

DATABASE MANAGEMENT SYSTEM PROJECT (UCS 310 -2324 EVEN SEM)



**THAPAR INSTITUTE
OF ENGINEERING & TECHNOLOGY
(Deemed to be University)**

COMMUNAL HEALTH MANAGEMENT SYSTEM

**SUBMITTED BY:
HARSHITA GUPTA (102216008)**

INDEX

SNO	TOPIC	PAGE NO
1	INTRODUCTION	3
2	PROJET GOALS	6
3	ER	7
4	ER TO TABLE	8
5	NORMALISATION	11
6	SQL QUERIES	22
7	PLSQL QUERIES	38
8	CONCLUSION	43

Introduction:

The Health Management System (HMS) is a multifaceted platform designed to revolutionize healthcare management within hospitals, clinics, and other healthcare facilities. At its core, the HMS is engineered to bring about a significant shift from traditional paper-based systems to efficient and streamlined digital processes. By leveraging cutting-edge digital technologies, the HMS aims to enhance both administrative and clinical workflows, thereby improving overall patient care and operational efficiency.

One of the primary objectives of the HMS is to centralize and digitize patient records. By transitioning from paper records to electronic health records (EHRs), healthcare providers gain access to a wealth of patient information at their fingertips. These digital records contain comprehensive details about patients' medical history, treatments, allergies, diagnostic reports, and more. With instant access to accurate and up-to-date patient information, healthcare professionals can make more informed decisions and provide personalized care to each patient.

Appointment management is another critical component of the HMS. Through an intuitive scheduling system, patients can easily book appointments with healthcare practitioners based on their availability and specialty. This streamlined process not only reduces wait times for patients but also optimizes the utilization of healthcare resources. Additionally, automated appointment reminders help minimize no-shows, ensuring that patients receive timely care while maximizing the efficiency of healthcare providers' schedules.

Prescription management is seamlessly integrated into the HMS, allowing healthcare providers to generate electronic prescriptions for medications and treatments. Digital prescriptions eliminate the need for handwritten notes, reducing the risk of errors and improving medication adherence. Pharmacists can efficiently process these electronic prescriptions, further streamlining the medication dispensing process and enhancing patient safety.

Vaccination tracking is another essential feature of the HMS, especially in the context of public health initiatives. The system maintains comprehensive records of patients' vaccination history, including administered vaccines, dates, and any booster requirements. This centralized vaccination database enables healthcare authorities to monitor vaccination coverage rates, identify at-risk populations, and implement targeted immunization campaigns to prevent the spread of infectious diseases.

Furthermore, the HMS incorporates environmental data management capabilities, allowing healthcare organizations to monitor and analyze factors such as water quality, air pollution levels, food safety standards, and sanitation conditions. By integrating environmental data with patient health records, the system facilitates evidence-based decision-making and enables healthcare providers to address environmental health risks effectively.

Features:

Patient Management:

1. Capture and manage patient information such as name, gender, date of birth, contact details, and emergency contact.
2. Assign patients to doctors and hospitals.
3. Maintain patient health records, including medical history, allergies, and blood type.

Appointment Management:

1. Schedule appointments for patients with doctors.
2. Manage appointment dates, times, and statuses (booked or not booked).
3. Allow patients to view and cancel appointments.

Prescription Management:

1. Record prescriptions issued by doctors to patients.
2. Include details such as medication name, dosage, quantity, and prescription date.
3. Link prescriptions to specific patients and doctors.

Vaccination Management:

1. Track vaccination records for patients.
2. Store details about vaccination doses administered, dates, and locations.
3. Set minimum and maximum age requirements for each vaccination.

Infant Record Management:

1. Maintain records of newborn infants, including birth weight, length, Apgar score, and head circumference.
2. Link infants to their mothers' Aadhar numbers and capture details like date and time of birth.

Doctor and Hospital Management:

1. Manage information about doctors, including their names, specializations, and associated hospitals.
2. Store hospital details such as name, address, contact information, and email.

Disease and Health Statistics:

1. Track disease statistics by recording the total number of cases, deaths, and dates of recording.
2. Collect data at the pincode level to analyze disease prevalence and mortality rates.
3. Maintain information about diseases, including names, mortality rates, and associated medications.

Environmental Data Management:

1. Monitor environmental factors affecting public health, such as water quality, air pollution, food safety, and sanitation status.
2. Record data related to water quality, including pH levels, dissolved oxygen, and chlorine levels.

3. Track air quality metrics like AQI, CO levels, and PPM concentrations.
4. Manage food safety records and sanitation status, including information on contaminants and treatment methods.

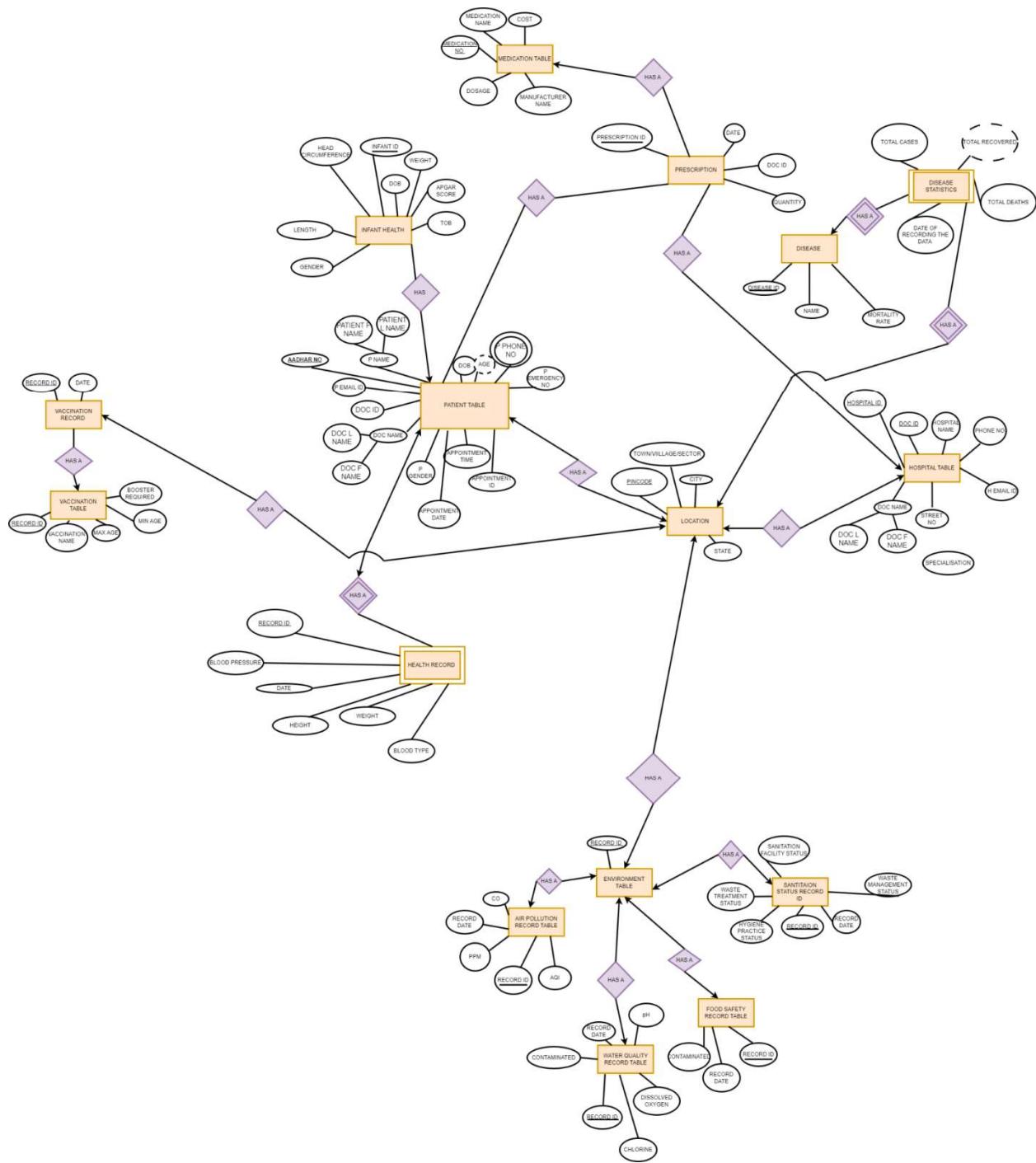
Project Goals

- Create a comprehensive health management system that improves the efficiency and accuracy of healthcare processes.
- Enhance patient care by providing healthcare professionals with easy access to patient information and medical records.
- Improve public health monitoring and disease prevention efforts through data-driven analysis of health statistics and environmental factors.

Target Users

1. Healthcare professionals (doctors, nurses, pharmacists, etc.).
2. Patients and caregivers.
3. Hospital and clinic administrators.
4. Public health authorities and researchers.

ENTITY-RELATION DIAGRAM



ER TO TABLE

PATIENT TABLE :

AADHAR NO.	PATIENT F NAME	PATIENT L NAME	EMAIL ID	DOB	PHONE NO	DOCTOR ID	DOCTOR F. NAME	DOCTOR L.NAME
------------	----------------	----------------	----------	-----	----------	-----------	----------------	---------------

APPOINTMENT ID	APPOINTMENT DATE	APPOINTMENT TIME	APPOINTMENT STATUS	P GENDER	P EMERGENCY NO
----------------	------------------	------------------	--------------------	----------	----------------

HOSPITAL TABLE :

HOSPITAL NO.	DOC ID	HOSPITAL NAME	STREET NO	PIN CODE (FK)	PHONE NO	EMAIL ID	DOC F NAME	DOC L NAME	SPECIALISATION
--------------	--------	---------------	-----------	---------------	----------	----------	------------	------------	----------------

MEDICATION TABLE

MEDICATION NO	MEDICATION NAME	MANUFACTURER NAME	COST	DOSAGE
---------------	-----------------	-------------------	------	--------

LOCATION TABLE:

PINCODE	TOWN/VILLAGE	CITY	STATE
---------	--------------	------	-------

HEALTH RECORD TABLE

RECORD ID	AADHAR NO (FK)	BLOOD TYPE	HEIGHT	WEIGHT	BLOOD PRESSURE	CHECKUP DATE
-----------	----------------	------------	--------	--------	----------------	--------------

PREScription TABLE

<u>PREScription ID</u>	AADHAR NO(FK)	DOC ID	MEDICATION ID (FK)	PRESCRIPTION DATE	QUANTITY

VACCINATION TABLE :

<u>VACCINATION ID</u>	VACCINATION NAME	MIN REQUIRED AGE	MAX POSSIBLE AGE	BOOSTER REQUIRED

VACCINATION RECORDS TABLE

<u>RECORD ID</u>	AADHAR NO(FK)	VACCINATION ID(FK)	DATE OF ADMINISTRATION OF DOSE	LOCATION

INFANT HEALTH TABLE :

<u>INFANT ID</u>	AADHAR NO OF MOTHER(FK)	DOB	TO B	BIRTH WEIGHT	LENGTH	APGAR SCORE	HEAD CIRCUMFERENCE	GENDER

DISEASE TABLE:

<u>DISEASE ID</u>	DISEASE NAME	MORTALITY RATE	MEDICATION ID(FK)

DISEASE STATISTIC TABLE:

<u>DISEASE ID</u>	<u>PINCODE(FK)</u>	TOTAL CASES	TOTAL DEATHS	DATE OF RECORDING

ENVIRONMENTAL DATA TABLE

<u>DATA ID</u>	WATER QUALITY RECORD ID (FK)	AIR POLLUTION RECORD ID (FK)	FOOD SAFETY RECORD ID (FK)	SANITATION STATUS RECORD ID(FK)	LOCATION PINCODE(FK)
----------------	------------------------------	------------------------------	----------------------------	---------------------------------	----------------------

WATERQUALITY TABLE

<u>RECORD ID</u>	RECORD DATE	pH	DISSOLVED OXYGEN	CHLORINE	CONTAMINATE D
------------------	-------------	----	------------------	----------	---------------

AIR-QUALITY TABLE

<u>RECORD ID</u>	RECORD DATE	AQI	CO	PPM
------------------	-------------	-----	----	-----

FOOD-SAFETY TABLE

<u>RECORD ID</u>	RECORD DATE	CHEMICAL CONTAMINANTS
------------------	-------------	-----------------------

SANITATION STATUS

<u>SANITATION STATUS ID</u>	WASTE MANAGEMENT STATUS	WASTE TREATMENT STATUS	SANITATION FACILITY STATUS	HYGIENE PRACTICE STATUS	RECORD DATE
-----------------------------	-------------------------	------------------------	----------------------------	-------------------------	-------------

NORMALISATION

PATIENT TABLE :

<u>AADHAR NO.</u>	PATIENT F NAME	PATIENT L NAME	EMAIL ID	DOB	PHONE NO	DOCTOR ID	DOCTOR F. NAME	DOCTOR L.NAME
-------------------	----------------	----------------	----------	-----	----------	-----------	----------------	---------------

APPOINTMENT ID	APPOINTMENT DATE	APPOINTMENT TIME	APPOINTMENT STATUS	P GENDER	P EMERGENCY NO
----------------	------------------	------------------	--------------------	----------	----------------

1NF: A relation R is said to be in first normal form (1NF) if and only if all the underlying domains contain atomic values only .Since the table contains multivalued attributes i.e phone no, it is not in 1NF .

