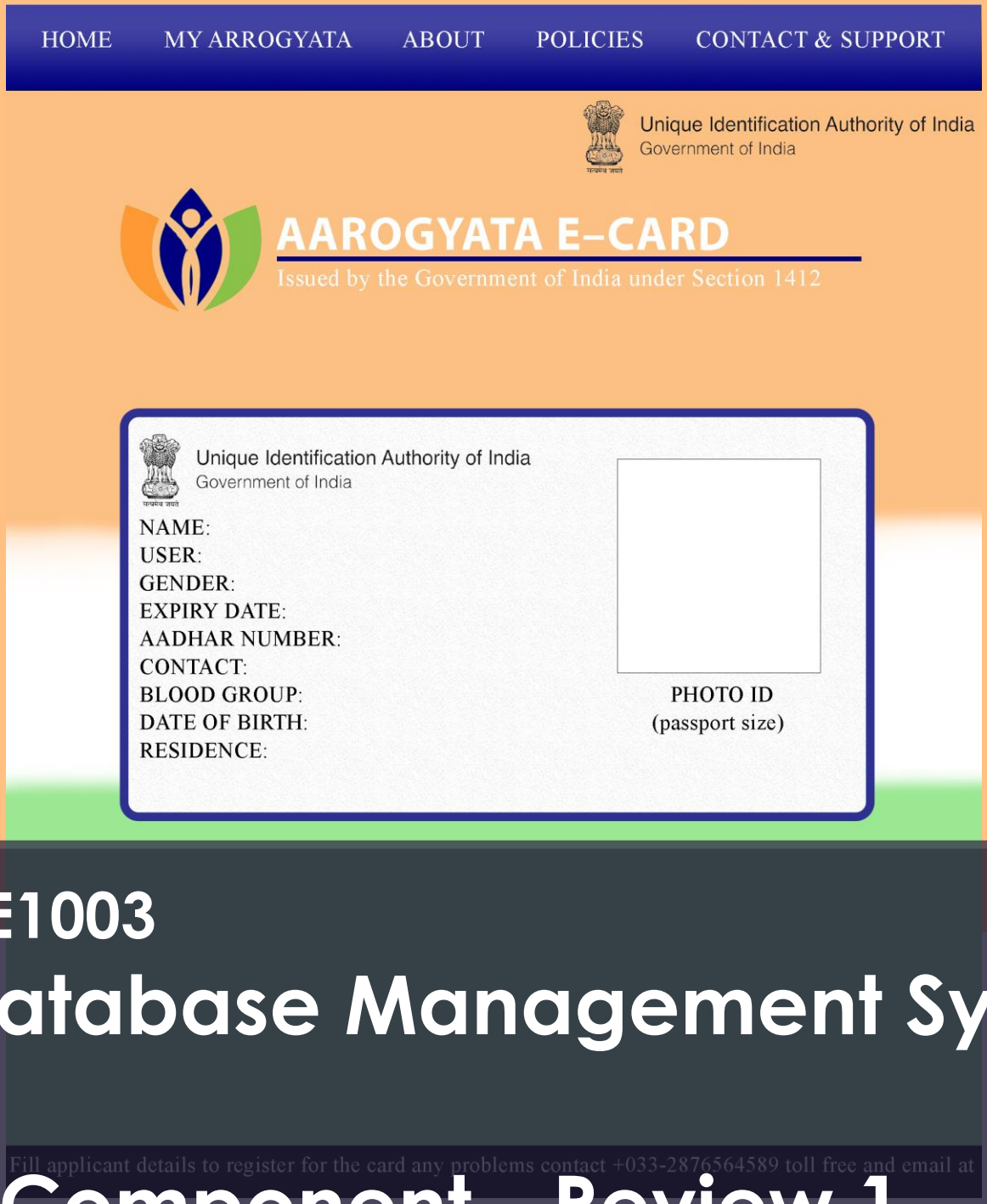

ITE1003

Database Management Systems

J Component - Review 1

Submitted To: Prof. Bimal Kumar Ray

PROJECT TITLE: AAROGYATA

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INTRODUCTION

In present, life isn't easy. Hospitals are being flooded with patients, nurses and doctors are working 24/7 to treat billions of people worldwide. COVID-19 has taken the world down with it but it is us humans who have to take the urgent step of fighting to overcome it.
This project aims at being that small catalyst for change that has the immense power to change the lifestyle and outlook of healthcare. Introducing, an online health E-card that will be issued by the Government of India. It will consist of all the important records and in-depth details of each and every citizen, doctor, disease and hospital of India. Using this card, doctors and patients will be able to pay, receive payment, view and book their appointments, have a record of diseases and much more. It will be quick and cashless database improvised catalogue for every individual of India.

"We can beat it together and we will survive"

MOTIVE OF THE PROJECT

To highlight the health standard of every individual in the country such that his/her's health records is in their very own hands. Healthcare will be much more accessible, quick and most importantly user-friendly. Not only will this make hospital's working faster but also make India reach a much better standard in terms of health and increase the immunity standard of the citizens of the nation thereby.

OVERVIEW

This project aims to create a centralized health system for the government. All the members involved in the medical records loop shall be provided with a unique identification card that allows easier access of the records and gives the central medical authorities to review all the activities taking place in as and when required.

The major components involved in this loop are the hospitals, doctors, and patients. Other than those, a centralized disease entity is maintained in the database for easier identification of the disease. To overlook all these attributes, a government authorized administrator is appointed who has his/her details mentioned in a separate entity in the database.

To make this card more useful, the feature of payments and storing money in sort of a “wallet” is given. A user will be allowed to add money to their card and can use it to pay for his appointments to the doctor and to pay his/her medical bills.

Why Aarogyata?

Time is of the essence for medical practitioners when they are treating a patient and having their medical records in hand makes the treatment more efficient. Moreover, it would prevent the misuse of drugs as the patient would only be provided the drugs for their ongoing treatment and not any other forged diseases.

It also gives the central authorities to manage all the medical institutions and medical practitioners in case they are suspected of malpractice/misuse of power.

ENTITIES AND ATTRIBUTES

CARD

- Type of user (Admin, Doctor, Patient)
- Expiry date
- Status
- Credit balance
- Phone No. [May or may not be unique, should contain 10 digits]
- Aadhar [Must be Unique, Should contain 12 digits]
- Residence
- Blood Group
- Email
- Gender
- Name
- DOB

ADMINISTRATOR

- Card id [Must be Unique, Should contain 8 digits]
- License No.
- Department

HOSPITAL

- Hospital id [Must be Unique, Should contain 8 digits]
- Location
- Name
- Type(government/private)
- License No.
- Telephone number
- Hospital fees

DOCTOR

- Card id [Must be Unique, Should contain 8 digits]
- Speciality
- License No.
- Fees
- Hospital Id

PAITENT

- Card id [Must be Unique, Should contain 8 digits]
- Ongoing treatment
- Previous health records

DISEASES

- Disease id [Must be Unique, Should contain 8 digits]
- Name
- Treated by doctor specialty
- Symptoms[]

DATA REQUIREMENTS

Every person in this system will be having a personal Aarogyata Card. A card will be having the type of user (i.e., Admin, Doctor, Patient), its Expiry date, Status, balance, the user's phone number, blood group, the user's Aadhaar number, address, email id, gender, as well as user's name and his/her date of birth. Administrator sits on the top of this whole system. Admin has a unique card id, a license number and the department name he works in. Admin can add or update the data of patient, doctor and hospital. Administrator can also add or remove diseases even when a pandemic outbreaks. A patient has a unique card id, the data of his/her ongoing treatment as well as previous health and treatment records. The data of patient's ongoing treatment can be updated by the hospital and the patient's previous health record can be accessed by the hospital. Also, patient is charged by the hospital to pay the treatment fees. More than one patient can be treated by a doctor. A doctor has a unique card id, license number, the hospital number he/she work for, his/her field of specialty, and the visiting fees. More than one doctor work in a single hospital. Every hospital is identified by a hospital number and has a location, name, type, telephone number and standard fees. A hospital can also add diseases. A disease has a unique disease id, name, its symptoms and the specialty of doctor required to treat that disease. Every disease added must have the hospital that issued that disease.

