Key Insights from SQL Server Assignments

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Database Structure and Design

- The database was structured with multiple tables to handle core hospital operations:
- Patients, Doctors, Appointments, Treatments, Billing
- Relationships between tables were established using Primary and Foreign Keys.
- Constraints ensured data integrity (e.g., Age > 0, Payment Status values).

Data Insertion and Queries

- Data was inserted into tables with valid entries based on hospital operations.
- Queries were used to filter data, retrieve appointment details, and calculate revenues.
- Examples:
- Identify available doctors for specific dates or times.
- Retrieve upcoming appointments for scheduling and reminders.

Stored Procedures for Automation

- Stored procedures were created to automate tasks like scheduling appointments and processing bills.
- These procedures reduce repetitive tasks and improve system efficiency.
- Example: Automatically scheduling an appointment for a patient and doctor.

Indexing for Performance Optimization

- Indexes were created to optimize query performance.
- Indexes speed up SELECT queries filtering or sorting by specific columns.
- Examples:
- Index on AppointmentDate for faster appointment filtering
- Index on Doctor Specialty to quickly retrieve doctor specialties

SQL Functions and Aggregation

- SQL functions were used to perform aggregations and calculations:
- Aggregate functions like AVG and SUM were used to calculate average stays and total revenues.
- Example queries:
- Calculate average patient stay duration in treatments
- Calculate total revenue per doctor specialty

Summary of Key Insights

- Database design focused on organizing hospital data efficiently.
- Queries were used to filter, aggregate, and join data across tables.
- Stored procedures automated tasks for scheduling and billing.
- Indexing and functions optimized query performance and data calculations.