TWO SEPERATE TABLES:

The first one (PATIENT TABLE) contains all other attributes and the second table (PATIENT PHONE NO) contains PHONE NO AND AADHAR NO as Composite Primary key ,AADHAR NO as FK.(PATIENT PHONE NO becomes a weak entity set)

PATIENT TABLE

<u>AADHAR NO.</u>	PATIENT F NAME	PATIENT L NAME	EMAIL ID	DOB	DOCTOR ID	DOCTOR F. NAME	DOCTOR L.NAME
-------------------	----------------	----------------	----------	-----	-----------	----------------	---------------

APPOINTMENT ID	APPOINTMENT DATE	APPOINTMENT TIME	APPOINTMENT STATUS	P GENDER	HOUSE NO
----------------	------------------	------------------	--------------------	----------	----------

PATIENT PHONE NO

<u>AADHAR NUMBER(FK)</u>	<u>PHONE NO</u>
--------------------------	-----------------

2NF: A relation R is said to be in second normal form (2 NF) if and only if it is in 1NF and every non prime attribute is fully dependent on the primary key . Since the above table (PATIENT TABLE) is now in 1NF and contains only a single primary key ,therefore it is in 2NF .

PATIENT PHONE NO table is also in 2NF (in 1NF because it contains atomic values only and in 2NF because of fully functional dependent attributes).

3NF :A relation R is said to be in third normal form (3 NF) if and only if it is in 2NF and every non key attribute is non-transitively dependent on the primary key .In the table above Doctor Name depends on the Doctor Id and not in the PK of the Patient table . Similarly Appointment date and time depend on the Appointment id .Therefore the table is not in 3NF.

SEPARATE TABLES :

We make a separate table for Details about Doctor and Appointment with Aadhar no as FK .

PATIENT TABLE

<u>AADHAR NO.</u>	PATIENT F NAME	PATIENT L NAME	EMAIL ID	DOB	P GENDER	P EMERGENCY NO
-------------------	----------------	----------------	----------	-----	----------	----------------

DOCTOR AND APPOINTMENT TABLE

<u>DOC ID</u>	DOC F NAME	DOC L NAME	APPOINTMENT ID	APPOINTMENT DATE	APPOINTMENT TIME	APPOINTMENT STATUS	P AADHAR NO (FK)
---------------	------------	------------	----------------	------------------	------------------	--------------------	------------------

The First table (Patient Table) is in 1NF ,2NF and 3NF. The second table DOCTOR AND APPOINTMENT TABLE is in 1NF,2NF but not in 3NF as APPOINTMENT DATE and TIME and STATUS are dependent on APPOINTMENT ID.

TWO SEPARATE TABLES:

We further break this table into 2 Separate tables .

DOCTOR TABLE

<u>DOC ID</u>	DOC F NAME	DOC L NAME
---------------	------------	------------

APPOINTMENT TABLE

<u>APPOINTMENT ID</u>	APPOINTMENT DATE	APPOINTMENT TIME	PATIENT AADHAR NO (FK)	DOC ID (FK)	APPOINTMENT STATUS
-----------------------	------------------	------------------	------------------------	-------------	--------------------

BCNF : A relation R is said to be in Boyce-Codd normal form (BCNF) if and only if it is in 3NF and every determinant is a candidate key .The given tables are in BCNF.

HOSPITAL TABLE :

<u>HOSPITAL NO.</u>	<u>DOC ID</u>	HOSPITAL NAME	STREET NO	PIN CODE (FK)	PHONE NO	EMAIL ID	DOC F NAME	DOC L NAME	SPECIALISATION
---------------------	---------------	---------------	-----------	---------------	----------	----------	------------	------------	----------------

1NF: A relation R is said to be in first normal form (1NF) if and only if all the underlying domains contain atomic values only .Since the table contains all single valued attributes, it is in 1NF .

2NF: A relation R is said to be in second normal form (2 NF) if and only if it is in 1NF and every non prime attribute is fully dependent on the primary key . Since the above table (HOSPITAL TABLE) is now in 1NF and contains composite primary key we check for partial dependency . Doc F Name and Doc L Name depend only on Doctor Id and not Hospital Id. To combat this transitive dependency we make

2 SEPARATE TABLES

HOSPITAL TABLE

<u>HOSPITAL NO.</u>	HOSPITAL NAME	STREET NO	PIN CODE(FK)	PHONE NO	EMAIL ID
---------------------	---------------	-----------	--------------	----------	----------

DOC TABLE

<u>DOC ID</u>	DOC F NAME	DOC L NAME	SPECIALIZATION	HOSPITAL NO (FK)

3NF :A relation R is said to be in third normal form (3 NF) if and only if it is in 2NF and every non key attribute is non-transitively dependent on the primary key . Since the above table is in 2NF and there exists no transitive dependency .

BCNF :A relation R is said to be in Boyce-Codd normal form (BCNF) if and only if it is in 3NF and every determinant is a candidate key .The given tables are in BCNF.

MEDICATION TABLE:

MEDICATION TABLE

<u>MEDICATION NO</u>	MEDICATION NAME	MANUFACTURER NAME	COST	DOSAGE

1NF: A relation R is said to be in first normal form (1NF) if and only if all the underlying domains contain atomic values only .Since the table contains multivalued attributes i.e manufacturer, it is not in 1NF .

TWO SEPERATE TABLES:

The first one (MEDICATION TABLE) contains all other attributes and the second table (MANUFACTURER TABLE) contains Manufacturer No as Primary key ,Medication No as foreign key and Manufacturer Name .

MEDICATION TABLE

<u>MEDICATION NO</u>	MEDICATION NAME	COST	DOSAGE

MANUFACTURER TABLE

<u>MANUFACTURER NAME</u>	<u>MEDICATION NO (FK)</u>

2NF: A relation R is said to be in second normal form (2 NF) if and only if it is in 1NF and every non prime attribute is fully dependent on the primary key . Since the above table is now in 1NF and contains only a single primary key ,therefore it is in 2NF .

Manufacturer table is also in 2NF (in 1NF because it contains atomic values only and in 2NF because of fully functional dependent attributes).

3NF :A relation R is said to be in third normal form (3 NF) if and only if it is in 2NF and every non key attribute is non-transitively dependent on the primary key . Since the above table is in 2NF and there exists no transitive dependency , therefore MEDICATION AND MANUFACTURER TABLE are in 3NF.

BCNF :A relation R is said to be in Boyce-Codd normal form (BCNF) if and only if it is in 3NF and every determinant is a candidate key .The given tables are in BCNF.

LOCATION TABLE

LOCATION TABLE:

PINCODE	TOWN/VILLAGE	CITY	STATE
---------	--------------	------	-------

1NF: A relation R is said to be in first normal form (1NF) if and only if all the underlying domains contain atomic values only .Since the table contains atomic attributes it is in 1NF .

2NF: A relation R is said to be in second normal form (2 NF) if and only if it is in 1NF and every non prime attribute is fully dependent on the primary key . Since the above table is now in 1NF and contains only a single primary key ,therefore it is in 2NF .

3NF :A relation R is said to be in third normal form (3 NF) if and only if it is in 2NF and every non key attribute is non-transitively dependent on the primary key . Since the above table is in 2NF and there exists no transitive dependency .Therefore, tables are in 3 NF.

BCNF :A relation R is said to be in Boyce-Codd normal form (BCNF) if and only if it is in 3NF and every determinant is a candidate key .The given tables are in BCNF.

HEALTH RECORD TABLE

RECORD ID	AADHAR NO (FK)	BLOOD TYPE	HEIGHT	WEIGHT	BLOOD PRESSURE	CHECKUP DATE
-----------	-------------------	---------------	--------	--------	-------------------	-----------------

1NF: A relation R is said to be in first normal form (1NF) if and only if all the underlying domains contain atomic values only .Since the table contains atomic attributes it is in 1NF .

2NF: A relation R is said to be in second normal form (2 NF) if and only if it is in 1NF and every non prime attribute is fully dependent on the primary key . The above table is now in 1NF but not in 2NF because of partial dependency (Blood type depends only on AADHAR NO and not on RECORD ID) .To make it 2NF we make\

2 SEPARATE TABLES

HEALTH RECORD TABLE

RECORD ID	AADHAR NO (FK)	HEIGHT	WEIGHT	BLOOD PRESSURE	CHECKUP DATE

BLOOD INFO TABLE:

AADHAR NO	BLOOD TYPE

3NF :A relation R is said to be in third normal form (3 NF) if and only if it is in 2NF and every non key attribute is non-transitively dependent on the primary key . Since the above table is in 2NF and there exists no transitive dependency .Therefore, tables are in 3 NF.

BCNF :A relation R is said to be in Boyce-Codd normal form (BCNF) if and only if it is in 3NF and every determinant is a candidate key .The given tables are in BCNF.

PRESCRIPTION TABLE

PRESCRIPTION ID	AADHAR NO(FK)	DOC ID	MEDICATION ID (FK)	PRESCRIPTION DATE	QUANTITY

1NF: A relation R is said to be in first normal form (1NF) if and only if all the underlying domains contain atomic values only .Since the table contains atomic attributes it is in 1NF .

2NF: A relation R is said to be in second normal form (2 NF) if and only if it is in 1NF and every non prime attribute is fully dependent on the primary key . Since the above table is now in 1NF and contains only a single primary key ,therefore it is in 2NF .

3NF :A relation R is said to be in third normal form (3 NF) if and only if it is in 2NF and every non key attribute is non-transitively dependent on the primary key . Since the above table is in 2NF and there exists no transitive dependency .Therefore, tables are in 3 NF.

BCNF :A relation R is said to be in Boyce-Codd normal form (BCNF) if and only if it is in 3NF and every determinant is a candidate key .The given tables are in BCNF.

VACCINATION TABLE :

VACCINATION ID	VACCINATION NAME	MIN REQUIRED AGE	MAX POSSIBLE AGE	BOOSTER REQUIRED

1NF: A relation R is said to be in first normal form (1NF) if and only if all the underlying domains contain atomic values only .Since the table contains atomic attributes it is in 1NF .

2NF: A relation R is said to be in second normal form (2 NF) if and only if it is in 1NF and every non prime attribute is fully dependent on the primary key . Since the above table is now in 1NF and contains only a single primary key ,therefore it is in 2NF .

3NF :A relation R is said to be in third normal form (3 NF) if and only if it is in 2NF and every non key attribute is non-transitively dependent on the primary key . Since the above table is in 2NF and there exists no transitive dependency .Therefore, tables are in 3 NF.

BCNF :A relation R is said to be in Boyce-Codd normal form (BCNF) if and only if it is in 3NF and every determinant is a candidate key .The given tables are in BCNF.

VACCINATIONRECORDS TABLE

RECORD ID	AADHAR NO(FK)	VACCINATION ID(FK)	DATE OF ADMINISTRATION OF DOSE	LOCATION

1NF: A relation R is said to be in first normal form (1NF) if and only if all the underlying domains contain atomic values only .Since the table contains atomic attributes it is in 1NF .

