PROJECT REPORT

Project: Healthcare Data Warehouse

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Course: Data WareHousing & Data Mining (LAB)

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This Project (HealthCare Data WareHouse) Report Based On Software Requirements Specification (SRS) And Software Design Specification (SDS) Format.

Requirements Specification (SRS) And Software Design Specification (SDS) Report

1. INTRODUCTION

1.1 Purpose The purpose of this Software Requirements Specification (SRS) document is to define the requirements for the HealthCare Data Warehouse project. This document serves as a comprehensive guide to understanding the system's functionalities, constraints, and interfaces, ensuring that all stakeholders have a clear understanding of the project goals and requirements.

1.2 Scope The Healthcare Data Warehouse is designed to consolidate and analyze healthcare data from various sources. It aims to provide a centralized repository for patient records, treatment history, and other relevant data, facilitating better decision-making and reporting in the healthcare sector.

1.3 Definitions, Acronyms, and Abbreviations

- **DW:** Data Warehouse
- **ETL:** Extract, Transform, Load
- **DB:** Database
- **SQL:** Structured Query Language
- **API:** Application Programming Interface

1.4 Overview This document provides detailed requirements for the HealthCare Data Warehouse system, including functional and non-functional requirements, user interfaces, and system models. The system is intended to support healthcare organizations in managing and analyzing large volumes of data efficiently.

2. OVERALL DESCRIPTION

2.1 Product Perspective: The HealthCare Data Warehouse system will be a centralized platform that integrates data from multiple healthcare sources. It will offer capabilities for data storage, processing, and analysis, with a user-friendly interface for accessing and querying data.

2.2 Product Functions

- **Data Integration:** Integrates data from various healthcare systems.
- **Data Storage:** Stores large volumes of historical and current healthcare data.
- **Data Analysis:** Provides analytical tools for data exploration and reporting.
- **Data Security:** Ensures data privacy and security compliance.
- **User Access:** Allows different user roles to access and interact with the data.

2.3 User Classes and Characteristics

- **Healthcare Providers:** Access patient records and treatment data.
- **Administrators:** Manage user access and system configuration.
- **Data Analysts:** Perform data analysis and generate reports.
- **IT Staff:** Maintain and support the system infrastructure.

2.4 Operating Environment The system will operate in a cloud-based environment with high availability and scalability features. It will be accessible via web browsers and integrate with existing healthcare management systems.

2.5 Design and Implementation Constraints

- **Performance:** Must handle large datasets with minimal latency.
- **Compatibility:** Must integrate with existing healthcare systems and databases.

2.6 Assumptions and Dependencies

- Reliable data sources and interfaces for integration.
- Adequate network infrastructure for data transfer and access.
- Availability of skilled personnel for system maintenance and support.

3. SPECIFIC REQUIREMENTS

3.1 Functional Requirements

3.1.1 Use Case Diagram & Use Case Descriptions

Use Case Descriptions for the Healthcare Management System:

1. ***Create Account***

- **Actor:** Patient
- **Description:** The patient creates a new account in the system by providing personal information such as name, contact details, and possibly health insurance details.
- **Pre-condition:** The system is accessible to new users.
- **Post-condition:** A new account is created, and the patient is registered in the system.

2. ***View Information***

- **Actor:** Patient, Doctor
- **Description:** Both patients and doctors can view relevant information. For patients, this might include their medical history, prescriptions, and appointments. For doctors, it could include patient records and scheduled appointments.
- **Pre-condition:** The user is logged in.
- **Post-condition:** The requested information is displayed on the user's interface.
- **Association:** Includes interaction with the "Record Patient Information" use case.

3. Take Appointments

- **Actor:** Patient
- **Description:** Patients can take or book appointments with doctors using the system by selecting available slots.
- **Pre-condition:** The patient must be logged in.
- **Post-condition:** An appointment is scheduled, and both the patient and doctor are notified.

4. Schedule Appointments

- **Actor:** Doctor
- **Description:** Doctors can schedule their availability for patient appointments. This feature allows doctors to block or open slots for consultations.
- **Pre-condition:** The doctor must be logged in.
- **Post-condition:** The availability is updated in the system.

5. Manage Appointments

- **Actor:** Doctor
- **Description:** Doctors can view, modify, and cancel appointments made by patients. They can manage their consultation schedule.
- **Pre-condition:** The doctor must be logged in.
- **Post-condition:** Appointments are updated or canceled as per the doctor's actions.

6. Record Patient Information

- **Actor:** Administrator
- **Description:** The administrator can record patient data such as medical history, treatments, and other relevant information into the system.
- **Pre-condition:** The administrator must be logged in.
- **Post-condition:** The patient's information is updated or stored in the system.

7. Add, Update, Delete from Information

- **Actor:** Administrator
- **Description:** The administrator can add new data, update existing data, or delete outdated or incorrect information from the system.
- **Pre-condition:** The administrator must be logged in.
- **Post-condition:** The data in the system is up-to-date.

8. Manage Information

- **Actor:** Administrator
- **Description:** Administrators manage all the information within the system, ensuring data integrity and accuracy.
- **Pre-condition:** The administrator must be logged in.
- **Post-condition:** System information is updated or validated.

9. Administer Medications

- **Actor:** Administrator
- **Description:** The administrator enters or updates information about prescribed medications for patients.
- **Pre-condition:** The administrator must be logged in.
- **Post-condition:** The patient's medication records are updated in the system.

3.2 NON-FUNCTIONAL REQUIREMENTS

3.2.1 Performance Requirements

- The system should support up to 10,000 concurrent users.
- Data queries should return results within 5 seconds.