FUNCTIONAL REQUIREMENTS

ADMIN

- Will overlook all the entities.
- Should be a government employee or a govt outsources firm to manage the other entities in the system.
- The only entity in the system that can change the details of all other entities.
- Is authorised to make changes to the attributes of other entities and can delete, append or update the existing attributes of an entity object.
- In scenario of hospitals
    a. Can delete an entire hospital object if the hospital becomes de-functional/ non-operational.
    b. Is authorised to make changes to attributes like address, phone numbers, name for the Doctors, patients and hospitals.
    c. It can append new diseases in the disease entity.
    d. It has the access to all the entities.

HOSPITAL

- Hospitals should assign the patients to the Doctors according to their Ailments.
- They should update the patients' treatment data in their account whenever the specific disease the patient was suffering from is cured.
- They are responsible to help the patient in matters of past ongoing treatments.

DOCTORS

- Doctors have the ability to add ongoing treatment to the corresponding patient id.
- Doctors can make changes to their fees by either decreasing or increasing it, it can never be null.
- Doctors have access their own credit balance, which has functionalities like credit and debit.
- Doctors can also add new hospital id's in their work array.
- Doctors can remove ongoing treatment and add that treatment to previous health records.

PATIENTS

- Patients should update their records on a regular basis.
- Patients should be able to book for appointments via the respective hospital.
- A patient can be registered under multiple hospital-id's.
- Patients can view their ongoing treatments anytime as and when it is updated by the doctor.

DML OPERATIONS

DATA MODIFICATION

1. ADMIN

As the admin has the power to change any attribute for any entity instance in the database, some of the data modifications possible have been mentioned below

- UPDATE HOSPITAL telephone number
- UPDATE PAITENT name from ‘name1’ to ‘name2’
- APPEND DISEASE symptoms by adding ‘SYMPTOM_N’ to the array
- APPEND DOCTOR speciality by adding ‘SPECIALIZATION_N’ to the array

2. HOSPITAL

Hospitals have less of an authority when it comes to data modification, they mostly have debit and credit facilities available to them along with some responsibilities to bring changes in the disease entity

- UPDATE HOSPITAL credit balance by debiting xxxx amount to DOCTOR
- UPDATE NEW DISEASE entity instance in the DISEASE entity by adding a unique Disease id and its symptoms
- APPEND DISEASE symptoms by adding ‘SYMPTOM_N’ to the array
- UPDATE HOSPITAL fees from ‘XXX’ to ‘XXX’

3. DOCTOR

Doctor is the only member in the entire database that should have access to the patient’s existing medical health records

- APPEND PAITENT ongoing treatment array with ‘DISEASE_ID_n’
- UPDATE PAITENT ongoing treatment array by moving ‘DISEASE_ID_n’ to PREVIOUS HEALTH RECORDS
- UPDATE DOCTOR fees from ‘XXX’ to ‘XXX’

DATA DELETION

1. ADMIN

As the admin has the power to change any attribute for any entity instance in the database, some of the data modifications possible have been mentioned below

- REMOVE PAITENTS, DOCTOR, ADMIN whose card STATUS is ‘INACTIVE’
- REMOVE HOSPITAL_ID for HOSPITAL is hospital id defunct
- REMOVE DOCTOR from DOCTOR if the doctor’s licence is expired
- REMOVE PAITENT if from PAITENT if the patient has deceased

2. HOSPITAL

Hospitals have less of an authority when it comes to data modification, they mostly have debit and credit facilities available to them along with some responsibilities to bring changes in the disease entity

- REMOVE DISEASE symptom which is seasonal

DATA RETRIEVAL

1. ADMIN

- GET HOSPITALS which are near the location ‘XYZ’
- GET DOCTORS which specialize in DISEASE_ID
- GET all PAITENTS for which card is inactive

2. HOSPITAL

- GET DISEASES for which symptoms are [‘ABC’,’DEF’]
- GET ALL DOCTORS for which hospital_id is ‘ABCDEF’

3. DOCTOR

- GET DISEASES for which symptoms are ['ABC','DEF']
- GET hospital FEES for hospital id 'x'

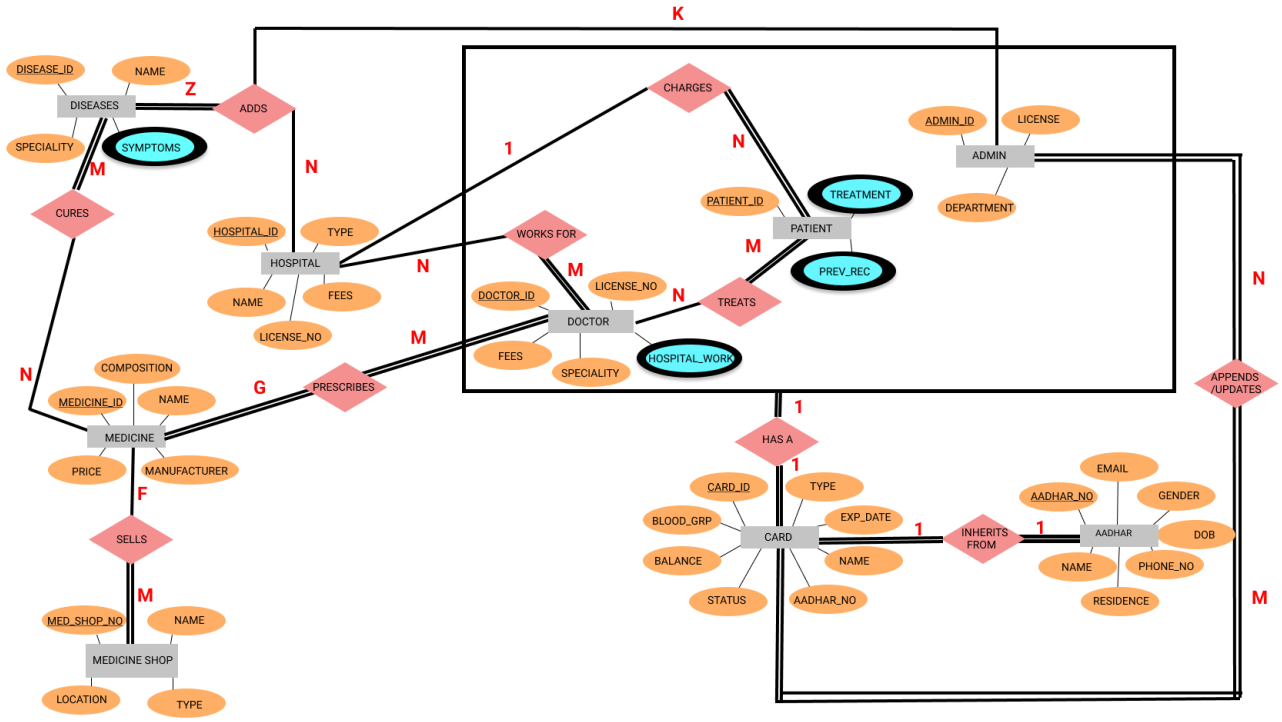
4. PAITENT

- GETS DOCTOR information and the fees associated
- GETS to choose which doctor it wants to visit according to the SPECIALITY
- GETS to pay hospital fees for hospital id 'x'