2NF: A relation R is said to be in second normal form (2 NF) if and only if it is in 1NF and every non prime attribute is fully dependent on the primary key . Since the above table is now in 1NF and contains only a single primary key ,therefore it is in 2NF .

3NF :A relation R is said to be in third normal form (3 NF) if and only if it is in 2NF and every non key attribute is non-transitively dependent on the primary key . Since the above table is in 2NF and there exists no transitive dependency .Therefore, tables are in 3 NF.

BCNF :A relation R is said to be in Boyce-Codd normal form (BCNF) if and only if it is in 3NF and every determinant is a candidate key .The given tables are in BCNF.

INFANT HEALTH TABLE :

INFANT ID	AADHAR NO OF MOTHER(FK)	DOB	TO B	BIRTH WEIGH T	LENGT H	APGAR SCORE	HEAD CIRCUMFEREN CE	GENDER
-----------	-------------------------	-----	------	---------------	---------	-------------	---------------------	--------

1NF: A relation R is said to be in first normal form (1NF) if and only if all the underlying domains contain atomic values only .Since the table contains atomic attributes it is in 1NF .

2NF: A relation R is said to be in second normal form (2 NF) if and only if it is in 1NF and every non prime attribute is fully dependent on the primary key . Since the above table is now in 1NF and contains only a single primary key ,therefore it is in 2NF .

3NF :A relation R is said to be in third normal form (3 NF) if and only if it is in 2NF and every non key attribute is non-transitively dependent on the primary key . Since the above table is in 2NF and there exists no transitive dependency .Therefore, tables are in 3 NF.

BCNF :A relation R is said to be in Boyce-Codd normal form (BCNF) if and only if it is in 3NF and every determinant is a candidate key .The given tables are in BCNF.

DISEASE TABLE:

DISEASE ID	DISEASE NAME	MORTALITY RATE	MEDICATION ID(FK)
------------	--------------	----------------	-------------------

1NF: A relation R is said to be in first normal form (1NF) if and only if all the underlying domains contain atomic values only .Since the table contains atomic attributes it is in 1NF .

2NF: A relation R is said to be in second normal form (2 NF) if and only if it is in 1NF and every non prime attribute is fully dependent on the primary key . Since the above table is now in 1NF and contains only a single primary key ,therefore it is in 2NF .

3NF :A relation R is said to be in third normal form (3 NF) if and only if it is in 2NF and every non key attribute is non-transitively dependent on the primary key . Since the above table is in 2NF and there exists no transitive dependency .Therefore, tables are in 3 NF.

BCNF :A relation R is said to be in Boyce-Codd normal form (BCNF) if and only if it is in 3NF and every determinant is a candidate key .The given tables are in BCNF.

DISEASE STATISTIC TABLE:

DISEASE ID	PINCODE(FK)	TOTAL CASES	TOTAL DEATHS	DATE OF RECORDING
------------	-------------	-------------	--------------	-------------------

1NF: A relation R is said to be in first normal form (1NF) if and only if all the underlying domains contain atomic values only .Since the table contains atomic attributes it is in 1NF .

2NF: A relation R is said to be in second normal form (2 NF) if and only if it is in 1NF and every non prime attribute is fully dependent on the primary key . Since the above table is now in 1NF and contains only a single primary key ,therefore it is in 2NF .

3NF :A relation R is said to be in third normal form (3 NF) if and only if it is in 2NF and every non key attribute is non-transitively dependent on the primary key . Since the above table is in 2NF and there exists no transitive dependency .Therefore, tables are in 3 NF.

BCNF :A relation R is said to be in Boyce-Codd normal form (BCNF) if and only if it is in 3NF and every determinant is a candidate key .The given tables are in BCNF.

ENVIRONMENTAL DATA TABLE

DATA ID	WATER QUALITY RECORD ID (FK)	AIR POLLUTION RECORD ID (FK)	FOOD SAFETY RECORD ID (FK)	SANITATION STATUS RECORD ID(FK)	LOCATION PINCODE(FK)
---------	------------------------------	------------------------------	----------------------------	---------------------------------	----------------------

1NF: A relation R is said to be in first normal form (1NF) if and only if all the underlying domains contain atomic values only .Since the table contains atomic attributes it is in 1NF .

2NF: A relation R is said to be in second normal form (2 NF) if and only if it is in 1NF and every non prime attribute is fully dependent on the primary key . Since the above table is now in 1NF and contains only a single primary key ,therefore it is in 2NF .

3NF :A relation R is said to be in third normal form (3 NF) if and only if it is in 2NF and every non key attribute is non-transitively dependent on the primary key . Since the above table is in 2NF and there exists no transitive dependency .Therefore, tables are in 3 NF.

BCNF :A relation R is said to be in Boyce-Codd normal form (BCNF) if and only if it is in 3NF and every determinant is a candidate key .The given tables are in BCNF.

WATERQUALITY TABLE

RECORD ID	RECORD DATE	pH	DISSOLVED OXYGEN	CHLORINE	CONTAMINATE D
-----------	-------------	----	------------------	----------	---------------

1NF: A relation R is said to be in first normal form (1NF) if and only if all the underlying domains contain atomic values only .Since the table contains atomic attributes it is in 1NF .

2NF: A relation R is said to be in second normal form (2 NF) if and only if it is in 1NF and every non prime attribute is fully dependent on the primary key . Since the above table is now in 1NF and contains only a single primary key ,therefore it is in 2NF .

3NF :A relation R is said to be in third normal form (3 NF) if and only if it is in 2NF and every non key attribute is non-transitively dependent on the primary key . Since the above table is in 2NF and there exists no transitive dependency .Therefore, tables are in 3 NF.

BCNF :A relation R is said to be in Boyce-Codd normal form (BCNF) if and only if it is in 3NF and every determinant is a candidate key .The given tables are in BCNF.

AIR-QUALITY TABLE

RECORD ID	RECORD DATE	AQI	CO	PPM
-----------	-------------	-----	----	-----

1NF: A relation R is said to be in first normal form (1NF) if and only if all the underlying domains contain atomic values only .Since the table contains atomic attributes it is in 1NF .

2NF: A relation R is said to be in second normal form (2 NF) if and only if it is in 1NF and every non prime attribute is fully dependent on the primary key . Since the above table is now in 1NF and contains only a single primary key ,therefore it is in 2NF .

3NF :A relation R is said to be in third normal form (3 NF) if and only if it is in 2NF and every non key attribute is non-transitively dependent on the primary key . Since the above table is in 2NF and there exists no transitive dependency .Therefore, tables are in 3 NF.

BCNF :A relation R is said to be in Boyce-Codd normal form (BCNF) if and only if it is in 3NF and every determinant is a candidate key .The given tables are in BCNF.

FOOD-SAFETY TABLE

RECORD ID	RECORD DATE	CHEMICAL CONTAMINANTS
-----------	-------------	-----------------------

1NF: A relation R is said to be in first normal form (1NF) if and only if all the underlying domains contain atomic values only .Since the table contains atomic attributes it is in 1NF .

2NF: A relation R is said to be in second normal form (2 NF) if and only if it is in 1NF and every non prime attribute is fully dependent on the primary key . Since the above table is now in 1NF and contains only a single primary key ,therefore it is in 2NF .

3NF :A relation R is said to be in third normal form (3 NF) if and only if it is in 2NF and every non key attribute is non-transitively dependent on the primary key . Since the above table is in 2NF and there exists no transitive dependency .Therefore, tables are in 3 NF.

BCNF :A relation R is said to be in Boyce-Codd normal form (BCNF) if and only if it is in 3NF and every determinant is a candidate key .The given tables are in BCNF.

SANITATION STATUS

SANITATION STATUS ID	WASTE MANAGEMENT STATUS	WASTE TREATMENT STATUS	SANITATION FACILITY STATUS	HYGIENE PRACTICE STATUS	RECORD DATE
----------------------	-------------------------	------------------------	----------------------------	-------------------------	-------------

1NF: A relation R is said to be in first normal form (1NF) if and only if all the underlying domains contain atomic values only .Since the table contains atomic attributes it is in 1NF .

2NF: A relation R is said to be in second normal form (2 NF) if and only if it is in 1NF and every non prime attribute is fully dependent on the primary key . Since the above table is now in 1NF and contains only a single primary key ,therefore it is in 2NF .

3NF :A relation R is said to be in third normal form (3 NF) if and only if it is in 2NF and every non key attribute is non-transitively dependent on the primary key . Since the above table is in 2NF and there exists no transitive dependency .Therefore, tables are in 3 NF.

BCNF :A relation R is said to be in Boyce-Codd normal form (BCNF) if and only if it is in 3NF and every determinant is a candidate key .The given tables are in BCNF.

SQL QUERIES

1) CREATING THE TABLES:

SQL Worksheet

```

18 v CREATE TABLE Doctor (
19   Doc_ID INT PRIMARY KEY,
20   First_name VARCHAR(45) NOT NULL,
21   Last_name VARCHAR(45) NOT NULL,
22   Specialization VARCHAR(50) NOT NULL,
23   Hospital_ID INT NOT NULL,
24   FOREIGN KEY (Hospital_ID) REFERENCES Hospitals(HospitalID)
25 );
26 v CREATE TABLE Patient (
27   AadharNO VARCHAR(12) PRIMARY KEY,
28   First_name VARCHAR(45) NOT NULL,
29   Last_name VARCHAR(45) NOT NULL,
30   Email_id VARCHAR(100),
31   Date_of_Birth DATE,
32   Gender VARCHAR(10) CHECK (Gender IN ('Male', 'Female', 'Other')),
33   EmergencyNo VARCHAR(15),
34   DoctorID INT,
35   FOREIGN KEY (DoctorID) REFERENCES Doctor(Doc_ID),
36   Hospital_ID INT,
37   FOREIGN KEY (Hospital_ID) REFERENCES Hospitals(HospitalID)

```

Table created.

Table created.

SQL Worksheet

```

77 v CREATE TABLE Prescription (
78   Prescription_ID INT PRIMARY KEY,
79   Patient_ID VARCHAR(12) NOT NULL,
80   DoctorID INT NOT NULL,
81   Medication_ID INT NOT NULL,
82   Prescription_Date DATE NOT NULL,
83   Quantity INT,
84   FOREIGN KEY (Patient_ID) REFERENCES Patient(AadharNO),
85   FOREIGN KEY (DoctorID) REFERENCES Doctor(Doc_ID),
86   FOREIGN KEY (Medication_ID) REFERENCES Medication(Medication_NO)
87 );
88 v CREATE TABLE Vaccination (
89   VaccinationID INT PRIMARY KEY,
90   Vaccination_name VARCHAR(50) NOT NULL,
91   Min_Required_Age INT,
92   Max_Required_Age INT,
93   Booster_Required VARCHAR(5)
94 );
95

```

Table created.

Table created.

SQL Worksheet

```

39 v CREATE TABLE PatientPhone (
40   AadharNO VARCHAR(12),
41   Phone_No VARCHAR(15),
42   PRIMARY KEY (AadharNO, Phone_No),
43   FOREIGN KEY (AadharNO) REFERENCES Patient(AadharNO),
44   CHECK (LENGTH(Phone_No) = 10 )
45 );
46 v CREATE TABLE Appointments (
47   Appointment_ID INT PRIMARY KEY,
48   Appointment_Date DATE NOT NULL,
49   Appointment_Time VARCHAR(5) NOT NULL,
50   Patient_ID VARCHAR(12) NOT NULL,
51   Doc_ID INT NOT NULL,
52   Appointment_Status VARCHAR(20) NOT NULL CHECK (Appointment_Status IN ('Booked', 'Not Booked')),
53   FOREIGN KEY (Patient_ID) REFERENCES Patient(AadharNO),
54   FOREIGN KEY (Doc_ID) REFERENCES Doctor(Doc_ID)
55 );
56
57 v CREATE TABLE Medication (

```

Table created.

Table created.