3.2.2 Security Requirements

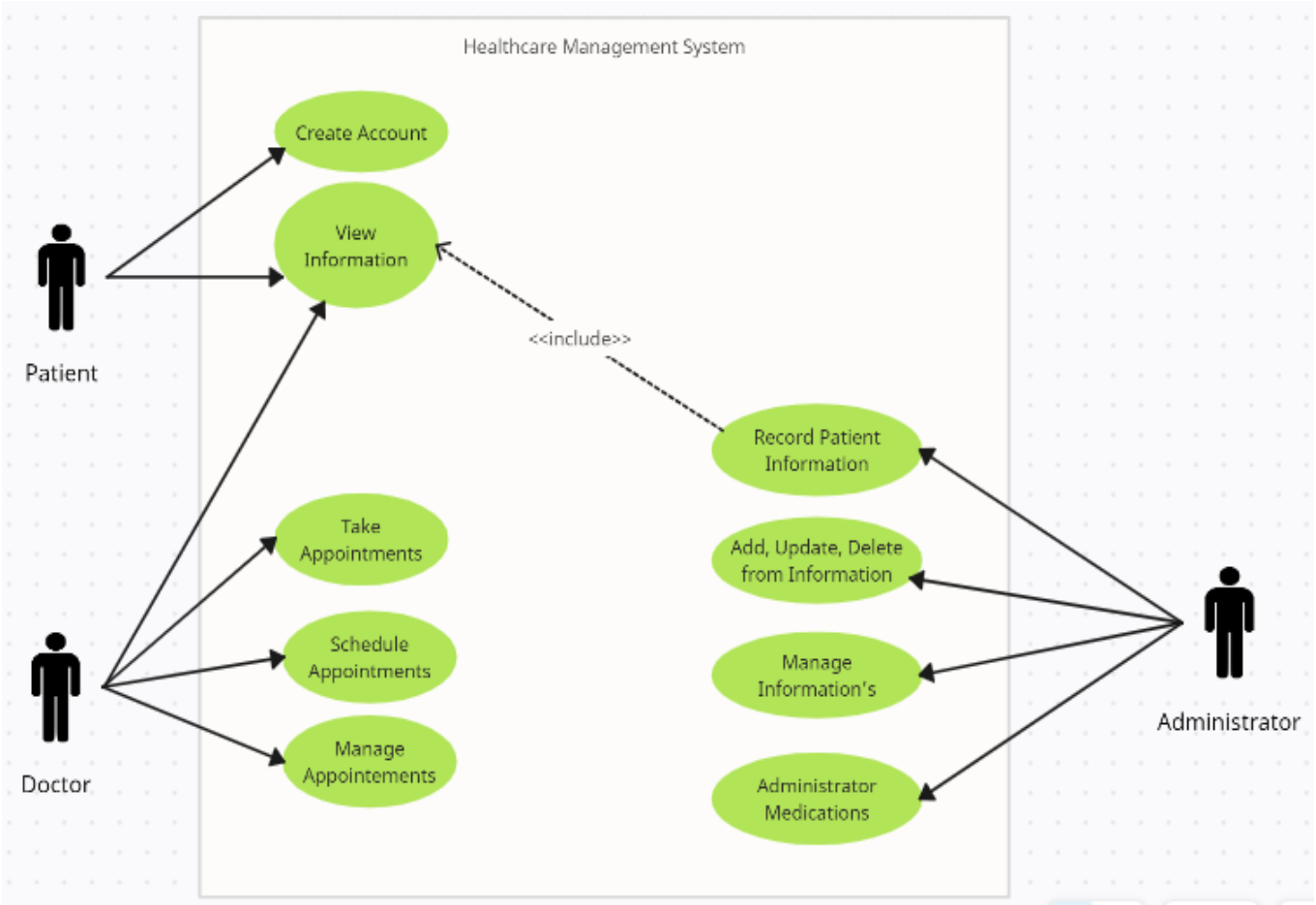
- Implement user authentication and authorization.
- Ensure data encryption at rest and in transit.

3.2.3 Usability Requirements

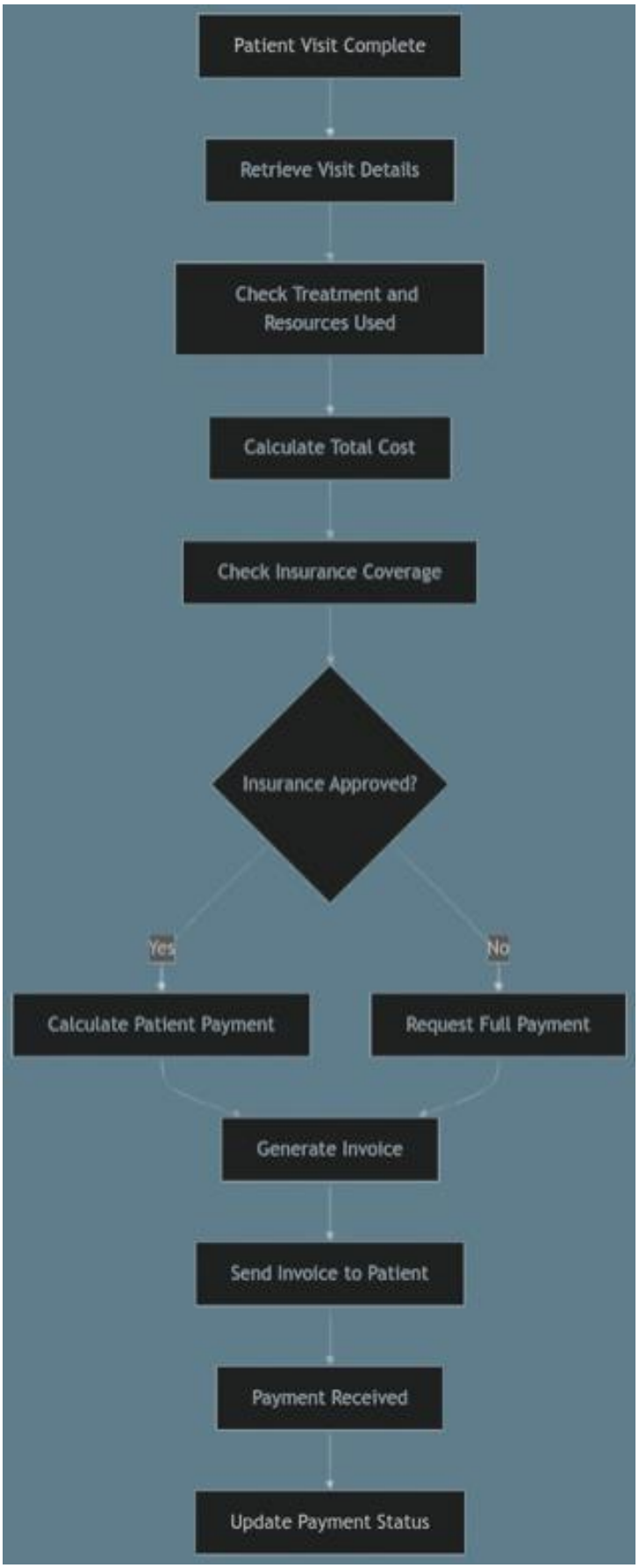
- User interface must be intuitive and accessible.
- Provide user documentation and help resources.