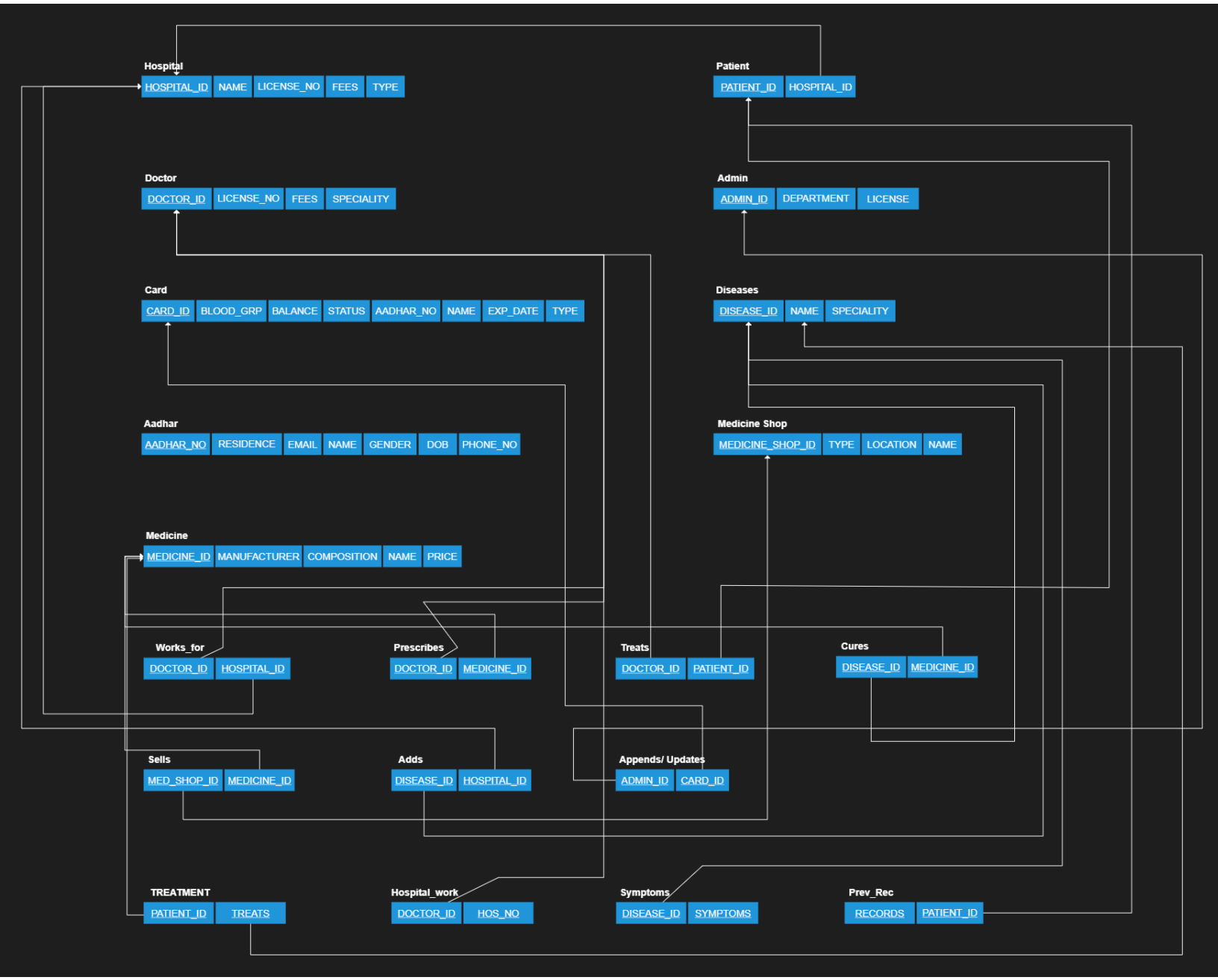
5. DISEASE

- GETS to be added by a particular hospital with a LICENSE NO. ['123456789101']
- GETS to be added by the admin with a LICENSE NO. ['123456789101']

EER DIAGRAM


K
DISEASE_ID
NAME
DISEASES
SPECIALITY
SYMPTOMS
ADDS
Z
M
N
CURES
HOSPITAL_ID
TYPE
HOSPITAL
NAME
FEES
LICENSE_NO
1
N
CHARGES
WORKS FOR
M
N
DOCTOR_ID
LICENSE_NO
DOCTOR
FEES
SPECIALITY
HOSPITAL_WORK
TREATS
N
M
PATIENT_ID
TREATMENT
PATIENT
PREV_REC
ADMIN_ID
LICENSE
ADMIN
DEPARTMENT
N
APPENDS /UPDATES
M
N
COMPOSITION
MEDICINE_ID
NAME
MEDICINE
PRICE
MANUFACTURER
G
PRESCRIBES
F
SELLS
M
MED_SHOP_NO
NAME
MEDICINE SHOP
LOCATION
TYPE
1
HAS A
1
CARD_ID
TYPE
BLOOD_GRP
EXP_DATE
CARD
BALANCE
NAME
STATUS
AADHAR_NO
1
INHERITS FROM
1
EMAIL
AADHAR_NO
GENDER
AADHAR
DOB
NAME
PHONE_NO
RESIDENCE
M