SQL Worksheet
Clear Find Actions Save Run

```

57 v CREATE TABLE Medication (
58   Medication_NO INT PRIMARY KEY,
59   Medication_Name VARCHAR(45) NOT NULL,
60   Cost DECIMAL(10,2),
61   Dosage VARCHAR(10)
62 );
63
64 v CREATE TABLE Manufacturer(
65   Manufacturer_NO INT PRIMARY KEY,
66   Medication_ID INT,
67   FOREIGN KEY (Medication_ID) REFERENCES Medication(Medication_NO)
68 );
69
70 v CREATE TABLE BloodType (
71   Aadhar_NO VARCHAR(12) PRIMARY KEY,
72   Blood_Type VARCHAR(5) NOT NULL,
73   FOREIGN KEY (Aadhar_NO) REFERENCES Patient(AadharNO)
74 );
75
76

```

Table created.

Table created.

Table created.

SQL Worksheet
Clear Find Actions Save Run

```

97 v CREATE TABLE VaccinationRecords (
98   Record_ID INT PRIMARY KEY,
99   AadharNo VARCHAR(12) NOT NULL,
100  VaccinationID INT NOT NULL,
101  DateOfAdministrationOfDose DATE,
102  Location VARCHAR(255),
103  FOREIGN KEY (AadharNo) REFERENCES Patient(AadharNO),
104  FOREIGN KEY (VaccinationID) REFERENCES Vaccination(VaccinationID)
105 );
106 v CREATE TABLE InfantRecord (
107   InfantID INT PRIMARY KEY,
108   AadharOfMother VARCHAR(12) NOT NULL,
109   DateOfBirth DATE NOT NULL,
110   TimeOfBirth VARCHAR(5) NOT NULL,
111   BirthWeight DECIMAL(5,2),
112   Length DECIMAL(5,2),
113   ApgarsScore INT,
114   HeadCircumference DECIMAL(5,2),
115   Gender VARCHAR(10) CHECK (Gender IN ('Male', 'Female')),
116   FOREIGN KEY (AadharOfMother) REFERENCES Patient(AadharNO)

```

Table created.

Table created.

SQL Worksheet
Clear Find Actions Save Run

```

120 v CREATE TABLE Disease (
121   DiseaseID INT PRIMARY KEY,
122   Disease_Name VARCHAR(50) NOT NULL,
123   MortalityRate DECIMAL(5,2),
124   MedicationID INT,
125   FOREIGN KEY (MedicationID) REFERENCES Medication(Medication_NO)
126 );
127
128 v CREATE TABLE DiseaseStatistics (
129   DiseaseID INT NOT NULL,
130   Pincode INT NOT NULL,
131   TotalCases INT,
132   TotalDeaths INT,
133   DateOfRecording DATE NOT NULL,
134   Contaminated VARCHAR(3) CHECK (Contaminated IN ('Yes', 'No')),
135   FOREIGN KEY (DiseaseID) REFERENCES Disease(DiseaseID),
136   FOREIGN KEY (Pincode) REFERENCES Location(PINCODE)
137 );
138

```

Table created.

Table created.

SQL Worksheet

```

139 v CREATE TABLE WaterQuality (
140   RecordID INT PRIMARY KEY,
141   Recorddate DATE NOT NULL,
142   PH DECIMAL(5,2),
143   Dissolvedoxygen DECIMAL(5,2),
144   Chlorine DECIMAL(5,2),
145   Contaminated VARCHAR(3) CHECK (Contaminated IN ('Yes', 'No'))
146 );
147 v CREATE TABLE AirQuality (
148   RecordID INT PRIMARY KEY,
149   Recorddate DATE NOT NULL,
150   AQI INT,
151   CO DECIMAL(5,2),
152   PPM VARCHAR(10));
153 v CREATE TABLE Foodsafety (
154   RecordID INT PRIMARY KEY,
155   Recorddate DATE NOT NULL,
156   ChemicalContaminants VARCHAR(255),
157   Contaminated VARCHAR(3) CHECK (Contaminated IN ('Yes', 'No'))
158 );
159 v
Table created.

Table created.

Table created.

```

SQL Worksheet

```

161 v CREATE TABLE SanitationStatus (
162   SanitationStatusID INT PRIMARY KEY,
163   WasteManagementStatus VARCHAR(50) NOT NULL CHECK (WasteManagementStatus IN ('Good', 'OK', 'Not OK')),
164   WasteManagementTreatment VARCHAR(3) NOT NULL CHECK (WasteManagementTreatment IN ('Yes', 'No')),
165   SanitationFacilityStatus VARCHAR(50) NOT NULL CHECK (SanitationFacilityStatus IN ('Good', 'OK', 'Not OK')),
166   Contaminated VARCHAR(3) CHECK (Contaminated IN ('Yes', 'No')),
167   RecordDate DATE NOT NULL;
168 v CREATE TABLE EnvironmentalData (
169   DataID INT PRIMARY KEY,
170   WaterQualityRecordID INT,
171   AirPollutionRecordID INT,
172   FoodSafetyRecordID INT,
173   SanitationStatusRecordID INT,
174   LocationPincode INT,
175   FOREIGN KEY (WaterQualityRecordID) REFERENCES WaterQuality(RecordID),
176   FOREIGN KEY (AirPollutionRecordID) REFERENCES AirQuality(RecordID),
177   FOREIGN KEY (FoodSafetyRecordID) REFERENCES Foodsafety(RecordID),
178   FOREIGN KEY (SanitationStatusRecordID) REFERENCES SanitationStatus(SanitationStatusID),
179   FOREIGN KEY (LocationPincode) REFERENCES Location(PINCODE)
180 );
181 v
Table created.

Table created.

```

2)INSERTING THE VALUES

```

109 v
190 -- Inserting data into Location
191 INSERT INTO Location VALUES (110001, 'Connaught Place', 'Delhi', 'Delhi');
192 INSERT INTO Location VALUES (400001, 'Colaba', 'Mumbai', 'Maharashtra');
193 INSERT INTO Location VALUES (700001, 'BBB Bagh', 'Kolkata', 'West Bengal');
194 INSERT INTO Location VALUES (600001, 'George Town', 'Chennai', 'Tamil Nadu');
195 INSERT INTO Location VALUES (560001, 'MG Road', 'Bangalore', 'Karnataka');
196 INSERT INTO Location VALUES (500001, 'Abids', 'Hyderabad', 'Telangana');
197 INSERT INTO Location VALUES (380001, 'Lal Darwaja', 'Ahmedabad', 'Gujarat');
198 INSERT INTO Location VALUES (411001, 'Camp', 'Pune', 'Maharashtra');
199 INSERT INTO Location VALUES (302001, 'Bapu Nagar', 'Jaipur', 'Rajasthan');
200 INSERT INTO Location VALUES (751001, 'Ashok Nagar', 'Bhubaneswar', 'Odisha');
201 -- Inserting data into Hospitals
202 INSERT INTO Hospitals VALUES (101, 'Apollo Hospital', '10', 110001, 1122334455, 'apollo@hospital.com');
203 INSERT INTO Hospitals VALUES (102, 'Fortis Hospital', '20', 400001, 2233445566, 'fortis@hospital.com');
204 INSERT INTO Hospitals VALUES (103, 'Medanta Medicity', '30', 700001, 3344556677, 'medanta@medicity.com');
205 INSERT INTO Hospitals VALUES (104, 'Max Healthcare', '40', 600001, 4455667788, 'max@healthcare.com');
206 INSERT INTO Hospitals VALUES (105, 'Manipal Hospital', '50', 560001, 5566778899, 'manipal@hospital.com');
207 INSERT INTO Hospitals VALUES (106, 'KIMS', '60', 500001, 6677889900, 'kims@hospital.com');
208 INSERT INTO Hospitals VALUES (107, 'Narayana Health', '70', 380001, 7788990011, 'narayana@health.com');
209 INSERT INTO Hospitals VALUES (108, 'Ruby Hall Clinic', '80', 411001, 8899001122, 'rubyhall@clinic.com');
210 INSERT INTO Hospitals VALUES (109, 'Sawai Mansingh Hospital', '90', 302001, 9900112233, 'smh@hospital.com');
211 INSERT INTO Hospitals VALUES (110, 'Kalinga Hospital', '100', 751001, 1011122334, 'kalinga@hospital.com');
212

```

```

212 -- Inserting data into Doctor
213 INSERT INTO Doctor VALUES (101, 'Amit', 'Sharma', 'Cardiology', 101);
214 INSERT INTO Doctor VALUES (102, 'Priya', 'Malik', 'Dermatology', 102);
215 INSERT INTO Doctor VALUES (103, 'Rajesh', 'Kumar', 'Neurology', 103);
216 INSERT INTO Doctor VALUES (104, 'Sunita', 'Gupta', 'Pediatrics', 104);
217 INSERT INTO Doctor VALUES (105, 'Anil', 'Patel', 'Orthopedics', 105);
218 INSERT INTO Doctor VALUES (106, 'Geeta', 'Roy', 'Oncology', 106);
219 INSERT INTO Doctor VALUES (107, 'Manish', 'Singh', 'Gynecology', 107);
220 INSERT INTO Doctor VALUES (108, 'Rani', 'Das', 'Psychiatry', 108);
221 INSERT INTO Doctor VALUES (109, 'Kunal', 'Joshi', 'Gastroenterology', 109);
222 INSERT INTO Doctor VALUES (110, 'Neha', 'Agarwal', 'Ophthalmology', 110);
223 -- Inserting data into Patient
224 INSERT INTO Patient VALUES ('123456789012', 'Vijay', 'Kumar', 'vijay.kumar@email.com', DATE '1990-08-15', 'Male', '9999888800', 101, 101);
225 INSERT INTO Patient VALUES ('234567890123', 'Deepa', 'Nair', 'deepa.nair@email.com', DATE '1982-12-22', 'Female', '9999888801', 102, 102);
226 INSERT INTO Patient VALUES ('345678901234', 'Sohail', 'Khan', 'sohail.khan@email.com', DATE '1983-03-30', 'Male', '9999888802', 103, 103);
227 INSERT INTO Patient VALUES ('456789012345', 'Anjali', 'Mehta', 'anjali.mehta@email.com', DATE '1975-05-25', 'Female', '9999888803', 104, 104);
228 INSERT INTO Patient VALUES ('567890123456', 'Rahul', 'Reddy', 'rahul.reddy@email.com', DATE '1987-07-17', 'Male', '9999888804', 105, 105);
229 INSERT INTO Patient VALUES ('678901234567', 'Lata', 'Mishra', 'lata.mishra@email.com', DATE '1992-09-10', 'Female', '9999888805', 106, 106);
230 INSERT INTO Patient VALUES ('789012345678', 'Karan', 'Shah', 'karan.shah@email.com', DATE '1980-01-14', 'Male', '9999888806', 107, 107);
231 INSERT INTO Patient VALUES ('890123456789', 'Suman', 'Singh', 'suman.singh@email.com', DATE '1985-11-05', 'Female', '9999888807', 108, 108);
232 INSERT INTO Patient VALUES ('901234567890', 'Raj', 'Patel', 'raj.patel@email.com', DATE '1993-04-20', 'Male', '9999888808', 109, 109);
233 INSERT INTO Patient VALUES ('012345678901', 'Nisha', 'Goyal', 'nisha.goyal@email.com', DATE '1989-02-28', 'Female', '9999888809', 110, 110);
234 . . .
235 -- Inserting data into PatientPhone
236 INSERT INTO PatientPhone VALUES ('123456789012', '9999888800');
237 INSERT INTO PatientPhone VALUES ('234567890123', '9999888801');
238 INSERT INTO PatientPhone VALUES ('345678901234', '9999888802');
239 INSERT INTO PatientPhone VALUES ('456789012345', '9999888803');
240 INSERT INTO PatientPhone VALUES ('567890123456', '9999888804');
241 INSERT INTO PatientPhone VALUES ('678901234567', '9999888805');
242 INSERT INTO PatientPhone VALUES ('789012345678', '9999888806');
243 INSERT INTO PatientPhone VALUES ('890123456789', '9999888807');
244 INSERT INTO PatientPhone VALUES ('901234567890', '9999888808');
245 INSERT INTO PatientPhone VALUES ('012345678901', '9999888809');
246 -- Inserting data into Appointments
247 INSERT INTO Appointments VALUES (1, DATE '2024-04-28', '10:00', '123456789012', 101, 'Booked');
248 INSERT INTO Appointments VALUES (2, DATE '2024-04-29', '10:30', '234567890123', 102, 'Booked');
249 INSERT INTO Appointments VALUES (3, DATE '2024-04-30', '11:00', '345678901234', 103, 'Booked');
250 INSERT INTO Appointments VALUES (4, DATE '2024-05-01', '11:30', '456789012345', 104, 'Booked');
251 INSERT INTO Appointments VALUES (5, DATE '2024-05-02', '12:00', '567890123456', 105, 'Booked');
252 INSERT INTO Appointments VALUES (6, DATE '2024-05-03', '12:30', '678901234567', 106, 'Booked');
253 INSERT INTO Appointments VALUES (7, DATE '2024-05-04', '13:00', '789012345678', 107, 'Booked');
254 INSERT INTO Appointments VALUES (8, DATE '2024-05-05', '13:30', '890123456789', 108, 'Booked');
255 INSERT INTO Appointments VALUES (9, DATE '2024-05-06', '14:00', '901234567890', 109, 'Booked');
256 INSERT INTO Appointments VALUES (10, DATE '2024-05-07', '14:30', '012345678901', 110, 'Booked');
257 -- Inserting data into Medication
258 INSERT INTO Medication VALUES (101, 'Paracetamol', 50.00, '500mg');
259 INSERT INTO Medication VALUES (102, 'Amoxicillin', 75.00, '250mg');
260 INSERT INTO Medication VALUES (103, 'Ciprofloxacin', 100.00, '500mg');
261 INSERT INTO Medication VALUES (104, 'Metformin', 85.00, '1000mg');
262 INSERT INTO Medication VALUES (105, 'Atorvastatin', 90.00, '40mg');
263 INSERT INTO Medication VALUES (106, 'Sertraline', 110.00, '100mg');
264 INSERT INTO Medication VALUES (107, 'Cetirizine', 30.00, '10mg');
265 INSERT INTO Medication VALUES (108, 'Ibuprofen', 45.00, '400mg');
266 INSERT INTO Medication VALUES (109, 'Lisinopril', 120.00, '20mg');
267 INSERT INTO Medication VALUES (110, 'Amlodipine', 135.00, '5mg');
268 -- Inserting data into Manufacturer
269 INSERT INTO Manufacturer VALUES (201, 101);
270 INSERT INTO Manufacturer VALUES (202, 102);
271 INSERT INTO Manufacturer VALUES (203, 103);
272 INSERT INTO Manufacturer VALUES (204, 104);
273 INSERT INTO Manufacturer VALUES (205, 105);
274 INSERT INTO Manufacturer VALUES (206, 106);
275 INSERT INTO Manufacturer VALUES (207, 107);
276 INSERT INTO Manufacturer VALUES (208, 108);
277 INSERT INTO Manufacturer VALUES (209, 109);
278 INSERT INTO Manufacturer VALUES (210, 110);
279 -- Inserting data into BloodType