4. SYSTEM MODELS

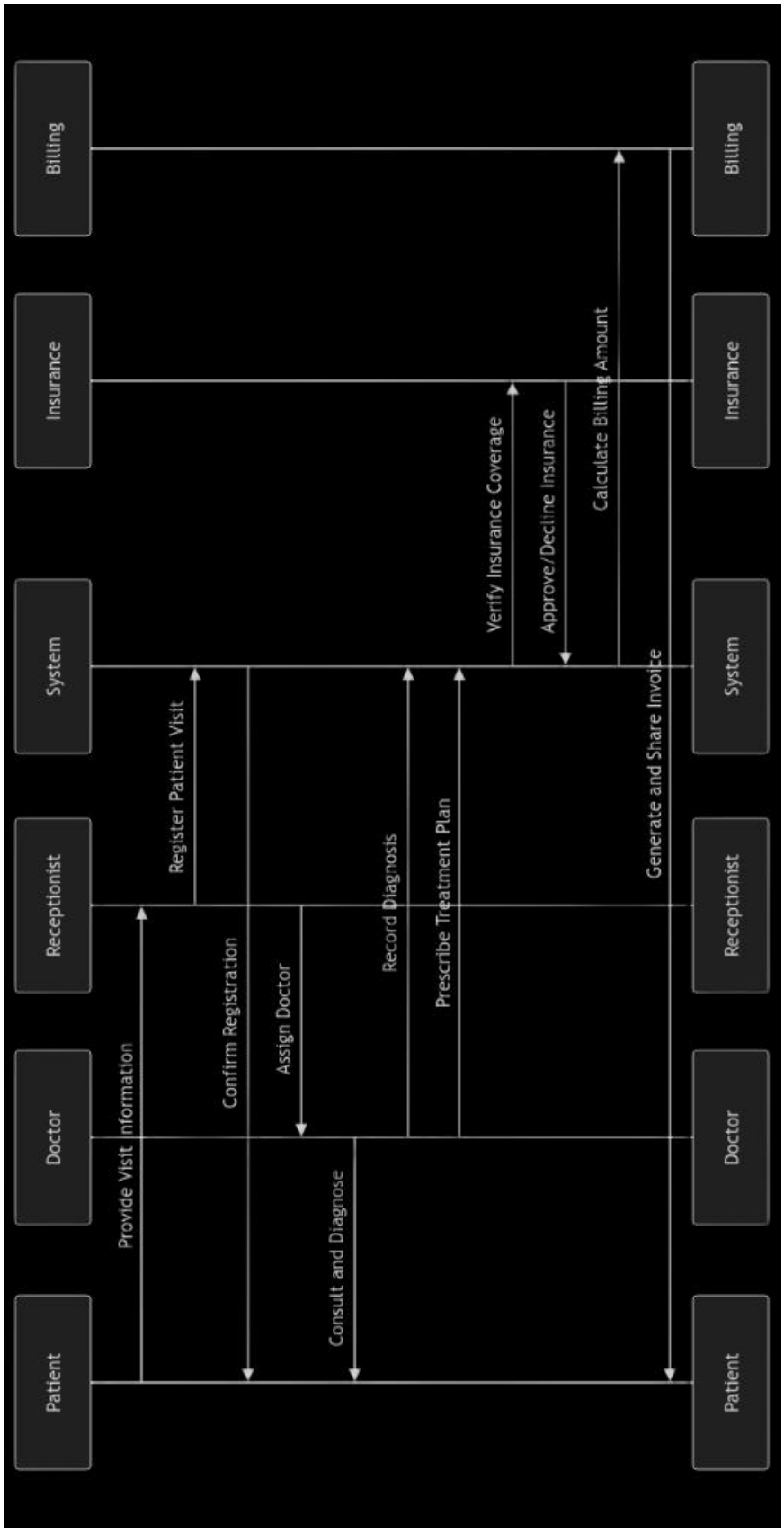
4.1 Use Case Diagram



4.2 Activity Diagram



4.3 Sequence Diagram



5. DETAILED PROJECT DESIGN

3.1 DATABASE DESIGN:

In the HealthCare Data Warehouse with ***15 total tables***, here's the classification of how many are **Fact Tables** and how many are **Dimension Tables**:

Fact Tables (5 Tables):

1. Patient Visit Fact Table
2. Medication Fact Table
3. Treatment Fact Table
4. Billing Fact Table
5. Diagnostic Test Fact Table

These tables store quantitative data, often representing actions or transactions that occur in the healthcare system, such as visits, treatments, or billing details.

Dimension Tables (10 Tables):

1. Patient Dimension Table
2. Provider Dimension Table
3. Medication Dimension Table
4. Diagnosis Dimension Table
5. Treatment Dimension Table
6. Test Type Dimension Table
7. Service Dimension Table
8. Location Dimension Table
9. Insurance Dimension Table
10. Time Dimension Table

These tables provide descriptive attributes and details related to the facts, such as patient information, healthcare providers, diagnoses, medications, and services. These tables help give context to the measurable events captured in the Fact Tables.

Fact Tables (5 Tables):

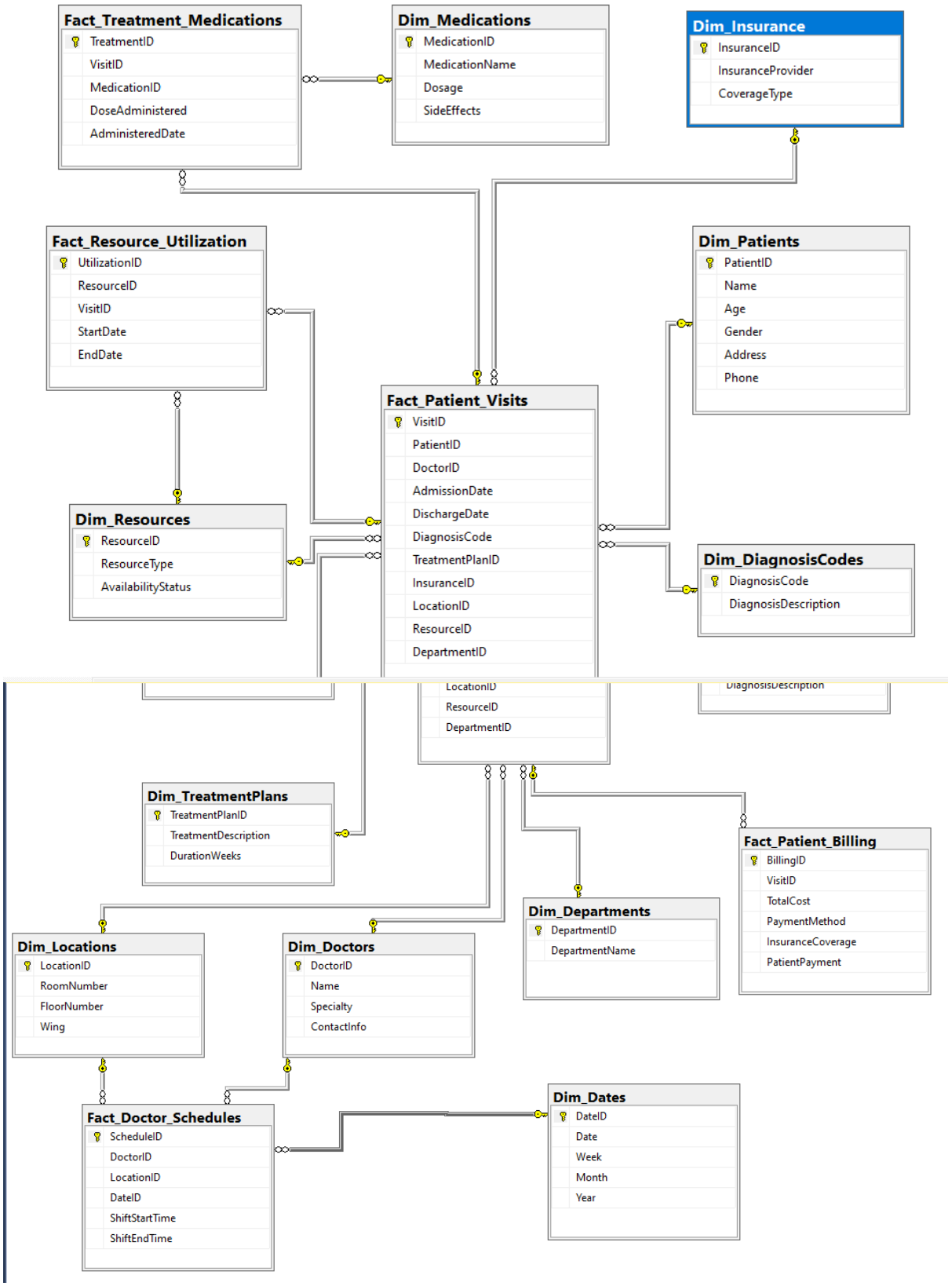
1. **Patient Visit Fact Table**
    - This table records details about every patient visit to the hospital or healthcare facility. It includes information like the date, reason for the visit, and the healthcare provider seen.
2. **Medication Fact Table**
    - This table keeps track of all medications prescribed to patients. It logs each time a patient is given or prescribed medicine, including dosage and frequency.
3. **Treatment Fact Table**
    - This table stores information about the treatments or procedures patients receive. It records details like what treatment was given, when, and by whom.
4. **Billing Fact Table**
    - This table contains the billing and financial transactions related to patient care. It includes costs of services, treatments, and any insurance claims or payments.
5. **Diagnostic Test Fact Table**

