Scenario : Hospital Management System Requirements:

A hospital is implementing a database system to improve the management of patient records, doctor schedules, and appointment bookings. The system should maintain detailed patient records, including personal information (name, age, address, contact details), medical history, current medications, and treatment plans. Doctor information, such as specialties, available hours, and contact details, must also be stored. The system should facilitate appointment bookings, allowing patients to schedule visits based on doctor availability. Each appointment should record the date, time, patient, doctor, and reason for the visit. The hospital wants to track treatment outcomes and generate reports on patient visits, treatment efficacy, and overall health trends. Additionally, the system should handle inpatient management, including admission dates, discharge dates, room assignments, and billing information. The ability to manage medical staff schedules, including shift rotations and leave management, is essential. The hospital also needs to maintain an inventory of medical supplies and equipment, tracking usage and restocking requirements. The system should support integration with laboratory and imaging departments to streamline diagnostic processes.

Questions:

- Find the doctor with the most patient appointments.
- Calculate the average number of appointments per patient.
- Retrieve the minimum number of days a patient stayed in the hospital.
- Find the patient who visited the hospital the most times.
- List the top 5 most common reasons for patient visits.

Table Create:

1. Patients Table

```
CREATE TABLE Patients (
   PatientID INT PRIMARY KEY,
   Name VARCHAR2(80),
   Age INT,
   Address VARCHAR2(80),
   ContactDetails VARCHAR2(80),
   MedicalHistory TEXT,
   CurrentMedications TEXT,
   TreatmentPlans TEXT
);
```

2. Doctors Table

```
CREATE TABLE Doctors (
  DoctorID INT PRIMARY KEY,
  Name VARCHAR2(80),
  Specialty VARCHAR2(80),
  AvailableHours VARCHAR2(80),
  ContactDetails VARCHAR2(80)
);
```

3. Appointments Table

```
CREATE TABLE Appointments (
  AppointmentID INT PRIMARY KEY,
  Date DATE,
  Time TIME,
  PatientID INT,
  DoctorID INT,
  ReasonForVisit VARCHAR2(80),
  FOREIGN KEY (PatientID) REFERENCES Patients(PatientID),
  FOREIGN KEY (DoctorID) REFERENCES Doctors(DoctorID)
);
```

4. InpatientManagement Table

```
CREATE TABLE InpatientManagement (
  AdmissionID INT PRIMARY KEY,
  PatientID INT,
  AdmissionDate DATE,
  DischargeDate DATE,
  RoomAssignment VARCHAR2(80),
```

```
    BillingInformation TEXT,
    FOREIGN KEY (PatientID) REFERENCES Patients(PatientID)
);
```

5. MedicalStaffSchedules Table

```
CREATE TABLE MedicalStaffSchedules (
    ScheduleID INT PRIMARY KEY,
    DoctorID INT,
    Shift VARCHAR2(80),
    Rotation VARCHAR2(80),
    LeaveManagement VARCHAR2(80),
    FOREIGN KEY (DoctorID) REFERENCES Doctors(DoctorID)
);
```

6. MedicalInventory Table

```
CREATE TABLE MedicalInventory (
    InventoryID INT PRIMARY KEY,
    ItemName VARCHAR2(80),
    Quantity INT,
    Usage TEXT,
    RestockingRequirement VARCHAR2(80)
);
```

7. LabAndImaging Table

```
CREATE TABLE LabAndImaging (
    LabImagingID INT PRIMARY KEY,
    PatientID INT,
    TypeOfTest VARCHAR2(80),
    Result TEXT,
```

```
    Date DATE,
    FOREIGN KEY (PatientID) REFERENCES Patients(PatientID)
);
```

Solution:

1. **Find the doctor with the most patient appointments:**

```
SELECT DoctorID, COUNT(*) AS AppointmentCount
FROM Appointments
GROUP BY DoctorID
ORDER BY AppointmentCount DESC;
```

2. **Calculate the average number of appointments per patient:**

```
SELECT COUNT(*) / COUNT(DISTINCT PatientID) AS
AverageAppointmentsPerPatient
FROM Appointments;
```

3. **Retrieve the minimum number of days a patient stayed in the hospital:**

```
SELECT MIN(DATEDIFF(DischargeDate, AdmissionDate)) AS MinimumStay
FROM InpatientManagement
WHERE DischargeDate IS NOT NULL;
```

4. **Find the patient who visited the hospital the most times:**

```
SELECT PatientID, COUNT(*) AS VisitCount
FROM Appointments
GROUP BY PatientID
ORDER BY VisitCount DESC;
```

5. **List the most common reasons for patient visits:**

```
SELECT ReasonForVisit, COUNT(*) AS VisitCount
FROM Appointments
GROUP BY ReasonForVisit
```

```
ORDER BY VisitCount DESC
LIMIT 5;
```