB_NAME	TECH_SKILL
11	LAB1	A
12	LAB2	B
13	LAB3	C
14	LAB4	D
15	LAB5	E

Figure 8: Retrieve Technician ID and skill with the lab which he works at.

Query 7:

```
499
500
501 select PATIENTS.PAT_ID, PHYSICIANS.PHY_ID , PHYSICIANS.SPECIALTY, CONTACT_DATE
502 from PATIENTS , PHYSICIANS
503 where PHYSICIANS.PHY_ID=PATIENTS.PHY_ID;
```

Results | Explain | Describe | Saved SQL | History

PAT_ID	PHY_ID	SPECIALTY	CONTACT_DATE
16	27	anesthesiologist	03/01/1999
17	29	psychiatrist	12/07/1988
20	26	Cardiologist	08/04/1989
25	26	Cardiologist	09/09/1998
19	29	psychiatrist	09/09/1999
21	30	Allergist	12/01/1988
22	27	anesthesiologist	11/01/1986
18	26	Cardiologist	04/04/1988
23	28	allergist	06/09/1977
24	30	Allergist	12/05/1995

Figure 9: Retrieve Patient ID and contact date, Physicians ID and his specialty .

Query 8:

```
499
500
501 select BED.ROOM_NUMBER ,  CARE_CENTER.CR_NAME , NURSE.NURSE_ID  , RESIDENT.PAT_ID, RESIDENT.TIME
502 from BED , NURSE, CARE_CENTER , PERSON , RESIDENT
503 where BED.CR_NAME= CARE_CENTER.CR_NAME   and NURSE.NURSE_ID=CARE_CENTER.NURSE_ID and PERSON.ID=NURSE.NURSE_ID and BED.ROOM_NUMBER = RESIDENT.ROOM_NUMBER and BED.CR_NAME=RESIDENT.CR_NAME;
```

Results | Explain | Describe | Saved SQL | History

ROOM_NUMBER	CR_NAME	NURSE_ID	PAT_ID	TIME
1	ER	1	21	9:00
2	DERMA	5	22	13:00
5	XRAY	2	25	9:30
3	CARD	3	23	7:00
4	OPTO	4	24	19:00

Figure 10: Retrieve room number , care center name , nurse ID, patient ID and time, from Bed ,Nurse ,Care_center , Person and Resident tables.

Query 9:

```
498
499
500
501  select STAFF_ID, JOB_CLASS, NAME
502  from STAFF, PERSON
503  where STAFF_ID=ID ;
```

Results | Explain | Describe | Saved SQL | History

STAFF_ID	JOB_CLASS	NAME
6	A	Mohammed
7	B	Abdulllah
8	C	Saleh
9	D	Abdulaziz
10	E	Ahmed

Figure 11: Retrieve Staff id, job class and name from Staff and person tables.