- This table logs all diagnostic tests that patients undergo, such as blood tests or X-rays. It records the type of test, the results, and the dates they were performed

Dimension Tables (10 Tables):

1. **Patient Dimension Table**
   - This table holds basic information about each patient, such as their name, age, gender, and contact details. It helps to identify the patients related to facts like visits or treatments.
2. **Provider Dimension Table**
   - This table contains details about healthcare providers (doctors, nurses, specialists). It includes their names, specialties, and contact information.
3. **Medication Dimension Table**
   - This table stores information about the medicines used in the hospital, such as the name of the drug, its usage, and potential side effects.
4. **Diagnosis Dimension Table**
   - This table includes a list of diagnoses for various medical conditions, their codes, and descriptions. It helps to categorize the conditions patients are diagnosed with.
5. **Treatment Dimension Table**
   - This table holds descriptions of the types of treatments or procedures available, including their names, purpose, and typical duration.
6. **Test Type Dimension Table**
   - This table lists all the different types of diagnostic tests that can be performed, like blood tests, imaging, and lab analyses, with details about what they test for.
7. **Service Dimension Table**
   - This table describes the healthcare services offered, such as outpatient visits, surgeries, and emergency services. It categorizes the services provided during patient care.
8. **Location Dimension Table**
   - This table tracks the different locations within the healthcare system, like hospitals, clinics, and labs. It provides details like address and contact information.
9. **Insurance Dimension Table**
   - This table contains information about the different insurance plans patients might have. It stores details about insurance providers, policy numbers, and coverage information.
10. **Time Dimension Table**
    - This table helps break down time into useful segments (year, month, day, hour). It's used to analyze when events like patient visits or treatments take place.