RELATIONAL DIAGRAM



CREATION OF TABLES IN SQL

```
SQL> create table adhaar(
  2  adhaar_no char(6),
  3  residence varchar(100) constraint address not null,
  4  email varchar(40) constraint email_id unique,
  5  name varchar(40) constraint name not null,
  6  dob date constraint dateofbirth not null,
  7  p_no char(50) constraint p_no_ unique,
  8  constraint adhaar_number primary key(adhaar_no)
  9  );

Table created.

SQL> create table card(
  2  c_id char(6),
  3  blood_g char(3) constraint bloog_grp not null ,
  4  balance number(10),
  5  status char(8) constraint status_of_card not null,
  6  adhaar_no references adhaar(adhaar_no) constraint adhaar_num unique,
  7  exp_date date constraint expiry not null,
  8  type varchar(8) constraint type_card not null,
  9  constraint card_pk primary key(c_id)
 10  );

Table created.
```

```
SQL> alter table adhaar modify p_no char(10);

Table altered.

SQL> alter table card add constraint check_card_type check(type='admin' or type='patient' or type='doctor');

Table altered.

SQL> create table admin(
  2  admin_id references card(c_id),
  3  department varchar(20) constraint dept not null,
  4  license char(6) constraint license_admin unique,
  5  constraint admin_pk primary key(admin_id)
  6  );

Table created.

SQL> create table doctor(
  2  doc_id references card(c_id),
  3  fees number(5),
  4  lis_no char(5) constraint license_doc unique,
  5  speciality varchar(40) constraint doc_spez unique,
  6  constraint doc_pk primary key(doc_id)
  7  );

Table created.

SQL> create table hospital(
  2  h_id char(6),
  3  lis_no char(5) constraint license_hosp unique,
  4  name varchar(40) constraint name_hosp not null,
  5  h_fees number(5),
  6  type varchar(10) constraint type_hosp not null,
  7  constraint hosp_pk primary key(h_id)
  8  );

Table created.
```

```
SQL> alter table hospital add constraint check_hosp_type check(type='government' or type='private');

Table altered.

SQL> create table disease(
  2  disease_id char(6),
  3  name varchar(20) constraint dis_name unique,
  4  speciality references doctor(speciality) constraint spec_disease not null,
  5  constraint disease_pk primary key(disease_id)
  6  );

Table created.

SQL> create table medicine_shop(
  2  med_shop_id char(6),
  3  name varchar(20) constraint shop_name not null,
  4  type varchar(10) constraint type_med_store not null,
  5  location varchar(40) constraint location_shop unique,
  6  constraint med_shop_pk primary key(med_shop_id)
  7  );

Table created.

SQL> alter table medicine_shop add constraint med_shop_type_check check(type='government' or type='private');

Table altered.


SQL> create table medicine(
  2  med_id char(6),
  3  name varchar(20) constraint med_name not null,
  4  composition varchar(40) constraint comp_med unique,
  5  manufacturer varchar(20) constraint manu_med not null,
  6  price number(4) constraint price_med not null,
  7  constraint med_pk primary key(med_id)
  8  );

Table created.

SQL> create table patient(
  2  p_id references card(c_id),
  3  constraint patient_pk primary key(p_id)
  4  );

Table created.

SQL> create table works_in_hospital(
  2  doc_id references doctor(doc_id),
  3  hosp_no varchar(2) constraint hosp_no_name not null,
  4  constraint work_in_hospital_pk primary key(doc_id)
  5  );

Table created.
```

```
SQL> create table treatment(
  2  p_id references patient(p_id),
  3  ongoing_treat varchar(25) constraint ongoing_treat_name not null,
  4  constraint ongoing_pk primary key(p_id)
  5  );

Table created.

SQL> create table health_record(
  2  p_id references patient(p_id),
  3  record varchar(25) constraint record_name not null,
  4  constraint record_pk primary key(p_id)
  5  );

Table created.

SQL> create table hospital_work(
  2  doc_id references doctor(doc_id),
  3  h_id references hospital(h_id),
  4  constraint hosptalwork_pk primary key(h_id,doc_id)
  5  );

Table created.

SQL> create table prescribes(
  2  doc_id references doctor(doc_id),
  3  med_id references medicine(med_id),
  4  constraint prescribes_pk primary key(med_id,doc_id)
  5  );

Table created.

SQL> create table sells(
  2  med_id references medicine(med_id),
  3  med_shop_id references medicine_shop(med_shop_id),
  4  constraint sells_pk primary key(med_id,med_shop_id)
  5  );

Table created.

SQL> create table adds(
  2  disease_id references disease(disease_id),
  3  h_id references hospital(h_id),
  4  constraint adds_pk primary key(disease_id,h_id)
  5  );

Table created.

SQL> create table treats(
  2  doc_id references doctor(doc_id),
  3  p_id references patient(p_id),
  4  constraint treats_pk primary key(doc_id,p_id)
  5  );

Table created.

SQL> create table cures(
  2  disease_id references disease(disease_id),
  3  med_id references medicine(med_id),
  4  constraint cures_pk primary key(disease_id,med_id)
  5  );

Table created.
```

```
SQL> create table appnd_updt(
  2  admin_id references admin(admin_id),
  3  c_id references card(c_id),
  4  constraint appnd_updt_pk primary key(admin_id, c_id)
  5  );

Table created.

SQL> create table symptoms(
  2  disease_id references disease(disease_id),
  3  symptom varchar(20) constraint symptom_name not null,
  4  constraint symptom_pk primary key(disease_id)
  5  );

Table created.

SQL> create table treatment(
  2  p_id references patient(p_id),
  3  ongoing_treat references disease(name) constraint ongoing_treat_name not null,
  4  constraint ongoing_pk primary key(p_id)
  5  );

Table created.

SQL> alter table adhaar add constraint email_chk check(email like '%_@__%.__%');

Table altered.

SQL> alter table adhaar add constraint check_pno check(length(p_no)=10);

Table altered.

SQL> alter table card add constraint check_Sttus check(status='active' or status='inactive');

Table altered.

SQL> alter table admin add constraint dept_admin check(department='UIDAI' or department='MoHFW');

Table altered.
```

DESCRIPTION OF TABLES

```
SQL> desc doctor;
 Name                                      Null?    Type
 ----------------------------------------- -------- ------------------------------------
 DOC_ID                                    NOT NULL CHAR(6)
 FEES                                               NUMBER(5)
 LIS_NO                                             CHAR(5)
 SPECIALITY                                         VARCHAR2(40)

SQL> desc hospital;
 Name                                      Null?    Type
 ----------------------------------------- -------- ------------------------------------
 H_ID                                      NOT NULL CHAR(6)
 LIS_NO                                             CHAR(5)
 NAME                                      NOT NULL VARCHAR2(40)
 H_FEES                                             NUMBER(5)
 TYPE                                      NOT NULL VARCHAR2(10)

SQL> desc disease;
 Name                                      Null?    Type
 ----------------------------------------- -------- ------------------------------------
 DISEASE_ID                                NOT NULL CHAR(6)
 NAME                                               VARCHAR2(20)
 SPECIALITY                                NOT NULL VARCHAR2(40)

SQL> desc medicine_shop;
 Name                                      Null?    Type
 ----------------------------------------- -------- ------------------------------------
 MED_SHOP_ID                               NOT NULL CHAR(6)
 NAME                                      NOT NULL VARCHAR2(20)
 TYPE                                      NOT NULL VARCHAR2(10)
 LOCATION                                           VARCHAR2(40)
SQL> desc medicine;
 Name                                      Null?    Type
 ----------------------------------------- -------- ------------------------------------
 MED_ID                                    NOT NULL CHAR(6)
 NAME                                      NOT NULL VARCHAR2(20)
 COMPOSITION                                        VARCHAR2(40)
 MANUFACTURER                              NOT NULL VARCHAR2(20)
 PRICE                                     NOT NULL NUMBER(4)

SQL> desc patient;
 Name                                      Null?    Type
 ----------------------------------------- -------- ------------------------------------
 P_ID                                      NOT NULL CHAR(6)
```

```
SQL> desc works_in_hospital;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 DOC_ID                                    NOT NULL CHAR(6)
 HOSP_NO                                   NOT NULL VARCHAR2(2)

SQL> desc treatment;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 P_ID                                      NOT NULL CHAR(6)
 ONGOING_TREAT                             NOT NULL VARCHAR2(20)

SQL> desc health_record;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 P_ID                                      NOT NULL CHAR(6)
 RECORD                                    NOT NULL VARCHAR2(25)

SQL> desc hospital_work;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 DOC_ID                                    NOT NULL CHAR(6)
 H_ID                                      NOT NULL CHAR(6)

SQL> desc prescribes;
 Name                                      Null?    Type
 ----------------------------------------- -------- ----------------------------
 DOC_ID                                    NOT NULL CHAR(6)
 MED_ID                                    NOT NULL CHAR(6)

SQL> desc sells;
 Name                                       Null?    Type
 ------------------------------------------ -------- ----------------------------
 MED_ID                                     NOT NULL CHAR(6)
 MED_SHOP_ID                                NOT NULL CHAR(6)

SQL> desc adds;
 Name                                       Null?    Type
 ------------------------------------------ -------- ----------------------------
 DISEASE_ID                                 NOT NULL CHAR(6)
 H_ID                                       NOT NULL CHAR(6)

SQL> desc treats;
 Name                                       Null?    Type
 ------------------------------------------ -------- ----------------------------
 DOC_ID                                     NOT NULL CHAR(6)
 P_ID                                       NOT NULL CHAR(6)

SQL> desc cures;
 Name                                       Null?    Type
 ------------------------------------------ -------- ----------------------------
 DISEASE_ID                                 NOT NULL CHAR(6)
 MED_ID                                     NOT NULL CHAR(6)

SQL> desc appnd_updt;
 Name                                       Null?    Type
 ------------------------------------------ -------- ----------------------------
 ADMIN_ID                                   NOT NULL CHAR(6)
 C_ID                                       NOT NULL CHAR(6)

SQL> desc symptoms;
 Name                                     Null?    Type
 ---------------------------------------- -------- ----------------------------
 DISEASE_ID                               NOT NULL CHAR(6)
 SYMPTOM                                  NOT NULL VARCHAR2(20)
```