```

QL Worksheet

Clear Find Actions Save Run

```

3 -- Inserting data into BloodType
4 INSERT INTO BloodType VALUES ('123456789012', 'A+');
5 INSERT INTO BloodType VALUES ('234567890123', 'O+');
1 INSERT INTO BloodType VALUES ('345678901234', 'B+');
2 INSERT INTO BloodType VALUES ('456789012345', 'AB+');
3 INSERT INTO BloodType VALUES ('567890123456', 'A-');
4 INSERT INTO BloodType VALUES ('678901234567', 'O-');
5 INSERT INTO BloodType VALUES ('789012345678', 'B-');
6 INSERT INTO BloodType VALUES ('890123456789', 'AB-');
7 INSERT INTO BloodType VALUES ('901234567890', 'A+');
8 INSERT INTO BloodType VALUES ('012345678901', 'O+');
9 -- Inserting data into Prescription
10 INSERT INTO Prescription VALUES (301, '123456789012', 101, 101, DATE '2024-04-28', 30);
11 INSERT INTO Prescription VALUES (302, '234567890123', 102, 102, DATE '2024-04-29', 20);
12 INSERT INTO Prescription VALUES (303, '345678901234', 103, 103, DATE '2024-04-30', 10);
13 INSERT INTO Prescription VALUES (304, '456789012345', 104, 104, DATE '2024-05-01', 25);
14 INSERT INTO Prescription VALUES (305, '567890123456', 105, 105, DATE '2024-05-02', 15);
15 INSERT INTO Prescription VALUES (306, '678901234567', 106, 106, DATE '2024-05-03', 50);
16 INSERT INTO Prescription VALUES (307, '789012345678', 107, 107, DATE '2024-05-04', 30);
17 INSERT INTO Prescription VALUES (308, '890123456789', 108, 108, DATE '2024-05-05', 40);
18 INSERT INTO Prescription VALUES (309, '901234567890', 109, 109, DATE '2024-05-06', 10);
19 INSERT INTO Prescription VALUES (310, '012345678901', 110, 110, DATE '2024-05-07', 20);
20 -- Inserting data into Vaccination
300 -- Inserting data into Vaccination
301 INSERT INTO Vaccination VALUES (401, 'Covaxin', 18, 60, 'Yes');
302 INSERT INTO Vaccination VALUES (402, 'Covishield', 18, 60, 'Yes');
303 INSERT INTO Vaccination VALUES (403, 'Sputnik V', 18, 60, 'Yes');
304 INSERT INTO Vaccination VALUES (404, 'Moderna', 12, 60, 'Yes');
305 INSERT INTO Vaccination VALUES (405, 'Pfizer', 12, 60, 'Yes');
306 INSERT INTO Vaccination VALUES (406, 'Johnson & Johnson', 18, 60, 'No');
307 INSERT INTO Vaccination VALUES (407, 'BBIBP-CorV', 18, 60, 'No');
308 INSERT INTO Vaccination VALUES (408, 'CoronaVac', 18, 60, 'No');
309 INSERT INTO Vaccination VALUES (409, 'EpivacCorona', 18, 60, 'No');
310 INSERT INTO Vaccination VALUES (410, 'Convidincea', 18, 60, 'No');
311 -- Inserting data into VaccinationRecords
312 INSERT INTO VaccinationRecords VALUES (501, '123456789012', 401, DATE '2021-05-15', 'Apollo Hospital, Delhi');
313 INSERT INTO VaccinationRecords VALUES (502, '234567890123', 402, DATE '2021-05-16', 'Fortis Hospital, Mumbai');
314 INSERT INTO VaccinationRecords VALUES (503, '345678901234', 403, DATE '2021-05-17', 'Medanta Medicity, Kolkata');
315 INSERT INTO VaccinationRecords VALUES (504, '456789012345', 404, DATE '2021-05-18', 'Max Healthcare, Chennai');
316 INSERT INTO VaccinationRecords VALUES (505, '567890123456', 405, DATE '2021-05-19', 'Manipal Hospital, Bangalore');
317 INSERT INTO VaccinationRecords VALUES (506, '678901234567', 406, DATE '2021-05-20', 'KIMS, Hyderabad');
318 INSERT INTO VaccinationRecords VALUES (507, '789012345678', 407, DATE '2021-05-21', 'Narayana Health, Ahmedabad');
319 INSERT INTO VaccinationRecords VALUES (508, '890123456789', 408, DATE '2021-05-22', 'Ruby Hall Clinic, Pune');
320 INSERT INTO VaccinationRecords VALUES (509, '901234567890', 409, DATE '2021-05-23', 'Sawai Mansingh Hospital, Jaipur');
321 INSERT INTO VaccinationRecords VALUES (510, '012345678901', 410, DATE '2021-05-24', 'Kalinga Hospital, Bhubaneswar');
322 -- Inserting data into InfantRecord

```

SQL Worksheet

Clear Find Actions Save Run

```

322 -- Inserting data into InfantRecord
323 INSERT INTO InfantRecord VALUES (601, '234567890123', DATE '2023-04-21', '05:20', 2.9, 48.0, 8, 33.5, 'Female');
324 INSERT INTO InfantRecord VALUES (602, '456789012345', DATE '2023-04-22', '06:25', 3.1, 49.0, 9, 34.0, 'Male');
325 INSERT INTO InfantRecord VALUES (603, '678901234567', DATE '2023-04-23', '07:30', 3.0, 50.5, 7, 34.5, 'Female');
326 INSERT INTO InfantRecord VALUES (604, '890123456789', DATE '2023-04-24', '08:35', 3.3, 51.0, 8, 36.0, 'Male');
327 INSERT INTO InfantRecord VALUES (605, '012345678901', DATE '2023-04-25', '09:40', 3.1, 49.5, 9, 35.0, 'Female');
328 INSERT INTO InfantRecord VALUES (606, '234567890123', DATE '2023-04-26', '10:45', 3.2, 50.0, 7, 35.5, 'Male');
329 INSERT INTO InfantRecord VALUES (607, '456789012345', DATE '2023-04-27', '11:50', 3.4, 51.5, 8, 36.5, 'Female');
330 INSERT INTO InfantRecord VALUES (608, '678901234567', DATE '2023-04-28', '12:55', 3.5, 52.0, 7, 34.0, 'Male');
331 INSERT INTO InfantRecord VALUES (609, '890123456789', DATE '2023-04-29', '13:00', 3.0, 49.0, 9, 35.5, 'Female');
332 INSERT INTO InfantRecord VALUES (610, '012345678901', DATE '2023-04-30', '14:05', 3.2, 50.0, 8, 33.5, 'Male');
333 -- Inserting data into Disease
334 INSERT INTO Disease VALUES (701, 'Dengue', 1.2, NULL);
335 INSERT INTO Disease VALUES (702, 'Malaria', 0.9, NULL);
336 INSERT INTO Disease VALUES (703, 'Tuberculosis', 2.3, NULL);
337 INSERT INTO Disease VALUES (704, 'Diabetes', 1.5, NULL);
338 INSERT INTO Disease VALUES (705, 'Hypertension', 0.8, NULL);
339 INSERT INTO Disease VALUES (706, 'COVID-19', 2.0, NULL);
340 INSERT INTO Disease VALUES (707, 'Chikungunya', 0.5, NULL);
341 INSERT INTO Disease VALUES (708, 'Typhoid', 0.7, NULL);
342 INSERT INTO Disease VALUES (709, 'Hepatitis B', 1.1, NULL);
343 INSERT INTO Disease VALUES (710, 'Asthma', 0.6, NULL);
344 -- Inserting data into DiseaseStatistics