3.1.2 Schema Diagram



Code:

```
-- Create the Healthcare Data Warehouse Database
CREATE DATABASE HealthcareDataWarehouse;

-- 1. Dim_Patients Table (Patient Information)
CREATE TABLE Dim_Patients (
    PatientID INT PRIMARY KEY,
    Name VARCHAR(100),
    Age INT,
    Gender CHAR(1),
    Address VARCHAR(255),
    Phone VARCHAR(15)
);

-- 2. Dim_Doctors Table (Doctor Information)
CREATE TABLE Dim_Doctors (
    DoctorID INT PRIMARY KEY,
    Name VARCHAR(100),
    Specialty VARCHAR(100),
    ContactInfo VARCHAR(255)
);

-- 3.Dim_DiagnosisCodes Table (Diagnosis Information)
CREATE TABLE Dim_DiagnosisCodes (
    DiagnosisCode VARCHAR(10) PRIMARY KEY,
    DiagnosisDescription VARCHAR(255)
);

-- 4. Dim_Dates Table (Date Information)
CREATE TABLE Dim_Dates (
    DateID INT PRIMARY KEY,
    Date DATE,
    Week INT,
    Month INT,
    Year INT
);

-- 5. Dim_Departments Table (Hospital Departments)
CREATE TABLE Dim_Departments (
    DepartmentID INT PRIMARY KEY,
    DepartmentName VARCHAR(100)
);
```

```sql
-- 6. Dim_TreatmentPlans Table (Treatment Plans)
CREATE TABLE Dim_TreatmentPlans (
    TreatmentPlanID INT PRIMARY KEY,
    TreatmentDescription VARCHAR(255),
    DurationWeeks INT
);

-- 7.Dim_Insurance Table (Insurance Information)
CREATE TABLE Dim_Insurance (
    InsuranceID INT PRIMARY KEY,
    InsuranceProvider VARCHAR(100),
    CoverageType VARCHAR(100)
);

-- 8. Dim_Medications Table (Medications)
CREATE TABLE Dim_Medications (
    MedicationID INT PRIMARY KEY,
    MedicationName VARCHAR(100),
    Dosage VARCHAR(50),
    SideEffects VARCHAR(255)
);

-- 9. Dim_Resources Table (Hospital Resources like Beds, Machines)
CREATE TABLE Dim_Resources (
    ResourceID INT PRIMARY KEY,
    ResourceType VARCHAR(100),
    AvailabilityStatus VARCHAR(50)
);

-- 10. Dim_Locations Table (Hospital Location Data)
CREATE TABLE Dim_Locations (
    LocationID INT PRIMARY KEY,
    RoomNumber VARCHAR(50),
    FloorNumber INT,
    Wing VARCHAR(50)
);
```

```sql
-- 11. Fact_Patient_Visits Table (Fact Table for Patient Visits)
CREATE TABLE Fact_Patient_Visits (
    VisitID INT PRIMARY KEY,
    PatientID INT,
    DoctorID INT,
    AdmissionDate DATE,
    DischargeDate DATE,
    DiagnosisCode VARCHAR(10),
    TreatmentPlanID INT,
    InsuranceID INT,
    LocationID INT,
    ResourceID INT,
    DepartmentID INT,
    FOREIGN KEY (PatientID) REFERENCES Dim_Patients(PatientID),
    FOREIGN KEY (DoctorID) REFERENCES Dim_Doctors(DoctorID),
    FOREIGN KEY (DiagnosisCode) REFERENCES Dim_DiagnosisCodes(DiagnosisCode),
    FOREIGN KEY (TreatmentPlanID) REFERENCES Dim_TreatmentPlans(TreatmentPlanID),
    FOREIGN KEY (InsuranceID) REFERENCES Dim_Insurance(InsuranceID),
    FOREIGN KEY (LocationID) REFERENCES Dim_Locations(LocationID),
    FOREIGN KEY (ResourceID) REFERENCES Dim_Resources(ResourceID),
    FOREIGN KEY (DepartmentID) REFERENCES Dim_Departments(DepartmentID)
);

-- 12. Fact_Treatment_Medications Table
-- (Fact Table for Medications given during Treatment)

CREATE TABLE Fact_Treatment_Medications (
    TreatmentID INT PRIMARY KEY,
    VisitID INT,
    MedicationID INT,
    DoseAdministered VARCHAR(50),
    AdministeredDate DATE,
    FOREIGN KEY (VisitID) REFERENCES Fact_Patient_Visits(VisitID),
    FOREIGN KEY (MedicationID) REFERENCES Dim_Medications(MedicationID)
);

-- 13. Fact_Doctor_Schedules Table (Doctor Schedules)
CREATE TABLE Fact_Doctor_Schedules (
    ScheduleID INT PRIMARY KEY,
    DoctorID INT,
```

```sql
-- 13. Fact_Doctor_Schedules Table (Doctor Schedules)
CREATE TABLE Fact_Doctor_Schedules (
    ScheduleID INT PRIMARY KEY,
    DoctorID INT,
    LocationID INT,
    DateID INT,
    ShiftStartTime TIME,
    ShiftEndTime TIME,
    FOREIGN KEY (DoctorID) REFERENCES Dim_Doctors(DoctorID),
    FOREIGN KEY (LocationID) REFERENCES Dim_Locations(LocationID),
    FOREIGN KEY (DateID) REFERENCES Dim_Dates(DateID)
);

-- 14. Fact_Resource_Utilization Table (Hospital Resource Usage)
CREATE TABLE Fact_Resource_Utilization (
    UtilizationID INT PRIMARY KEY,
    ResourceID INT,
    VisitID INT,
    StartDate DATE,
    EndDate DATE,
    FOREIGN KEY (ResourceID) REFERENCES Dim_Resources(ResourceID),
    FOREIGN KEY (VisitID) REFERENCES Fact_Patient_Visits(VisitID)
);

-- 15. Fact_Patient_Billing Table (Patient Billing)
CREATE TABLE Fact_Patient_Billing (
    BillingID INT PRIMARY KEY,
    VisitID INT,
    TotalCost DECIMAL(10, 2),
    PaymentMethod VARCHAR(50),
    InsuranceCoverage DECIMAL(10, 2),
    PatientPayment DECIMAL(10, 2),
    FOREIGN KEY (VisitID) REFERENCES Fact_Patient_Visits(VisitID)
);
```