ALL CONSTRAINTS IN THE DATABASE

```
SQL> COLUMN CONSTRAINT_NAME FORMAT A20
SQL> COLUMN CONSTRAINT_TYPE FORMAT A20
SQL> COLUMN COLUMN_NAME FORMAT A20
SQL> SELECT CONSTRAINT_NAME,CONSTRAINT_TYPE,COLUMN_NAME FROM USER_CONSTRAINTS NATURAL JOIN USER_CONS_COLUMNS WHERE TABLE_NAME='ADHAAR';

CONSTRAINT_NAME      CONSTRAINT_TYPE      COLUMN_NAME
-------------------- -------------------- --------------------
ADDRESS              C                    RESIDENCE
NAME                 C                    NAME
DATEOFBIRTH          C                    DOB
ADHAAR_NUMBER        P                    ADHAAR_NO
EMAIL_ID             U                    EMAIL
P_NO_                U                    P_NO
EMAIL_CHK            C                    EMAIL

7 rows selected.
SQL> COLUMN CONSTRAINT_NAME FORMAT A20
SQL> COLUMN CONSTRAINT_TYPE FORMAT A20
SQL> COLUMN COLUMN_NAME FORMAT A20
SQL> SELECT CONSTRAINT_NAME,CONSTRAINT_TYPE,COLUMN_NAME FROM USER_CONSTRAINTS NATURAL JOIN USER_CONS_COLUMNS WHERE TABLE_NAME='CARD';

CONSTRAINT_NAME      CONSTRAINT_TYPE      COLUMN_NAME
-------------------- -------------------- --------------------
BLOOG_GRP            C                    BLOOD_G
STATUS_OF_CARD       C                    STATUS
EXPIRY               C                    EXP_DATE
TYPE_CARD            C                    TYPE
CARD_PK              P                    C_ID
ADHAAR_NUM           U                    ADHAAR_NO
SYS_C007711          R                    ADHAAR_NO
CHECK_STTUS          C                    STATUS
CHECK_CARD_TYPE      C                    TYPE

9 rows selected.
SQL> COLUMN CONSTRAINT_NAME FORMAT A20
SQL> COLUMN CONSTRAINT_TYPE FORMAT A20
SQL> COLUMN COLUMN_NAME FORMAT A20
SQL> SELECT CONSTRAINT_NAME,CONSTRAINT_TYPE,COLUMN_NAME FROM USER_CONSTRAINTS NATURAL JOIN USER_CONS_COLUMNS WHERE TABLE_NAME='ADMIN';

CONSTRAINT_NAME      CONSTRAINT_TYPE      COLUMN_NAME
-------------------- -------------------- --------------------
DEPT                 C                    DEPARTMENT
ADMIN_PK             P                    ADMIN_ID
LICENSE_ADMIN        U                    LICENSE
SYS_C007716          R                    ADMIN_ID
DEPT_ADMIN           C                    DEPARTMENT
SQL> COLUMN CONSTRAINT_NAME FORMAT A20
SQL> COLUMN CONSTRAINT_TYPE FORMAT A20
SQL> COLUMN COLUMN_NAME FORMAT A20
SQL> SELECT CONSTRAINT_NAME,CONSTRAINT_TYPE,COLUMN_NAME FROM USER_CONSTRAINTS NATURAL JOIN USER_CONS_COLUMNS WHERE TABLE_NAME='DOCTOR';

CONSTRAINT_NAME      CONSTRAINT_TYPE      COLUMN_NAME
-------------------- -------------------- --------------------
DOC_PK               P                    DOC_ID
LICENSE_DOC          U                    LIS_NO
DOC_SPEZ             U                    SPECIALITY
SYS_C007720          R                    DOC_ID

SQL>
SQL> COLUMN CONSTRAINT_NAME FORMAT A20
SQL> COLUMN CONSTRAINT_TYPE FORMAT A20
SQL> COLUMN COLUMN_NAME FORMAT A20
SQL> SELECT CONSTRAINT_NAME,CONSTRAINT_TYPE,COLUMN_NAME FROM USER_CONSTRAINTS NATURAL JOIN USER_CONS_COLUMNS WHERE TABLE_NAME='HOSPITAL
';

CONSTRAINT_NAME      CONSTRAINT_TYPE      COLUMN_NAME
-------------------- -------------------- --------------------
NAME_HOSP            C                    NAME
TYPE_HOSP            C                    TYPE
HOSP_PK              P                    H_ID
LICENSE_HOSP         U                    LIS_NO
CHECK_HOSP_TYPE      C                    TYPE
```

```
SQL> COLUMN CONSTRAINT_NAME FORMAT A20
SQL> COLUMN CONSTRAINT_TYPE FORMAT A20
SQL> COLUMN COLUMN_NAME FORMAT A20
SQL> SELECT CONSTRAINT_NAME,CONSTRAINT_TYPE,COLUMN_NAME FROM USER_CONSTRAINTS NATURAL JOIN USER_CONS_COLUMNS WHERE TABLE_NAME='DISEASE'
;

CONSTRAINT_NAME      CONSTRAINT_TYPE      COLUMN_NAME
-------------------- -------------------- --------------------
SPEC_DISEASE         C                    SPECIALITY
DISEASE_PK           P                    DISEASE_ID
DIS_NAME             U                    NAME
SYS_C007782          R                    SPECIALITY

SQL> COLUMN CONSTRAINT_NAME FORMAT A20
SQL> COLUMN CONSTRAINT_TYPE FORMAT A20
SQL> COLUMN COLUMN_NAME FORMAT A20
SQL> SELECT CONSTRAINT_NAME,CONSTRAINT_TYPE,COLUMN_NAME FROM USER_CONSTRAINTS NATURAL JOIN USER_CONS_COLUMNS WHERE TABLE_NAME='MEDICINE
_SHOP';

CONSTRAINT_NAME      CONSTRAINT_TYPE      COLUMN_NAME
-------------------- -------------------- --------------------
SHOP_NAME            C                    NAME
TYPE_MED_STORE       C                    TYPE
MED_SHOP_PK          P                    MED_SHOP_ID
LOCATION_SHOP        U                    LOCATION
MED_SHOP_TYPE_CHECK  C                    TYPE

SQL> COLUMN CONSTRAINT_NAME FORMAT A20
SQL> COLUMN CONSTRAINT_TYPE FORMAT A20
SQL> COLUMN COLUMN_NAME FORMAT A20
SQL> SELECT CONSTRAINT_NAME,CONSTRAINT_TYPE,COLUMN_NAME FROM USER_CONSTRAINTS NATURAL JOIN USER_CONS_COLUMNS WHERE TABLE_NAME='MEDICINE
';

CONSTRAINT_NAME      CONSTRAINT_TYPE      COLUMN_NAME
-------------------- -------------------- --------------------
MED_NAME             C                    NAME
MANU_MED             C                    MANUFACTURER
PRICE_MED            C                    PRICE
MED_PK               P                    MED_ID
COMP_MED             U                    COMPOSITION

SQL> COLUMN CONSTRAINT_NAME FORMAT A20
SQL> COLUMN CONSTRAINT_TYPE FORMAT A20
SQL> COLUMN COLUMN_NAME FORMAT A20
SQL> SELECT CONSTRAINT_NAME,CONSTRAINT_TYPE,COLUMN_NAME FROM USER_CONSTRAINTS NATURAL JOIN USER_CONS_COLUMNS WHERE TABLE_NAME='PATIENT'
;

CONSTRAINT_NAME      CONSTRAINT_TYPE      COLUMN_NAME
-------------------- -------------------- --------------------
PATIENT_PK           P                    P_ID
SYS_C007741          R                    P_ID

SQL> COLUMN CONSTRAINT_NAME FORMAT A20
SQL> COLUMN CONSTRAINT_TYPE FORMAT A20
SQL> COLUMN COLUMN_NAME FORMAT A20
SQL> SELECT CONSTRAINT_NAME,CONSTRAINT_TYPE,COLUMN_NAME FROM USER_CONSTRAINTS NATURAL JOIN USER_CONS_COLUMNS WHERE TABLE_NAME='WORKS_IN