```

SQL Worksheet

```

344 -- Inserting data into DiseaseStatistics
345 INSERT INTO DiseaseStatistics VALUES (701, 110001, 150, 2, DATE '2024-03-01', 'No');
346 INSERT INTO DiseaseStatistics VALUES (702, 400001, 300, 3, DATE '2024-03-02', 'No');
347 INSERT INTO DiseaseStatistics VALUES (703, 700001, 200, 5, DATE '2024-03-03', 'No');
348 INSERT INTO DiseaseStatistics VALUES (704, 600001, 250, 4, DATE '2024-03-04', 'No');
349 INSERT INTO DiseaseStatistics VALUES (705, 560001, 180, 2, DATE '2024-03-05', 'No');
350 INSERT INTO DiseaseStatistics VALUES (706, 500001, 1000, 20, DATE '2024-03-06', 'Yes');
351 INSERT INTO DiseaseStatistics VALUES (707, 380001, 120, 1, DATE '2024-03-07', 'No');
352 INSERT INTO DiseaseStatistics VALUES (708, 411001, 140, 2, DATE '2024-03-08', 'No');
353 INSERT INTO DiseaseStatistics VALUES (709, 302001, 160, 3, DATE '2024-03-09', 'No');
354 INSERT INTO DiseaseStatistics VALUES (710, 751001, 110, 1, DATE '2024-03-10', 'No');
355 -- Inserting data into WaterQuality
356 INSERT INTO WaterQuality VALUES (801, DATE '2024-04-20', 7.6, 6.0, 0.3, 'No');
357 INSERT INTO WaterQuality VALUES (802, DATE '2024-04-21', 8.0, 5.5, 0.2, 'No');
358 INSERT INTO WaterQuality VALUES (803, DATE '2024-04-22', 7.8, 7.0, 0.4, 'No');
359 INSERT INTO WaterQuality VALUES (804, DATE '2024-04-23', 7.5, 6.5, 0.5, 'Yes');
360 INSERT INTO WaterQuality VALUES (805, DATE '2024-04-24', 7.9, 6.8, 0.1, 'No');
361 INSERT INTO WaterQuality VALUES (806, DATE '2024-04-25', 7.4, 5.8, 0.6, 'Yes');
362 INSERT INTO WaterQuality VALUES (807, DATE '2024-04-26', 8.1, 6.1, 0.3, 'No');
363 INSERT INTO WaterQuality VALUES (808, DATE '2024-04-27', 7.7, 6.2, 0.2, 'No');
364 INSERT INTO WaterQuality VALUES (809, DATE '2024-04-28', 7.8, 6.4, 0.4, 'No');
365 INSERT INTO WaterQuality VALUES (810, DATE '2024-04-29', 8.2, 6.3, 0.1, 'No');

QL Worksheet
```

```

5 -- Continuing insertion into AirQuality
6 INSERT INTO AirQuality VALUES (904, DATE '2024-04-23', 130, 0.04, 'Good');
7 INSERT INTO AirQuality VALUES (905, DATE '2024-04-24', 140, 0.06, 'Moderate');
8 INSERT INTO AirQuality VALUES (906, DATE '2024-04-25', 220, 0.10, 'Poor');
9 INSERT INTO AirQuality VALUES (907, DATE '2024-04-26', 260, 0.12, 'Unhealthy');
10 INSERT INTO AirQuality VALUES (908, DATE '2024-04-27', 280, 0.14, 'Very Unhealthy');
11 INSERT INTO AirQuality VALUES (909, DATE '2024-04-28', 300, 0.16, 'Hazardous');
12 INSERT INTO AirQuality VALUES (910, DATE '2024-04-29', 100, 0.03, 'Good');

1 -- Inserting data into FoodSafety
2 INSERT INTO FoodSafety VALUES (1001, DATE '2024-04-20', 'Pesticides trace found', 'No');
3 INSERT INTO FoodSafety VALUES (1002, DATE '2024-04-21', 'Heavy metals above safe levels', 'Yes');
4 INSERT INTO FoodSafety VALUES (1003, DATE '2024-04-22', 'Bacteria contamination', 'Yes');
5 INSERT INTO FoodSafety VALUES (1004, DATE '2024-04-23', 'No contaminants', 'No');
6 INSERT INTO FoodSafety VALUES (1005, DATE '2024-04-24', 'Mycotoxins found in grains', 'Yes');
7 INSERT INTO FoodSafety VALUES (1006, DATE '2024-04-25', 'Aflatoxins detected in nuts', 'Yes');
8 INSERT INTO FoodSafety VALUES (1007, DATE '2024-04-26', 'Synthetic additives found', 'No');
9 INSERT INTO FoodSafety VALUES (1008, DATE '2024-04-27', 'Undeclared allergens', 'Yes');
10 INSERT INTO FoodSafety VALUES (1009, DATE '2024-04-28', 'Pesticides below safe levels', 'No');
11 INSERT INTO FoodSafety VALUES (1010, DATE '2024-04-29', 'No chemical contaminants', 'No');

12 -- Inserting data into SanitationStatus
13 INSERT INTO SanitationStatus VALUES (1101, 'Good', 'Yes', 'Good', 'No', DATE '2024-04-20');
14 INSERT INTO SanitationStatus VALUES (1102, 'OK', 'No', 'Not OK', 'Yes', DATE '2024-04-21');
15 INSERT INTO SanitationStatus VALUES (1103, 'Not OK', 'Yes', 'OK', 'Yes', DATE '2024-04-22');

16 -- Inserting data into EnvironmentalData
17 INSERT INTO EnvironmentalData VALUES (1201, 801, 901, 1001, 1101, 110001);
18 INSERT INTO EnvironmentalData VALUES (1202, 802, 902, 1002, 1102, 400001);
19 INSERT INTO EnvironmentalData VALUES (1203, 803, 903, 1003, 1103, 700001);
20 INSERT INTO EnvironmentalData VALUES (1204, 804, 904, 1004, 1104, 600001);
21 INSERT INTO EnvironmentalData VALUES (1205, 805, 905, 1005, 1105, 560001);
22 INSERT INTO EnvironmentalData VALUES (1206, 806, 906, 1006, 1106, 500001);
23 INSERT INTO EnvironmentalData VALUES (1207, 807, 907, 1007, 1107, 380001);
24 INSERT INTO EnvironmentalData VALUES (1208, 808, 908, 1008, 1108, 411001);
25 INSERT INTO EnvironmentalData VALUES (1209, 809, 909, 1009, 1109, 302001);
26 INSERT INTO EnvironmentalData VALUES (1210, 810, 910, 1010, 1110, 751001);

```

3)FOR ADMIN:**SELECT * FROM TABLE NAME :**

183 | SELECT * FROM Location;

PINCODE	TOWN_OR_VILLAGE	CITY	STATE_NAME
110001	Connaught Place	Delhi	Delhi
400001	Colaba	Mumbai	Maharashtra
700001	BBD Bagh	Kolkata	West Bengal
600001	George Town	Chennai	Tamil Nadu
560001	MG Road	Bangalore	Karnataka
500001	Abids	Hyderabad	Telangana
380001	Lal Darwaja	Ahmedabad	Gujarat
411001	Camp	Pune	Maharashtra
302001	Bapu Nagar	Jaipur	Rajasthan
751001	Ashok Nagar	Bhubaneswar	Odisha

184 | SELECT * FROM Hospitals;

HOSPITALID	HOSPITAL_NAME	STREET_NO	PINCODE	PHONE_NO	EMAIL_ID
101	Apollo Hospital	10	110001	1122334455	apollo@hospital.com
102	Fortis Hospital	20	400001	2233445566	fortis@hospital.com
103	Medanta Medicity	30	700001	3344556677	medanta@medicity.com
104	Max Healthcare	40	600001	4455667788	max@healthcare.com
105	Manipal Hospital	50	560001	5566778899	manipal@hospital.com
106	KIMS	60	500001	6677889900	kims@hospital.com
107	Narayana Health	70	380001	7788990011	narayana@health.com
108	Ruby Hall Clinic	80	411001	8899001122	rubyhall@clinic.com
109	Sawai Mansingh Hospital	90	302001	9900112233	smh@hospital.com
110	Kalinga Hospital	100	751001	1011122334	kalinga@hospital.com

185 | SELECT * FROM Doctor;

101	Amit	Sharma	Cardiology	101
102	Priya	Malik	Dermatology	102
103	Rajesh	Kumar	Neurology	103
104	Sunita	Gupta	Pediatrics	104
105	Anil	Patel	Orthopedics	105
106	Geeta	Roy	Oncology	106
107	Manish	Singh	Gynecology	107
108	Rani	Das	Psychiatry	108
109	Kunal	Joshi	Gastroenterology	109
110	Neha	Agarwal	Ophthalmology	110

[Download CSV](#)

186 | SELECT * FROM Patient;

AADHARNO	FIRST_NAME	LAST_NAME	EMAIL_ID	DATE_OF_BIRTH	GENDER	EMERGENCYNO	DOCTORID	HOSPITAL_ID
123456789012	Vijay	Kumar	vijay.kumar@email.com	15-AUG-90	Male	9999888800	101	101
234567890123	Deepa	Nair	deepa.nair@email.com	22-DEC-82	Female	9999888801	102	102
345678901234	Sohail	Khan	sohail.khan@email.com	30-MAR-83	Male	9999888802	103	103
456789012345	Anjali	Mehta	anjali.mehta@email.com	25-MAY-75	Female	9999888803	104	104
567890123456	Rahul	Reddy	rahul.reddy@email.com	17-JUL-87	Male	9999888804	105	105
678901234567	Lata	Mishra	lata.mishra@email.com	10-SEP-92	Female	9999888805	106	106
789012345678	Karan	Shah	karan.shah@email.com	14-JAN-80	Male	9999888806	107	107
890123456789	Suman	Singh	suman.singh@email.com	05-NOV-85	Female	9999888807	108	108
901234567890	Raj	Patel	raj.patel@email.com	20-APR-93	Male	9999888808	109	109
012345678901	Nisha	Goyal	nisha.goyal@email.com	28-FEB-89	Female	9999888809	110	110

187 | SELECT * FROM PatientPhone;

AADHARNO	PHONE_NO
012345678901	9999888809
123456789012	9999888800
234567890123	9999888801
345678901234	9999888802
456789012345	9999888803
567890123456	9999888804
678901234567	9999888805
789012345678	9999888806
890123456789	9999888807
901234567890	9999888808

188 | SELECT * FROM Appointments;

APPOINTMENT_ID	APPOINTMENT_DATE	APPOINTMENT_TIME	PATIENT_ID	DOC_ID	APPOINTMENT_STATUS
1	28-APR-24	10:00	123456789012	101	Booked
2	29-APR-24	10:30	234567890123	102	Booked
3	30-APR-24	11:00	345678901234	103	Booked
4	01-MAY-24	11:30	456789012345	104	Booked
5	02-MAY-24	12:00	567890123456	105	Booked
6	03-MAY-24	12:30	678901234567	106	Booked
7	04-MAY-24	13:00	789012345678	107	Booked
8	05-MAY-24	13:30	890123456789	108	Booked
9	06-MAY-24	14:00	901234567890	109	Booked
10	07-MAY-24	14:30	012345678901	110	Booked

189 | SELECT * FROM Medication;

MEDICATION_NO	MEDICATION_NAME	COST	DOSAGE
101	Paracetamol	50	500mg
102	Amoxicillin	75	250mg
103	Ciprofloxacin	100	500mg
104	Metformin	85	1000mg
105	Atorvastatin	90	40mg
106	Sertraline	110	100mg
107	Cetirizine	30	10mg
108	Ibuprofen	45	400mg
109	Lisinopril	120	20mg
110	Amlodipine	135	5mg

190 | SELECT * FROM Manufacturer;

MANUFACTURER_NO	MEDICATION_ID
201	101
202	102
203	103
204	104
205	105
206	106
207	107
208	108
209	109
210	110

191 | SELECT * FROM BloodType;

AADHAR_NO	BLOOD_TYPE
123456789012	A+
234567890123	O+
345678901234	B+
456789012345	AB+
567890123456	A-
678901234567	O-
789012345678	B-
890123456789	AB-
901234567890	A+
012345678901	O+

192 | SELECT * FROM Prescription;

PRESCRIPTION_ID	PATIENT_ID	DOCTORID	MEDICATION_ID	PRESCRIPTION_DATE	QUANTITY
301	123456789012	101	101	28-APR-24	30
302	234567890123	102	102	29-APR-24	20
303	345678901234	103	103	30-APR-24	10
304	456789012345	104	104	01-MAY-24	25
305	567890123456	105	105	02-MAY-24	15
306	678901234567	106	106	03-MAY-24	50
307	789012345678	107	107	04-MAY-24	30
308	890123456789	108	108	05-MAY-24	40
309	901234567890	109	109	06-MAY-24	10
310	012345678901	110	110	07-MAY-24	20

193 | SELECT * FROM Vaccination;

VACCINATIONID	VACCINATION_NAME	MIN_REQUIRED AGE	MAX_REQUIRED AGE	BOOSTER_REQUIRED
401	Covaxin	18	60	Yes
402	Covishield	18	60	Yes
403	Sputnik V	18	60	Yes
404	Moderna	12	60	Yes
405	Pfizer	12	60	Yes
406	Johnson & Johnson	18	60	No
407	BBIBP-CorV	18	60	No
408	CoronaVac	18	60	No
409	EpiVacCorona	18	60	No
410	Convidicea	18	60	No

194 | SELECT * FROM VaccinationRecords;