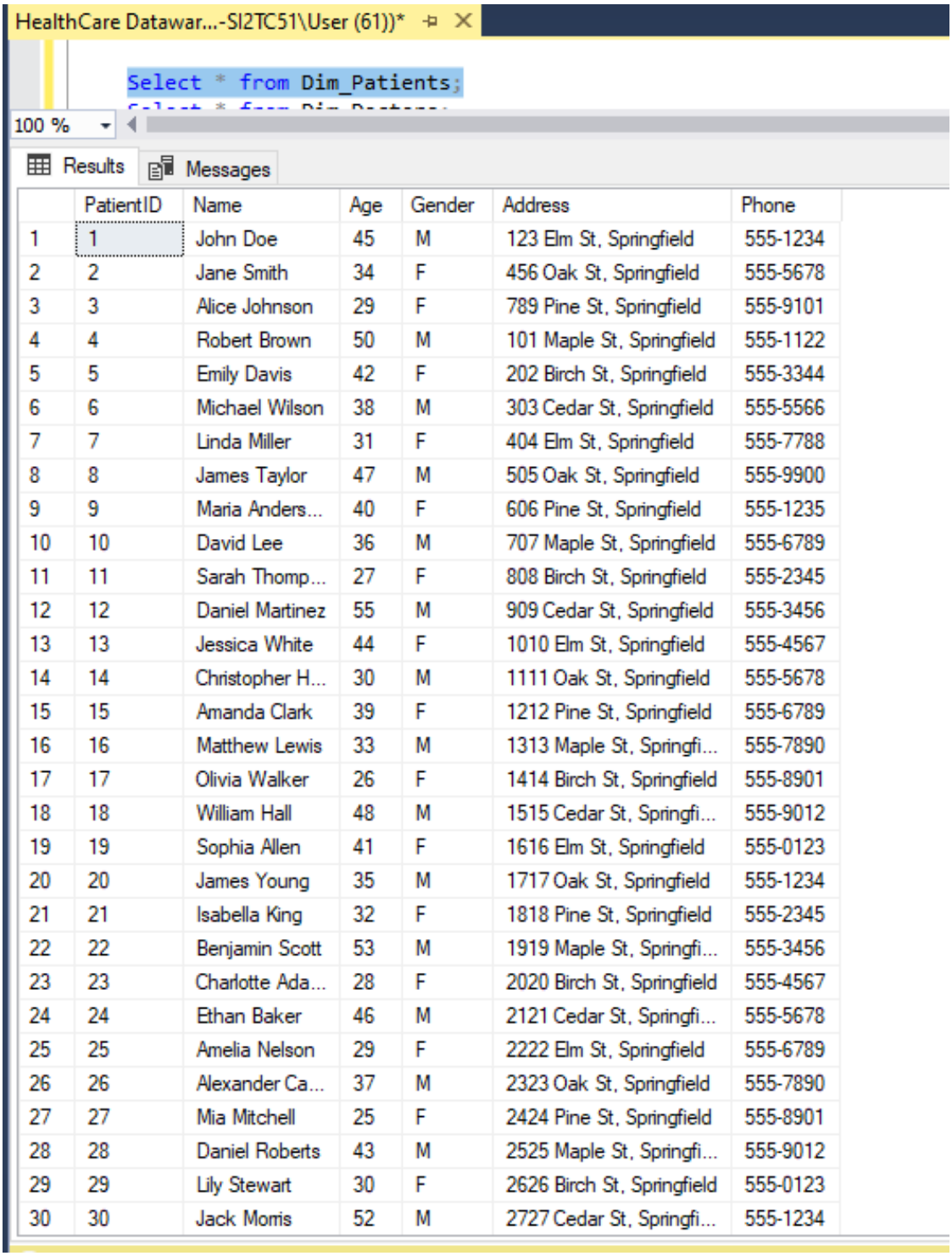
```sql
------------ Insert Data into Tables -------------
-- 1. Inserting Data into Dim_Patients
INSERT INTO Dim_Patients (PatientID, Name, Age, Gender, Address, Phone)
VALUES
(1, 'John Doe', 45, 'M', '123 Elm St, Springfield', '555-1234'),
(2, 'Jane Smith', 34, 'F', '456 Oak St, Springfield', '555-5678'),
(3, 'Alice Johnson', 29, 'F', '789 Pine St, Springfield', '555-9101'),
(4, 'Robert Brown', 50, 'M', '101 Maple St, Springfield', '555-1122'),
(5, 'Emily Davis', 42, 'F', '202 Birch St, Springfield', '555-3344'),
(6, 'Michael Wilson', 38, 'M', '303 Cedar St, Springfield', '555-5566'),
(7, 'Linda Miller', 31, 'F', '404 Elm St, Springfield', '555-7788'),
(8, 'James Taylor', 47, 'M', '505 Oak St, Springfield', '555-9900'),
(9, 'Maria Anderson', 40, 'F', '606 Pine St, Springfield', '555-1235'),
(10, 'David Lee', 36, 'M', '707 Maple St, Springfield', '555-6789'),
(11, 'Sarah Thompson', 27, 'F', '808 Birch St, Springfield', '555-2345'),
(12, 'Daniel Martinez', 55, 'M', '909 Cedar St, Springfield', '555-3456'),
(13, 'Jessica White', 44, 'F', '1010 Elm St, Springfield', '555-4567'),
(14, 'Christopher Harris', 30, 'M', '1111 Oak St, Springfield', '555-5678'),
(15, 'Amanda Clark', 39, 'F', '1212 Pine St, Springfield', '555-6789'),
(16, 'Matthew Lewis', 33, 'M', '1313 Maple St, Springfield', '555-7890'),
(17, 'Olivia Walker', 26, 'F', '1414 Birch St, Springfield', '555-8901'),
(18, 'William Hall', 48, 'M', '1515 Cedar St, Springfield', '555-9012'),
(19, 'Sophia Allen', 41, 'F', '1616 Elm St, Springfield', '555-0123'),
(20, 'James Young', 35, 'M', '1717 Oak St, Springfield', '555-1234'),
(21, 'Isabella King', 32, 'F', '1818 Pine St, Springfield', '555-2345'),
(22, 'Benjamin Scott', 53, 'M', '1919 Maple St, Springfield', '555-3456'),
(23, 'Charlotte Adams', 28, 'F', '2020 Birch St, Springfield', '555-4567'),
(24, 'Ethan Baker', 46, 'M', '2121 Cedar St, Springfield', '555-5678'),
(25, 'Amelia Nelson', 29, 'F', '2222 Elm St, Springfield', '555-6789'),
(26, 'Alexander Carter', 37, 'M', '2323 Oak St, Springfield', '555-7890'),
(27, 'Mia Mitchell', 25, 'F', '2424 Pine St, Springfield', '555-8901'),
(28, 'Daniel Roberts', 43, 'M', '2525 Maple St, Springfield', '555-9012'),
(29, 'Lily Stewart', 30, 'F', '2626 Birch St, Springfield', '555-0123'),
(30, 'Jack Morris', 52, 'M', '2727 Cedar St, Springfield', '555-1234');

Select * from Dim_Patients;
```

```sql
-- 2. Inserting Data into Dim_Doctors
INSERT INTO Dim_Doctors (DoctorID, Name, Specialty, ContactInfo)
VALUES
(101, 'Dr. Ahmed Parker',   'Cardiology', 'ahmed.parker@hospital.com'),
(102, 'Dr. Bob Green',      'Neurology', 'bob.green@hospital.com'),
(103, 'Dr. Emily Johnson',  'Dermatology', 'emily.johnson@hospital.com'),
(104, 'Dr. David Brown',    'Pediatrics', 'david.brown@hospital.com'),
(105, 'Dr. Jonthan Miller', 'Oncology', 'jonthan.miller@hospital.com'),
(106, 'Dr. Spider Wilson',  'Orthopedics', 'spider.wilson@hospital.com'),
(107, 'Dr. Patricia Taylor', 'Gastroenterology', 'patricia.taylor@hospital.com'),
(108, 'Dr. Michael Davis',  'Pulmonology', 'michael.davis@hospital.com'),
(109, 'Dr. Kareena Smith',  'Nephrology', 'Kareena.smith@hospital.com'),
(110, 'Dr. Daniel Anderson', 'Endocrinology', 'daniel.anderson@hospital.com'),
(111, 'Dr. Karen Jackson',  'Rheumatology', 'karen.jackson@hospital.com'),
(112, 'Dr. William Harris', 'Urology', 'william.harris@hospital.com'),
(113, 'Dr. Linda Clark',    'Hematology', 'linda.clark@hospital.com'),
(114, 'Dr. Steven Lewis',   'Allergy & Immunology', 'steven.lewis@hospital.com'),
(115, 'Dr. Barbara Walker', 'Infectious Disease', 'barbara.walker@hospital.com'),
(116, 'Dr. Thomas Hall',    'Ophthalmology', 'thomas.hall@hospital.com'),
(117, 'Dr. Jennifer Young', 'Obstetrics & Gynecology', 'jennifer.young@hospital.com'),
(118, 'Dr. George King',    'Anesthesiology', 'george.king@hospital.com'),
(119, 'Dr. Sarah Scott',    'Otolaryngology', 'sarah.scott@hospital.com'),
(120, 'Dr. Robert Hill',    'Psychiatry', 'robert.hill@hospital.com'),
(121, 'Dr. Nancy Adams',    'Palliative Care', 'nancy.adams@hospital.com'),
(122, 'Dr. Charles Baker',  'Plastic Surgery', 'charles.baker@hospital.com'),
(123, 'Dr. Betty Wright',   'Vascular Surgery', 'betty.wright@hospital.com'),
(124, 'Dr. John Carter',    'Neurosurgery', 'john.carter@hospital.com'),
(125, 'Dr. Amy Mitchell',   'Emergency Medicine', 'amy.mitchell@hospital.com'),
(126, 'Dr. Mark Perez',     'Geriatrics', 'mark.perez@hospital.com'),
(127, 'Dr. Rebecca Turner', 'General Surgery', 'rebecca.turner@hospital.com'),
(128, 'Dr. Paul Roberts',   'Radiology', 'paul.roberts@hospital.com'),
(129, 'Dr. Angela Phillips', 'Pathology', 'angela.phillips@hospital.com'),
(130, 'Dr. Carol Black',    'Orthopedics', 'carol.black@hospital.com');

Select * from Dim_Doctors;
```

```sql
------------- Queries for Data Analysis ----------------
--- Query to Fetch All Patient Visits with Details
SELECT
    p.Name AS PatientName,
    d.Name AS DoctorName,
    dc.DiagnosisDescription,
    tp.TreatmentDescription,
    i.InsuranceProvider,
    pv.AdmissionDate,
    pv.DischargeDate
FROM
    Fact_Patient_Visits pv
JOIN
    Dim_Patients p ON pv.PatientID = p.PatientID
JOIN
    Dim_Doctors d ON pv.DoctorID = d.DoctorID
JOIN
    Dim_DiagnosisCodes dc ON pv.DiagnosisCode = dc.DiagnosisCode
JOIN
    Dim_TreatmentPlans tp ON pv.TreatmentPlanID = tp.TreatmentPlanID
JOIN
    Dim_Insurance i ON pv.InsuranceID = i.InsuranceID;


--------  Query to Track Resource Usage

SELECT
    r.ResourceType,
    COUNT(ru.UtilizationID) AS UsageCount
FROM
    Fact_Resource_Utilization ru
JOIN
    Dim_Resources r ON ru.ResourceID = r.ResourceID
GROUP BY
    r.ResourceType;
```

```sql
--------  Query to Track Resource Usage

SELECT
    r.ResourceType,
    COUNT(ru.UtilizationID) AS UsageCount
FROM
    Fact_Resource_Utilization ru
JOIN
    Dim_Resources r ON ru.ResourceID = r.ResourceID
GROUP BY
    r.ResourceType;

    Select * from Dim_Patients;
    Select * from Dim_Doctors;
    Select * from Dim_DiagnosisCodes;
    Select * from Dim_Dates;
    Select * from Dim_Departments;
    SELECT * FROM Dim_TreatmentPlans;
    Select * from Dim_Insurance;
    Select * from Dim_Medications;
    Select * from Dim_Resources;
    Select * from Dim_Locations;
    Select * from Fact_Patient_Visits;
    Select * from Fact_Treatment_Medications;
    Select * from Fact_Doctor_Schedules;
    Select * from Fact_Resource_Utilization;
    Select * from Fact_Patient_Billing;
```