_HOSPITAL';

CONSTRAINT_NAME      CONSTRAINT_TYPE      COLUMN_NAME
-------------------- -------------------- --------------------
HOSP_NO_NAME         C                    HOSP_NO
WORK_IN_HOSPITAL_PK  P                    DOC_ID
SYS_C007744          R                    DOC_ID

SQL> COLUMN CONSTRAINT_NAME FORMAT A20
SQL> COLUMN CONSTRAINT_TYPE FORMAT A20
SQL> COLUMN COLUMN_NAME FORMAT A20
SQL> SELECT CONSTRAINT_NAME,CONSTRAINT_TYPE,COLUMN_NAME FROM USER_CONSTRAINTS NATURAL JOIN USER_CONS_COLUMNS WHERE TABLE_NAME='TREATMEN
T';

CONSTRAINT_NAME      CONSTRAINT_TYPE      COLUMN_NAME
-------------------- -------------------- --------------------
ONGOING_TREAT_NAME   C                    ONGOING_TREAT
ONGOING_PK           P                    P_ID
SYS_C007785          R                    P_ID
SYS_C007786          R                    ONGOING_TREAT

SQL> COLUMN CONSTRAINT_NAME FORMAT A20
SQL> COLUMN CONSTRAINT_TYPE FORMAT A20
SQL> COLUMN COLUMN_NAME FORMAT A20
SQL> SELECT CONSTRAINT_NAME,CONSTRAINT_TYPE,COLUMN_NAME FROM USER_CONSTRAINTS NATURAL JOIN USER_CONS_COLUMNS WHERE TABLE_NAME='HEALTH_R
ECORD';

CONSTRAINT_NAME      CONSTRAINT_TYPE      COLUMN_NAME
-------------------- -------------------- --------------------
RECORD_NAME          C                    RECORD
RECORD_PK            P                    P_ID
SYS_C007750          R                    P_ID
```

```
SQL> COLUMN CONSTRAINT_NAME FORMAT A20
SQL> COLUMN CONSTRAINT_TYPE FORMAT A20
SQL> COLUMN COLUMN_NAME FORMAT A20
SQL> SELECT CONSTRAINT_NAME,CONSTRAINT_TYPE,COLUMN_NAME FROM USER_CONSTRAINTS NATURAL JOIN USER_CONS_COLUMNS WHERE TABLE_NAME='HOSPITAL
_WORK';

CONSTRAINT_NAME      CONSTRAINT_TYPE      COLUMN_NAME
-------------------- -------------------- --------------------
HOSPTALWORK_PK       P                    H_ID
HOSPTALWORK_PK       P                    DOC_ID
SYS_C007752          R                    DOC_ID
SYS_C007753          R                    H_ID

SQL> COLUMN CONSTRAINT_NAME FORMAT A20
SQL> COLUMN CONSTRAINT_TYPE FORMAT A20
SQL> COLUMN COLUMN_NAME FORMAT A20
SQL> SELECT CONSTRAINT_NAME,CONSTRAINT_TYPE,COLUMN_NAME FROM USER_CONSTRAINTS NATURAL JOIN USER_CONS_COLUMNS WHERE TABLE_NAME='PRESCRIB
ES';

CONSTRAINT_NAME      CONSTRAINT_TYPE      COLUMN_NAME
-------------------- -------------------- --------------------
PRESCRIBES_PK        P                    MED_ID
PRESCRIBES_PK        P                    DOC_ID
SYS_C007755          R                    DOC_ID
SYS_C007756          R                    MED_ID

SQL> COLUMN CONSTRAINT_NAME FORMAT A20
SQL> COLUMN CONSTRAINT_TYPE FORMAT A20
SQL> COLUMN COLUMN_NAME FORMAT A20
SQL> SELECT CONSTRAINT_NAME,CONSTRAINT_TYPE,COLUMN_NAME FROM USER_CONSTRAINTS NATURAL JOIN USER_CONS_COLUMNS WHERE TABLE_NAME='SELLS';

CONSTRAINT_NAME      CONSTRAINT_TYPE      COLUMN_NAME
-------------------- -------------------- --------------------
SELLS_PK             P                    MED_ID
SELLS_PK             P                    MED_SHOP_ID
SYS_C007758          R                    MED_ID
SYS_C007759          R                    MED_SHOP_ID

SQL> COLUMN CONSTRAINT_NAME FORMAT A20
SQL> COLUMN CONSTRAINT_TYPE FORMAT A20
SQL> COLUMN COLUMN_NAME FORMAT A20
SQL> SELECT CONSTRAINT_NAME,CONSTRAINT_TYPE,COLUMN_NAME FROM USER_CONSTRAINTS NATURAL JOIN USER_CONS_COLUMNS WHERE TABLE_NAME='ADDS';

CONSTRAINT_NAME      CONSTRAINT_TYPE      COLUMN_NAME
-------------------- -------------------- --------------------
ADDS_PK              P                    DISEASE_ID
ADDS_PK              P                    H_ID
SYS_C007794          R                    DISEASE_ID
SYS_C007795          R                    H_ID

SQL> COLUMN CONSTRAINT_NAME FORMAT A20
SQL> COLUMN CONSTRAINT_TYPE FORMAT A20
SQL> COLUMN COLUMN_NAME FORMAT A20
SQL> SELECT CONSTRAINT_NAME,CONSTRAINT_TYPE,COLUMN_NAME FROM USER_CONSTRAINTS NATURAL JOIN USER_CONS_COLUMNS WHERE TABLE_NAME='TREATS';

CONSTRAINT_NAME      CONSTRAINT_TYPE      COLUMN_NAME
-------------------- -------------------- --------------------
TREATS_PK            P                    DOC_ID
TREATS_PK            P                    P_ID
SYS_C007764          R                    DOC_ID
SYS_C007765          R                    P_ID

SQL> COLUMN CONSTRAINT_NAME FORMAT A20
SQL> COLUMN CONSTRAINT_TYPE FORMAT A20
SQL> COLUMN COLUMN_NAME FORMAT A20
SQL> SELECT CONSTRAINT_NAME,CONSTRAINT_TYPE,COLUMN_NAME FROM USER_CONSTRAINTS NATURAL JOIN USER_CONS_COLUMNS WHERE TABLE_NAME='CURES';

CONSTRAINT_NAME      CONSTRAINT_TYPE      COLUMN_NAME
-------------------- -------------------- --------------------
CURES_PK             P                    DISEASE_ID
CURES_PK             P                    MED_ID
SYS_C007791          R                    DISEASE_ID
SYS_C007792          R                    MED_ID
```

```
SQL> COLUMN CONSTRAINT_NAME FORMAT A20
SQL> COLUMN CONSTRAINT_TYPE FORMAT A20
SQL> COLUMN COLUMN_NAME FORMAT A20
SQL> SELECT CONSTRAINT_NAME,CONSTRAINT_TYPE,COLUMN_NAME FROM USER_CONSTRAINTS NATURAL JOIN USER_CONS_COLUMNS WHERE TABLE_NAME='APPND_UP
DT';

CONSTRAINT_NAME      CONSTRAINT_TYPE      COLUMN_NAME
-------------------- -------------------- --------------------
APPND_UPDT_PK        P                    ADMIN_ID
APPND_UPDT_PK        P                    C_ID
SYS_C007770          R                    ADMIN_ID
SYS_C007771          R                    C_ID

SQL> COLUMN CONSTRAINT_NAME FORMAT A20
SQL> COLUMN CONSTRAINT_TYPE FORMAT A20
SQL> COLUMN COLUMN_NAME FORMAT A20
SQL> SELECT CONSTRAINT_NAME,CONSTRAINT_TYPE,COLUMN_NAME FROM USER_CONSTRAINTS NATURAL JOIN USER_CONS_COLUMNS WHERE TABLE_NAME='SYMPTOMS
';

CONSTRAINT_NAME      CONSTRAINT_TYPE      COLUMN_NAME
-------------------- -------------------- --------------------
SYMPTOM_NAME         C                    SYMPTOM
SYMPTOM_PK           P                    DISEASE_ID
SYS_C007789          R                    DISEASE_ID
```