RECORD_ID	AADHARNO	VACCINATIONID	DATEOFADMINISTRATIONOFTDOSE	LOCATION
501	123456789012	401	15-MAY-21	Apollo Hospital, Delhi
502	234567890123	402	16-MAY-21	Fortis Hospital, Mumbai
503	345678901234	403	17-MAY-21	Medanta Medicity, Kolkata
504	456789012345	404	18-MAY-21	Max Healthcare, Chennai
505	567890123456	405	19-MAY-21	Manipal Hospital, Bangalore
506	678901234567	406	20-MAY-21	KIMS, Hyderabad
507	789012345678	407	21-MAY-21	Narayana Health, Ahmedabad
508	890123456789	408	22-MAY-21	Ruby Hall Clinic, Pune
509	901234567890	409	23-MAY-21	Sawai Mansingh Hospital, Jaipur
510	012345678901	410	24-MAY-21	Kalinga Hospital, Bhubaneswar

195 | SELECT * FROM InfantRecord;

INFANTID	AADHAROFMOTHER	DATEOFBIRTH	TIMEOFBIRTH	BIRTHWEIGHT	LENGTH	APGARSCORE	HEADCIRCUMFERENCE	GENDER
601	234567890123	21-APR-23	05:20	2.9	48	8	33.5	Female
602	456789012345	22-APR-23	06:25	3.1	49	9	34	Male
603	678901234567	23-APR-23	07:30	3	50.5	7	34.5	Female
604	890123456789	24-APR-23	08:35	3.3	51	8	36	Male
605	012345678901	25-APR-23	09:40	3.1	49.5	9	35	Female
606	234567890123	26-APR-23	10:45	3.2	50	7	35.5	Male
607	456789012345	27-APR-23	11:50	3.4	51.5	8	36.5	Female
608	678901234567	28-APR-23	12:55	3.5	52	7	34	Male
609	890123456789	29-APR-23	13:00	3	49	9	35.5	Female
610	012345678901	30-APR-23	14:05	3.2	50	8	33.5	Male

196 | SELECT * FROM Disease;

DISEASEID	DISEASE_NAME	MORTALITYRATE	MEDICATIONID
701	Dengue	1.2	-
702	Malaria	.9	-
703	Tuberculosis	2.3	-
704	Diabetes	1.5	-
705	Hypertension	.8	-
706	COVID-19	2	-
707	Chikungunya	.5	-
708	Typhoid	.7	-
709	Hepatitis B	1.1	-
710	Asthma	.6	-

197 | SELECT * FROM DiseaseStatistics;

DISEASEID	PINCODE	TOTALCASES	TOTALDEATHS	DATEOFRCORDING	CONTAMINATED
701	110001	150	2	01-MAR-24	No
702	400001	300	3	02-MAR-24	No
703	700001	200	5	03-MAR-24	No
704	600001	250	4	04-MAR-24	No
705	560001	180	2	05-MAR-24	No
706	500001	1000	20	06-MAR-24	Yes
707	380001	120	1	07-MAR-24	No
708	411001	140	2	08-MAR-24	No
709	302001	160	3	09-MAR-24	No
710	751001	110	1	10-MAR-24	No

198 SELECT * FROM WaterQuality;

RECORDID	RECORDDATE	PH	DISSOLVEDOXYGEN	CHLORINE	CONTAMINATED
801	20-APR-24	7.6	6	.3	No
802	21-APR-24	8	5.5	.2	No
803	22-APR-24	7.8	7	.4	No
804	23-APR-24	7.5	6.5	.5	Yes
805	24-APR-24	7.9	6.8	.1	No
806	25-APR-24	7.4	5.8	.6	Yes
807	26-APR-24	8.1	6.1	.3	No
808	27-APR-24	7.7	6.2	.2	No
809	28-APR-24	7.8	6.4	.4	No
810	29-APR-24	8.2	6.3	.1	No

199 SELECT * FROM AirQuality;

RECORDID	RECORDDATE	AQI	CO	PPM
904	23-APR-24	130	.04	Good
905	24-APR-24	140	.06	Moderate
906	25-APR-24	220	.1	Poor
907	26-APR-24	260	.12	Unhealthy
909	28-APR-24	300	.16	Hazardous
910	29-APR-24	100	.03	Good

200 SELECT * FROM FoodSafety;

RECORDID	RECORDDATE	CHEMICALCONTAMINANTS	CONTAMINATED
1001	20-APR-24	Pesticides trace found	No
1002	21-APR-24	Heavy metals above safe levels	Yes
1003	22-APR-24	Bacteria contamination	Yes
1004	23-APR-24	No contaminants	No
1005	24-APR-24	Mycotoxins found in grains	Yes
1006	25-APR-24	Aflatoxins detected in nuts	Yes
1007	26-APR-24	Synthetic additives found	No
1008	27-APR-24	Undeclared allergens	Yes
1009	28-APR-24	Pesticides below safe levels	No
1010	29-APR-24	No chemical contaminants	No

202 SELECT * FROM EnvironmentalData;

[Download CSV](#)

10 rows selected.

DATAID	WATERQUALITYRECORDID	AIRPOLLUTIONRECORDID	FOODSAFETYRECORDID	SANITATIONSTATUSRECORDID	LOCATIONPINCODE
1204	804	904	1004	1104	600001
1205	805	905	1005	1105	560001
1206	806	906	1006	1106	500001
1207	807	907	1007	1107	380001
1209	809	909	1009	1109	302001
1210	810	910	1010	1110	751001

[Download CSV](#)

4) QUERY TO RETRIEVE FIRST AND LAST NAME OF PATIENTS GROUPED BY DOCID

```

614 --SQL QUERIES
615 v SELECT Patient.First_name, Patient.Last_name
616   FROM Patient
617 WHERE Patient.DoctorID IN (
618   SELECT Doc_ID
619     FROM Doctor
620   GROUP BY Doc_ID
621   HAVING COUNT(*) > 0
622 );

```

FIRST_NAME	LAST_NAME
Vijay	Kumar
Karan	Shah
Raj	Patel
Sohail	Khan
Anjali	Mehta
Lata	Mishra
Suman	Singh

5) CO-RELATED SUBQUERY TO RETRIEVE NAME OF DOC WHOSE SPECIALISATION IS CARDIOLOGY

```

652 v SELECT Doctor.First_name, Doctor.Last_name
653   FROM Doctor
654 WHERE Doctor.Specialization = 'Cardiology'
655 AND EXISTS (
656   SELECT 1
657     FROM Patient
658    WHERE Patient.DoctorID = Doctor.Doc_ID
659 );
660
661

```

FIRST_NAME	LAST_NAME
Amit	Sharma

[Download CSV](#)

6) DISPLAYING THE AVG PRESCRIPTION QUANTITY GROUPED BY SPECIALISATION

```

631 v SELECT Doctor.Specialization, AVG(Prescription.Quantity) AS Average_Prescription_Quantity
632 FROM Doctor
633 LEFT JOIN Prescription ON Doctor.Doc_ID = Prescription.DoctorID
634 GROUP BY Doctor.Specialization
635 HAVING AVG(Prescription.Quantity) > (
636     SELECT AVG(Prescription.Quantity)
637     FROM Prescription
638 );
639 SELECT Patient.First_name, Patient.Last_name

```

SPECIALIZATION	AVERAGE_PRESSCRIPTION_QUANTITY
Gynecology	30
Cardiology	30
Oncology	50
Psychiatry	40

[Download CSV](#)

4 rows selected.

7) RETRIEVING DATA OF PATIENTS WITH APPOINTMENTS IN CITIES WITH POOR AIR QUALITY

```

668 v ``SELECT DISTINCT Patient.First_name, Patient.Last_name
669 FROM Patient
670 INNER JOIN Appointments ON Patient.AadharNO = Appointments.Patient_ID
671 INNER JOIN Hospitals ON Patient.Hospital_ID = Hospitals.HospitalID
672 INNER JOIN Location ON Hospitals.PinCode = Location.PINCODE
673 INNER JOIN EnvironmentalData ON Location.PINCODE = EnvironmentalData.LocationPincode
674 INNER JOIN Airquality ON EnvironmentalData.AirPollutionRecordID = Airquality.RecordID
675 WHERE Airquality.AQI > 150 AND Appointments.Appointment_Status = 'Booked';

```

FIRST_NAME	LAST_NAME
Lata	Mishra
Raj	Patel
Karan	Shah

[Download CSV](#)

3 rows selected.

8) LOCATION -WISE AIR QUALITY

```

678 v SELECT Location.Town_or_Village, Location.City, Location.State_name, AirQuality.AQI
679 FROM Location
680 INNER JOIN EnvironmentalData ON Location.PINCODE = EnvironmentalData.LocationPincode
681 INNER JOIN AirQuality ON EnvironmentalData.AirPollutionRecordID = AirQuality.RecordID;
682

```

TOWN_OR_VILLAGE	CITY	STATE_NAME	AQI
George Town	Chennai	Tamil Nadu	130
MG Road	Bangalore	Karnataka	140
Abids	Hyderabad	Telangana	220
Lal Darwaja	Ahmedabad	Gujarat	260
Bapu Nagar	Jaipur	Rajasthan	300
Ashok Nagar	Bhubaneswar	Odisha	100

9)WATER QUALITY RECORDS OF CONTAMINATED REGIONS

```

685 v SELECT *
686 FROM WaterQuality
687 WHERE Contaminated = 'Yes';
688
689

```

RECORDID	RECORDDATE	PH	DISSOLVEDOXYGEN	CHLORINE	CONTAMINATED
804	23-APR-24	7.5	6.5	.5	Yes
806	25-APR-24	7.4	5.8	.6	Yes

10) AREAS WITH SUB STANDARDIZED SANITATION AND AIR QUALITY

```

684 v SELECT Location.Town_or_Village, Location.City, Location.State_name, SanitationStatus.WasteManagementStatus, SanitationStatus.SanitationFacilityStatus, AirQuali
685 FROM Location
686 INNER JOIN EnvironmentalData ON Location.PINCODE = EnvironmentalData.LocationPincode
687 INNER JOIN SanitationStatus ON EnvironmentalData.SanitationStatusRecordID = SanitationStatus.SanitationStatusID
688 INNER JOIN AirQuality ON EnvironmentalData.AirPollutionRecordID = AirQuality.RecordID
689 INNER JOIN WaterQuality ON EnvironmentalData.WaterQualityRecordID = WaterQuality.RecordID
690 WHERE SanitationStatus.WasteManagementStatus = 'Not OK' AND AirQuality.AQI > 100;

```

TOWN_OR_VILLAGE	CITY	STATE_NAME	WASTEMANAGEMENTSTATUS	SANITATIONFACILITYSTATUS	AQI	PH
Abids	Hyderabad	Telangana	Not OK	Not OK	220	7.4

PLSQL

1)FUNCTION TO RETRIEVE INFORMATION (PHONE NO , NAME ,PINCODE) ABOUT PATIENTS WHOSE BLOOD GROUP IS AB-VE AND AGE >18

```

408 -- FUNCTION TO RETRIEVE INFO OF PATIENTS WHICH BLOOD GROUP AB-VE AND AGE >18
409 v DECLARE
410   CURSOR ab_neg_patients IS
411     SELECT pp.Phone_No, p.First_name, p.Last_name, l.PINCODE
412       FROM PatientPhone pp
413         JOIN Patient p ON pp.AadharNO = p.AadharNO
414         JOIN BloodType bt ON p.AadharNO = bt.Aadhar_NO
415         JOIN Hospitals h ON p.Hospital_ID = h.HospitalID
416         JOIN Location l ON h.PinCode = l.PINCODE
417         WHERE bt.Blood_Type = 'AB-' AND (SYSDATE - p.Date_of_Birth) / 365 > 18;
418
419   patient_record ab_neg_patients%ROWTYPE;
420
421 v BEGIN
422   DBMS_OUTPUT.ENABLE;
423   OPEN ab_neg_patients;
424 v   LOOP
425     FETCH ab_neg_patients INTO patient_record;
426     EXIT WHEN ab_neg_patients%NOTFOUND;
427     DBMS_OUTPUT.PUT_LINE('Phone: ' || patient_record.Phone_No ||
428                           ', Name: ' || patient_record.First_name || ' ' || patient_record.Last_name ||
429                           ', PIN Code: ' || patient_record.PINCODE);
430
431   END LOOP;
432   CLOSE ab_neg_patients;
433 EXCEPTION
434   WHEN OTHERS THEN
435     DBMS_OUTPUT.PUT_LINE('Error occurred: ' || SQLERRM);
436 END;
437 /