Output:



	PatientID	Name	Age	Gender	Address	Phone
1	1	John Doe	45	M	123 Elm St, Springfield	555-1234
2	2	Jane Smith	34	F	456 Oak St, Springfield	555-5678
3	3	Alice Johnson	29	F	789 Pine St, Springfield	555-9101
4	4	Robert Brown	50	M	101 Maple St, Springfield	555-1122
5	5	Emily Davis	42	F	202 Birch St, Springfield	555-3344
6	6	Michael Wilson	38	M	303 Cedar St, Springfield	555-5566
7	7	Linda Miller	31	F	404 Elm St, Springfield	555-7788
8	8	James Taylor	47	M	505 Oak St, Springfield	555-9900
9	9	Maria Anders...	40	F	606 Pine St, Springfield	555-1235
10	10	David Lee	36	M	707 Maple St, Springfield	555-6789
11	11	Sarah Thomp...	27	F	808 Birch St, Springfield	555-2345
12	12	Daniel Martinez	55	M	909 Cedar St, Springfield	555-3456
13	13	Jessica White	44	F	1010 Elm St, Springfield	555-4567
14	14	Christopher H...	30	M	1111 Oak St, Springfield	555-5678
15	15	Amanda Clark	39	F	1212 Pine St, Springfield	555-6789
16	16	Matthew Lewis	33	M	1313 Maple St, Springfi...	555-7890
17	17	Olivia Walker	26	F	1414 Birch St, Springfield	555-8901
18	18	William Hall	48	M	1515 Cedar St, Springfi...	555-9012
19	19	Sophia Allen	41	F	1616 Elm St, Springfield	555-0123
20	20	James Young	35	M	1717 Oak St, Springfield	555-1234
21	21	Isabella King	32	F	1818 Pine St, Springfield	555-2345
22	22	Benjamin Scott	53	M	1919 Maple St, Springfi...	555-3456
23	23	Charlotte Ada...	28	F	2020 Birch St, Springfield	555-4567
24	24	Ethan Baker	46	M	2121 Cedar St, Springfi...	555-5678
25	25	Amelia Nelson	29	F	2222 Elm St, Springfield	555-6789
26	26	Alexander Ca...	37	M	2323 Oak St, Springfield	555-7890
27	27	Mia Mitchell	25	F	2424 Pine St, Springfield	555-8901
28	28	Daniel Roberts	43	M	2525 Maple St, Springfi...	555-9012
29	29	Lily Stewart	30	F	2626 Birch St, Springfield	555-0123
30	30	Jack Morris	52	M	2727 Cedar St, Springfi...	555-1234

```
Select * from Dim_Doctors;
```

100 %

Results | Messages

	DoctorID	Name	Specialty	ContactInfo
1	101	Dr. Ahmed Parker	Cardiology	ahmed.parker@hospital.com
2	102	Dr. Bob Green	Neurology	bob.green@hospital.com
3	103	Dr. Emily Johnson	Dermatology	emily.johnson@hospital.com
4	104	Dr. David Brown	Pediatrics	david.brown@hospital.com
5	105	Dr. Jonthan Miller	Oncology	jonthan.miller@hospital.com
6	106	Dr. Spider Wilson	Orthopedics	spider.wilson@hospital.com
7	107	Dr. Patricia Taylor	Gastroenterology	patricia.taylor@hospital.com
8	108	Dr. Michael Davis	Pulmonology	michael.davis@hospital.com
9	109	Dr. Kareena Smith	Nephrology	Kareena.smith@hospital.com
10	110	Dr. Daniel Anderson	Endocrinology	daniel.anderson@hospital.com
11	111	Dr. Karen Jackson	Rheumatology	karen.jackson@hospital.com
12	112	Dr. William Harris	Urology	william.harris@hospital.com
13	113	Dr. Linda Clark	Hematology	linda.clark@hospital.com
14	114	Dr. Steven Lewis	Allergy & Immunology	steven.lewis@hospital.com
15	115	Dr. Barbara Walker	Infectious Disease	barbara.walker@hospital.com
16	116	Dr. Thomas Hall	Ophthalmology	thomas.hall@hospital.com
17	117	Dr. Jennifer Young	Obstetrics & Gynecology	jennifer.young@hospital.com
18	118	Dr. George King	Anesthesiology	george.king@hospital.com
19	119	Dr. Sarah Scott	Otolaryngology	sarah.scott@hospital.com
20	120	Dr. Robert Hill	Psychiatry	robert.hill@hospital.com
21	121	Dr. Nancy Adams	Palliative Care	nancy.adams@hospital.com
22	122	Dr. Charles Baker	Plastic Surgery	charles.baker@hospital.com
23	123	Dr. Betty Wright	Vascular Surgery	betty.wright@hospital.com
24	124	Dr. John Carter	Neurosurgery	john.carter@hospital.com
25	125	Dr. Amy Mitchell	Emergency Medicine	amy.mitchell@hospital.com
26	126	Dr. Mark Perez	Geriatrics	mark.perez@hospital.com
27	127	Dr. Rebecca Turner	General Surgery	rebecca.turner@hospital.com
28	128	Dr. Paul Roberts	Radiology	paul.roberts@hospital.com
29	129	Dr. Angela Phillips	Pathology	angela.phillips@hospital.com
30	130	Dr. Carol Black	Orthopedics	carol.black@hospital.com