DATA INSERTION

```
SQL> INSERT INTO card VALUES(&c_id,&blood_g,&balance,&status,&adhaar_no,&exp_date,&type);
Enter value for c_id: '016352'
Enter value for blood_g: 'B+'
Enter value for balance: '6000'
Enter value for status: 'active'
Enter value for adhaar_no: '963512'
Enter value for exp_date: TO_DATE('17-07-2022', 'DD-MM-YYYY')
Enter value for type: 'doctor'
old   1: INSERT INTO card VALUES(&c_id,&blood_g,&balance,&status,&adhaar_no,&exp_date,&type)
new   1: INSERT INTO card VALUES('016352','B+','6000','active','963512',TO_DATE('17-07-2022', 'DD-MM-YYYY'),'doctor')

1 row created.

SQL> INSERT INTO admin VALUES(&admin_id,&department,&license);
Enter value for admin_id: '119374'
Enter value for department: 'MoHFW'
Enter value for license: '778884'
old   1: INSERT INTO admin VALUES(&admin_id,&department,&license)
new   1: INSERT INTO admin VALUES('119374','MoHFW','778884')

1 row created.

SQL> INSERT INTO doctor VALUES(&doc_id,&fees,&lis_no,&speciality);
Enter value for doc_id: '016352'
Enter value for fees: '700'
Enter value for lis_no: '44335'
Enter value for speciality: 'neurologist'
old   1: INSERT INTO doctor VALUES(&doc_id,&fees,&lis_no,&speciality)
new   1: INSERT INTO doctor VALUES('016352','700','44335','neurologist')

1 row created.

SQL> INSERT INTO hospital VALUES(&h_id,&lis_no,&name,&h_fees,&type);
Enter value for h_id: '292229'
Enter value for lis_no: '50501'
Enter value for name: 'Sarojini Hospital'
Enter value for h_fees: '500'
Enter value for type: 'government'
old   1: INSERT INTO hospital VALUES(&h_id,&lis_no,&name,&h_fees,&type)
new   1: INSERT INTO hospital VALUES('292229','50501','Sarojini Hospital','500','government')

1 row created.

SQL> INSERT INTO disease VALUES(&disease_id,&name,&speciality);
Enter value for disease_id: '636777'
Enter value for name: 'Diarrhea'
Enter value for speciality: 'Pediatricians'
old   1: INSERT INTO disease VALUES(&disease_id,&name,&speciality)
new   1: INSERT INTO disease VALUES('636777','Diarrhea','Pediatricians')

1 row created.

SQL> INSERT INTO medicine_shop VALUES(&med_shop_id,&name,&type,&location);
Enter value for med_shop_id: '494193'
Enter value for name: 'Star Pharma'
Enter value for type: 'private'
Enter value for location: 'Delhi'
old   1: INSERT INTO medicine_shop VALUES(&med_shop_id,&name,&type,&location)
new   1: INSERT INTO medicine_shop VALUES('494193','Star Pharma','private','Delhi')

1 row created.

SQL> INSERT INTO medicine VALUES(&med_id,&name,&composition,&manufacturer,&price);
Enter value for med_id: '356289'
Enter value for name: 'Sumatriptan'
Enter value for composition: 'Tosymra'
Enter value for manufacturer: 'Cipla Pharmaceutical'
Enter value for price: '150'
old   1: INSERT INTO medicine VALUES(&med_id,&name,&composition,&manufacturer,&price)
new   1: INSERT INTO medicine VALUES('356289','Sumatriptan','Tosymra','Cipla Pharmaceutical','150')

1 row created.
```

```
SQL> INSERT into patient VALUES(&p_id);
Enter value for p_id: '917642'
old   1: INSERT into patient VALUES(&p_id)
new   1: INSERT into patient VALUES('917642')

1 row created.

SQL> INSERT into works_in_hospital VALUES(&doc_id,&hosp_no);
Enter value for doc_id: '016352'
Enter value for hosp_no: '56'
old   1: INSERT into works_in_hospital VALUES(&doc_id,&hosp_no)
new   1: INSERT into works_in_hospital VALUES('016352','56')

1 row created.

SQL> insert into health_record VALUES(&p_id,&record);
Enter value for p_id: '917642'
Enter value for record: 'Tuberculosis'
old   1: insert into health_record VALUES(&p_id,&record)
new   1: insert into health_record VALUES('917642','Tuberculosis')

1 row created.

SQL> INSERT into hospital_work VALUES(&doc_id,&h_id);
Enter value for doc_id: '016352'
Enter value for h_id: '292229'
old   1: INSERT into hospital_work VALUES(&doc_id,&h_id)
new   1: INSERT into hospital_work VALUES('016352','292229')

1 row created.

SQL> INSERT into prescribes VALUES(&doc_id,&med_id);
Enter value for doc_id: '016352'
Enter value for med_id: '356289'
old   1: INSERT into prescribes VALUES(&doc_id,&med_id)
new   1: INSERT into prescribes VALUES('016352','356289')

1 row created.

---
SQL> INSERT into sells VALUES(&med_id,&med_shop_id);
Enter value for med_id: '356289'
Enter value for med_shop_id: '494193'
old   1: INSERT into sells VALUES(&med_id,&med_shop_id)
new   1: INSERT into sells VALUES('356289','494193')

1 row created.

SQL> INSERT into treats VALUES(&doc_id,&p_id);
Enter value for doc_id: '054238'
Enter value for p_id: '917642'
old   1: INSERT into treats VALUES(&doc_id,&p_id)
new   1: INSERT into treats VALUES('054238','917642')

1 row created.

SQL> INSERT INTO cures VALUES(&disease_id,&med_id);
Enter value for disease_id: '609239'
Enter value for med_id: '356289'
old   1: INSERT INTO cures VALUES(&disease_id,&med_id)
new   1: INSERT INTO cures VALUES('609239','356289')

1 row created.

SQL> INSERT INTO appnd_updt VALUES(&admin_id,&c_id);
Enter value for admin_id: '119374'
Enter value for c_id: '932453'
old   1: INSERT INTO appnd_updt VALUES(&admin_id,&c_id)
new   1: INSERT INTO appnd_updt VALUES('119374','932453')

1 row created.

SQL> INSERT INTO symptoms VALUES(&disease_id,&symptom);
Enter value for disease_id: '609239'
Enter value for symptom: 'headache'
old   1: INSERT INTO symptoms VALUES(&disease_id,&symptom)
new   1: INSERT INTO symptoms VALUES('609239','headache')

1 row created.
```

```
SQL> insert into adds VALUES(&disease_id,&h_id);
Enter value for disease_id: '600132'
Enter value for h_id: '292229'
old   1: insert into adds VALUES(&disease_id,&h_id)
new   1: insert into adds VALUES('600132','292229')

1 row created.

SQL> insert into treatment VALUES(&p_id,&ongoing_treat);
Enter value for p_id: '917642'
Enter value for ongoing_treat: 'Diarrhea'
old   1: insert into treatment VALUES(&p_id,&ongoing_treat)
new   1: insert into treatment VALUES('917642','Diarrhea')

1 row created.
```