```

Statement processed.
Phone: 9999888807, Name: Suman Singh, PIN Code: 411001

2)FUNCTION TO RETRIEVE HOSPITAL NAME , PINCODE , DOC NAME , DOC ID WHOSE SPECIALIZATION IS CARDIOLOGY

```

436 --NAME OF HOSPITAL , PINCODE , DOC NAME DOC ID WITH PARTICULAR SPECIALISATIONDECLARE
437 v   CURSOR doc_specialization IS
438     SELECT h.Hospital_name, l.PINCODE, d.First_name, d.Last_name, d.Doc_ID
439       FROM Doctor d
440         JOIN Hospitals h ON d.Hospital_ID = h.HospitalID
441         JOIN Location l ON h.PinCode = l.PINCODE
442         WHERE d.Specialization = 'Cardiology';
443
444   doctor_record doc_specialization%ROWTYPE;
445
446 v BEGIN
447   DBMS_OUTPUT.ENABLE;
448   OPEN doc_specialization;
449 v   LOOP
450     FETCH doc_specialization INTO doctor_record;
451     EXIT WHEN doc_specialization%NOTFOUND;
452     DBMS_OUTPUT.PUT_LINE('Hospital Name: ' || doctor_record.Hospital_name ||
453                           ', PIN Code: ' || doctor_record.PINCODE ||
454                           ', Doctor Name: ' || doctor_record.First_name || ' ' || doctor_record.Last_name ||
455                           ', Doctor ID: ' || doctor_record.Doc_ID);
456   END LOOP;
457   CLOSE doc_specialization;
458 v EXCEPTION
459   WHEN OTHERS THEN
460     DBMS_OUTPUT.PUT_LINE('Error occurred: ' || SQLERRM);
461 END;
462
463

```

Statement processed.
Hospital Name: Apollo Hospital, PIN Code: 110001, Doctor Name: Amit Sharma, Doctor ID: 101

3) FUNCTION TO RETRIEVE AVG HEIGHT AND WEIGHT AND INFANT ID AND APGAR SCORE OF FEMALE INFANTS

```

465 v DECLARE
466   gender VARCHAR2(6) := 'Female';
467   avg_weight NUMBER;
468   avg_length NUMBER;
469 v BEGIN
470   SELECT AVG(BirthWeight), AVG(Length) INTO avg_weight, avg_length
471   FROM InfantRecord
472   WHERE Gender = gender;
473
474   DBMS_OUTPUT.ENABLE;
475   DBMS_OUTPUT.PUT_LINE('Average BirthWeight of Female Infants: ' || avg_weight);
476   DBMS_OUTPUT.PUT_LINE('Average Length of Female Infants: ' || avg_length);
477
478 v   FOR rec IN (SELECT InfantID, ApgarScore FROM InfantRecord WHERE Gender = gender)
479   LOOP
480     DBMS_OUTPUT.PUT_LINE('InfantID: ' || rec.InfantID || ', ApgarScore: ' || rec.ApgarScore);
481   END LOOP;
482 v EXCEPTION
483   WHEN OTHERS THEN
484     DBMS_OUTPUT.PUT_LINE('Error occurred: ' || SQLERRM);
485 END;
486
Statement processed.
Average BirthWeight of Female Infants: 3.17
Average Length of Female Infants: 50.05
InfantID: 601, ApgarScore: 8

```

4) FUNCTION TO FETCH RECORD OF PATIENT WHO IS GETTING TREATED BY DOC WITH DOC ID 108

```

490 v DECLARE
491   CURSOR patients_cursor IS
492     SELECT p.AadharNo, p.First_name, p.Last_name, p.Email_id, p.Date_of_Birth, p.Gender, h.Hospital_name, l.PINCODE
493     FROM Patient p
494     JOIN Hospitals h ON p.Hospital_ID = h.HospitalID
495     JOIN Location l ON h.PinCode = l.PINCODE
496     WHERE p.DoctorID = 108; -- Hardcoded doctor ID
497   patient_record patients_cursor%ROWTYPE;
498 v BEGIN
499   OPEN patients_cursor;
500 v   LOOP
501     FETCH patients_cursor INTO patient_record;
502     EXIT WHEN patients_cursor%NOTFOUND;
503 v     DBMS_OUTPUT.PUT_LINE('AadharNO: ' || patient_record.AadharNo ||
504       ', First Name: ' || patient_record.First_name ||
505       ', Last Name: ' || patient_record.Last_name ||
506       ', Email ID: ' || NVL(patient_record.Email_id, 'N/A') ||
507       ', DOB: ' || TO_CHAR(patient_record.Date_of_Birth, 'DD-MON-YYYY') ||

```

```

507      ', DOB: ' || TO_CHAR(patient_record.Date_of_Birth, 'DD-MON-YYYY') ||
508      ', Gender: ' || patient_record.Gender ||
509      ', Hospital Name: ' || patient_record.Hospital_name ||
510      ', PIN Code: ' || patient_record.PINCODE);
511  END LOOP;
512  CLOSE patients_cursor;
513  EXCEPTION
514    WHEN OTHERS THEN
515      DBMS_OUTPUT.PUT_LINE('Error occurred: ' || SQLERRM);
516  END;
517

```

Statement processed.
AadharNO: 890123456789, First Name: Suman, Last Name: Singh, Email ID: suman.singh@email.com, DOB: 05-NOV-1985, Gender: Female, Hospital Name: Ruby Hall clinic, PIN Code: 411001

5)FUNCTION TO RETRIEVE NAME , PPM, PINCODE OF PLACES WITH AQI >200

```

518  v  DECLARE
519    CURSOR aq_cursor IS
520      SELECT l.City, aq.PPM, aq.RecordID, l.PINCODE
521      FROM AirQuality aq
522      JOIN EnvironmentalData ed ON aq.RecordID = ed.AirPollutionRecordID
523      JOIN Location l ON ed.LocationPincode = l.PINCODE
524      WHERE aq.AQI > 200;
525    aq_record aq_cursor%ROWTYPE;
526    cities_count NUMBER := 0;
527  BEGIN
528    OPEN aq_cursor;
529    LOOP
530      FETCH aq_cursor INTO aq_record;
531      EXIT WHEN aq_cursor%NOTFOUND;
532      cities_count := cities_count + 1;
533      DBMS_OUTPUT.PUT_LINE('City: ' || aq_record.City ||
534          ', PPM: ' || aq_record.PPM ||
535          ', PINCODE: ' || aq_record.PINCODE);
536    END LOOP;
537    CLOSE aq_cursor;
538    DBMS_OUTPUT.PUT_LINE('Number of cities with AQI > 200: ' || cities_count);
539  EXCEPTION
540    WHEN OTHERS THEN
541      DBMS_OUTPUT.PUT_LINE('Error occurred: ' || SQLERRM);
542  END;
543
544
545

```

Statement processed.
City: Hyderabad, PPM: Poor, PINCODE: 500001
City: Ahmedabad, PPM: Unhealthy, PINCODE: 380001
City: Jaipur, PPM: Hazardous, PINCODE: 302001
Number of cities with AQI > 200: 3

6)FUNCTION TO RETRIEVE NO OF PATIENTS AND AVG AGE OF PATIENTS SUFFERING FROM TYPHOID

```

546  v  DECLARE
547    typhoid_medication_id INT;
548    patient_count INT := 0;
549    total_age NUMBER := 0;
550    avg_age NUMBER;
551  v  CURSOR patients_cursor IS
552    SELECT (SYSDATE - p.Date_of_Birth) / 365 AS Age
553    FROM Patient p
554    JOIN Prescription pr ON p.AadharNO = pr.Patient_ID
555    JOIN Medication m ON pr.Medication_ID = m.Medication_NO
556    JOIN Disease d ON m.Medication_NO = d.MedicationID AND d.Disease_Name = 'Typhoid';
557
558    patient_record patients_cursor%ROWTYPE;
559  v  BEGIN
560    OPEN patients_cursor;
561    LOOP
562      FETCH patients_cursor INTO patient_record;
563      EXIT WHEN patients_cursor%NOTFOUND;

```

```

566     END LOOP;
567     CLOSE patients_cursor;
568   v  IF patient_count > 0 THEN
569     avg_age := total_age / patient_count;
570     DBMS_OUTPUT.PUT_LINE('Number of patients with Typhoid: ' || patient_count);
571     DBMS_OUTPUT.PUT_LINE('Average age of patients with Typhoid: ' || avg_age);
572   v  ELSE
573     DBMS_OUTPUT.PUT_LINE('No patients with Typhoid found.');
574   END IF;
575 v EXCEPTION
576   WHEN OTHERS THEN
577     DBMS_OUTPUT.PUT_LINE('Error occurred: ' || SQLERRM);
578 END;
579

```

Statement processed.
No patients with Typhoid found.

7) TRIGGER BEFORE DELETE ON DISEASE STATISTICS TABLE

```

581 v CREATE OR REPLACE TRIGGER trg_before_disease_statistics_delete
582 BEFORE DELETE ON DiseaseStatistics
583 FOR EACH ROW
584 DECLARE
585   v_mortality_rate DECIMAL(5,2);
586 BEGIN
587   |
588   SELECT MortalityRate INTO v_mortality_rate
589   FROM Disease
590   WHERE DiseaseID = :OLD.DiseaseID;
591
592 v  IF v_mortality_rate > 10 THEN
593    RAISE_APPLICATION_ERROR(-20001, 'Cannot delete statistics for diseases with high mortality rate.');
594  END IF;
595 END trg_before_disease_statistics_delete;
596

```

Trigger created.

8) STORED FUNCTION TO GET TOTAL APPOINTMENT FOR DOCTOR

```

692 v CREATE OR REPLACE FUNCTION GetTotalAppointmentsForDoctor(
693   p_DoctorID IN INT,
694   p_StartDate IN DATE,
695   p_EndDate IN DATE
696 ) RETURN INT|
697 IS
698   v_TotalAppointments INT;
699 v BEGIN
700   SELECT COUNT(*)
701   INTO v_TotalAppointments
702   FROM Appointments
703   WHERE Doc_ID = p_DoctorID
704   AND Appointment_Date BETWEEN p_StartDate AND p_EndDate;
705
706   RETURN v_TotalAppointments;
707 v EXCEPTION
708   WHEN NO_DATA_FOUND THEN
709     RETURN 0; -- Return 0 if no appointments found for the specified doctor and time period
710 v   WHEN OTHERS THEN
711     RAISE; -- Raise an exception for any other errors
712 END GetTotalAppointmentsForDoctor;
713

```

Function created.

CONCLUSION

In conclusion, the Health Management System (HMS) stands as a transformative solution poised to revolutionize healthcare management across various medical settings. By embracing digital technologies and streamlining administrative and clinical workflows, the HMS offers a comprehensive suite of tools and functionalities to enhance patient care and operational efficiency.

Through centralized electronic health records (EHRs), the HMS provides healthcare providers with instant access to comprehensive patient information, enabling informed decision-making and personalized care delivery. The system's intuitive appointment management feature ensures timely access to healthcare services while optimizing resource utilization and minimizing wait times for patients.

The integration of electronic prescriptions and vaccination tracking capabilities further enhances patient safety and public health outcomes by reducing medication errors, improving medication adherence, and enabling targeted immunization initiatives. Additionally, the HMS's ability to manage environmental data empowers healthcare organizations to address environmental health risks proactively and safeguard community well-being.

Overall, the Health Management System represents a significant advancement in healthcare technology, offering a holistic approach to healthcare management that prioritizes patient-centric care, operational excellence, and public health preparedness. By embracing the HMS, healthcare organizations can navigate the complexities of modern healthcare delivery with confidence, ultimately leading to improved patient outcomes and enhanced quality of life for individuals and communities alike.