Query executed successfully.

```
Select * from Dim_DiagnosisCodes;
```

100 %

Results | Messages

	DiagnosisCode	DiagnosisDescription
1	D01	Hypertension
2	D02	Migraine
3	D03	Diabetes Mellitus Type 2
4	D04	Asthma
5	D05	Chronic Obstructive Pulmonary Disease (COPD)
6	D06	Coronary Artery Disease
7	D07	Stroke
8	D08	Chronic Kidney Disease
9	D09	Osteoarthritis
10	D10	Rheumatoid Arthritis
11	D11	Epilepsy
12	D12	Depression
13	D13	Anxiety Disorder
14	D14	Schizophrenia
15	D15	Bipolar Disorder
16	D16	Pneumonia
17	D17	Tuberculosis
18	D18	HIV/AIDS
19	D19	Cancer - Breast
20	D20	Cancer - Lung
21	D21	Heart Failure
22	D22	Arrhythmia
23	D23	Chronic Liver Disease
24	D24	Pancreatitis
25	D25	Irritable Bowel Syndrome
26	D26	Gastric Ulcer
27	D27	Multiple Sclerosis
28	D28	Alzheimer's Disease
29	D29	Parkinson's Disease
30	D30	Fractured Leg

```
Select * from Dim_Dates;
```

00 %

Results | Messages

	DateID	Date	Week	Month	Year
1	1	2024-01-01	1	1	2024
2	2	2024-01-02	1	1	2024
3	3	2024-01-03	1	1	2024
4	4	2024-01-04	1	1	2024
5	5	2024-01-05	1	1	2024
6	6	2024-01-06	1	1	2024
7	7	2024-01-07	2	1	2024
8	8	2024-01-08	2	1	2024
9	9	2024-01-09	2	1	2024
10	10	2024-01-10	2	1	2024
11	11	2024-01-11	2	1	2024
12	12	2024-01-12	2	1	2024
13	13	2024-01-13	2	1	2024
14	14	2024-01-14	2	1	2024
15	15	2024-01-15	3	1	2024
16	16	2024-01-16	3	1	2024
17	17	2024-01-17	3	1	2024
18	18	2024-01-18	3	1	2024
19	19	2024-01-19	3	1	2024
20	20	2024-01-20	3	1	2024
21	21	2024-01-21	4	1	2024
22	22	2024-01-22	4	1	2024
23	23	2024-01-23	4	1	2024
24	24	2024-01-24	4	1	2024
25	25	2024-01-25	4	1	2024
26	26	2024-01-26	4	1	2024
27	27	2024-01-27	4	1	2024
28	28	2024-01-28	4	1	2024
29	29	2024-01-29	5	1	2024
30	30	2024-02-01	5	2	2024

Query to Fetch All Patient Visits with Details:

```sql
--- Query to Fetch All Patient Visits with Details
SELECT
    p.Name AS PatientName,
    d.Name AS DoctorName,
    dc.DiagnosisDescription,
    tp.TreatmentDescription,
    i.InsuranceProvider,
    pv.AdmissionDate,
    pv.DischargeDate
FROM
    Fact_Patient_Visits pv
JOIN
    Dim_Patients p ON pv.PatientID = p.PatientID
JOIN
    Dim_Doctors d ON pv.DoctorID = d.DoctorID
JOIN
    Dim_DiagnosisCodes dc ON pv.DiagnosisCode = dc.DiagnosisCode
JOIN
    Dim_TreatmentPlans tp ON pv.TreatmentPlanID = tp.TreatmentPlanID
JOIN
    Dim_Insurance i ON pv.InsuranceID = i.InsuranceID;
```

100 %

Results | Messages

	PatientName	DoctorName	DiagnosisDescription	TreatmentDescription	InsuranceProvider	AdmissionDate	DischargeDate
1	John Doe	Dr. Ahmed Parker	Hypertension	Cardiac Rehabilitation	HealthPlus	2024-01-01	2024-01-10
2	Jane Smith	Dr. Bob Green	Migraine	Neurological Therapy	MediCare	2024-01-15	2024-01-20
3	Alice Johnson	Dr. Emily Johnson	Diabetes Mellitus Type 2	Physical Therapy	WellCare	2024-01-22	2024-01-30
4	Robert Brown	Dr. David Brown	Asthma	Chemotherapy	CareMax	2024-01-25	2024-02-05
5	Emily Davis	Dr. Jonthan Miller	Chronic Obstructive Pulmonary Disease (COPD)	Radiation Therapy	SecureHealth	2024-02-01	2024-02-10
6	Michael Wilson	Dr. Spider Wilson	Coronary Artery Disease	Dialysis Treatment	TrustMed	2024-02-05	2024-02-15
7	Linda Miller	Dr. Patricia Taylor	Stroke	Diabetes Management	GlobalCare	2024-02-10	2024-02-20
8	James Taylor	Dr. Michael Davis	Chronic Kidney Disease	Asthma Care	LifeSecure	2024-02-15	2024-02-25
9	Maria Anderson	Dr. Kareena Smith	Osteoarthritis	Hypertension Management	EasyCare	2024-02-20	2024-03-01
10	David Lee	Dr. Daniel Anderson	Rheumatoid Arthritis	Weight Loss Program	HealthFirst	2024-02-25	2024-03-05
11	Sarah Thompson	Dr. Karen Jackson	Epilepsy	Sleep Apnea Therapy	OptiCare	2024-03-01	2024-03-10
12	Daniel Martinez	Dr. William Harris	Depression	Post-Surgery Recovery	TotalHealth	2024-03-05	2024-03-15
13	Jessica White	Dr. Linda Clark	Anxiety Disorder	Prenatal Care	BetterHealth	2024-03-10	2024-03-20
14	Christopher Harris	Dr. Steven Lewis	Schizophrenia	Postnatal Care	MediPlan	2024-03-15	2024-03-25

Query executed successfully. DESKTOP-SI2TC51\SQLEXPRESS ...