DATA DISPLAY

```
SQL> set line 9000;
SQL> select * from adhaar;

ADHAAR RESIDENCE                                                                                                    EMAIL
                    NAME                                    DOB       P_NO
------ ---------------------------------------------------------------------------------------------------------- --------------------------
------------ ---------------------------------------- --------- ----------
963512 Bhubaneshwar                                                                                                 mohanraj@gmail.com
                    Mohanraj Sharma                         04-AUG-92 9178234652
273483 Katpadi                                                                                                      coolboy@gmail.com
                    Ramesh Chopra                           19-NOV-88 8276316435
164276 Sonagachi                                                                                                    shreebasu563@gmail.com
                    Shree Basu                              05-JUN-03 8507132039
024308 Kolhapur                                                                                                     khatri89@gmail.com
                    Harihar Khatri                          09-MAY-89 7234803564
283746 Chinchwad                                                                                                    vineeta.tandon@rediffmail.c
om          Vineeta Tandon                          17-APR-01 9239642365
157435 Faridabad                                                                                                    sswaminathan@yahoo.com
                    Supriya Swaminathan                     19-JUL-95 8898823121
013477 Ranchi                                                                                                       msdhoni234@yahoo.com
                    Mahendra Dhoni                          07-JUL-77 7234543236
975436 Kanpur                                                                                                       lalikumra86@gmail.com
                    Lalita Kumra                            31-JAN-86 9761986454
421353 Rajkot                                                                                                       meradesmahan@hotmail.com
                    Amol Birla                              27-SEP-64 8009003267

9 rows selected.
```

```
SQL> select * from card;

C_ID   BLO    BALANCE STATUS   ADHAAR EXP_DATE  TYPE
------ --- ---------- -------- ------ --------- --------
016352 B+        6000 active   963512 17-JUL-22 doctor
054238 A+       12000 inactive 273483 21-SEP-25 doctor
035555 B-       10300 active   164276 01-APR-23 doctor
917642 AB+      16000 active   024308 20-OCT-26 patient
932453 B+        2600 active   283746 18-SEP-24 patient
964238 AB+       6600 active   157435 22-JUL-25 patient
119374 AB-       5500 inactive 013477 17-DEC-22 admin
124902 AB+      11900 active   975436 10-JUL-23 admin
199229 B+        3700 active   421353 16-AUG-23 admin
SQL> select * from admin;

ADMIN_ DEPARTMENT          LICENS
------ ------------------- ------
119374 MoHFW               778884
124902 UIDAI               009494
199229 MoHFW               636622
SQL> select * from doctor;

DOC_ID       FEES LIS_N SPECIALITY
------ ---------- ----- ---------------------------------------
016352        700 44335 neurologist
054238        500 82821 Pediatricians
035555        600 77282 Ophthalmologist

SQL> select * from hospital;

H_ID   LIS_N NAME                                    H_FEES TYPE
------ ----- ---------------------------------------- ---------- ----------
292229 50501 Sarojini Hospital                           500 government
232333 02012 City Hospital                               800 private
266464 12203 Ruby Hospital                               750 private

SQL> select * from disease;

DISEAS NAME                SPECIALITY
------ ------------------- ---------------------------------------
636777 Diarrhea            Pediatricians
609239 Migraine            neurologist
600132 Conjunctivitis      Ophthalmologist
```

```
SQL> select * from medicine_shop;

MED_SH NAME                 TYPE       LOCATION
------ -------------------- ---------- ---------------------------------------
494193 Star Pharma          private    Delhi
444169 Janata Medical       government Ranchi
496225 The Medicine Shop    private    Katpadi

SQL> select * from medicine;

MED_ID NAME                COMPOSITION                          MANUFACTURER             PRICE
------ ------------------- ------------------------------------ -------------------- ----------
356289 Sumatriptan         Tosymra                              Cipla Pharmaceutical        150
324361 Loperamide          Bismuth subsalicylate                Emcure Pharma               225
300441 Combiflam           Paracetamol                          Impulse Pharma              210

SQL> select * from patient;

P_ID
------
917642
932453
964238

SQL> select * from works_in_hospital;

DOC_ID HO
------ --
016352 56
054238 73
035555 14

SQL> select * from health_record;

P_ID   RECORD
------ -------------------------
917642 Tuberculosis
964238 Swine Flu
932453 Malaria

SQL> select * from hospital_work;

DOC_ID H_ID
------ ------
054238 232333
035555 266464
016352 292229

SQL> select * from prescribes;

DOC_ID MED_ID
------ ------
035555 300441
054238 324361
016352 356289

SQL> select * from sells;

MED_ID MED_SH
------ ------
300441 496225
324361 444169
356289 494193

SQL> select * from treats;

DOC_ID P_ID
------ ------
016352 964238
035555 932453
054238 917642

SQL> select * from cures;

DISEAS MED_ID
------ ------
600132 300441
609239 356289
636777 324361
```

```
SQL> select * from appnd_updt;

ADMIN_ C_ID
------ ------
119374 932453
124902 964238
199229 035555
SQL> select * from symptoms;

DISEAS SYMPTOM
------ --------------------
609239 headache
600132 red eyes
636777 too much shizz

SQL> select * from adds;

DISEAS H_ID
------ ------
600132 292229
609239 266464
636777 232333

SQL> select * from treatment;

P_ID   ONGOING_TREAT
------ --------------------
917642 Diarrhea
964238 Migraine
932453 Conjunctivitis
```