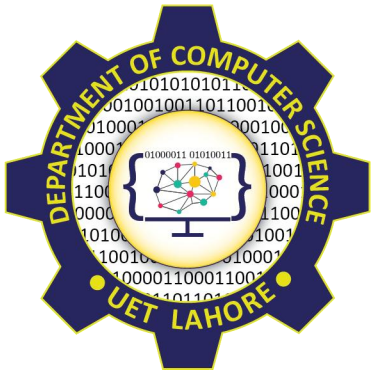
Skylines Hospital Management System

Project Report



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Skylines Hospital Management System

1. Introduction:

The **Skylines Hospital Management System** is a desktop-based application developed using **C# Windows Forms** for the front-end and **SQL Server Management Studio (SSMS)** for database management. The system streamlines hospital operations by managing rooms, departments, patients, doctors, nurses, and appointments efficiently.

2. Objectives:

- Automate hospital administrative tasks.
- Efficiently manage patient and staff data.
- Provide a secure and reliable platform for hospital management.

3. System Features and Roles:

3.1. Doctor:

- **Manage Schedule**: Doctors can manage their schedules.
- **Manage Appointments**: Handles patient appointment bookings.
- **Manage Prescriptions**: Doctors can generate and store prescriptions.

3.2. Admin:

- **Add Room**: Admins can add new rooms to the system.
- **Add Department**: Admins can create and manage hospital departments.
- **Add Doctor**: Admins can add new doctors.
- **Add Nurse**: Admins can add nurses.
- **Add Patient**: Admins can register new patients.
- **Manage Users**: Admins can add and manage system users.
- **Login**: Provides authentication for users.

3.3. Patient:

- **Apply Room**: Patients can apply for room allocation.
- **View Allotted Rooms**: Patients can check assigned rooms.

4. Technologies Used:

- **Front-end**: C# Windows Forms
- **Back-end**: SQL Server Management Studio (SSMS)
- **IDE**: Visual Studio

5. System Workflow:

5.1. User Authentication:

Users log in based on their roles.

5.2. Role Specific Functionalities:

- Admins manage doctors, nurses, and departments.
- Patients apply for rooms and view assigned rooms.
- Doctors manage schedules, appointments, and prescriptions.

5.3. Database Integration:

All data is stored and retrieved from SSMS.

5.4. Data Security Measures:

Access control implemented based on user roles

6. Implementation Details:

- Forms are created for user-friendly interaction.
- SQL queries handle CRUD operations for data management.
- Exception handling ensures system reliability.
- **Triggers**: Implemented in the database to maintain data integrity. For example:
    - **Before Insert Triggers** ensure that duplicate patient records are not created.
    - **After Update Triggers** log changes made to patient and doctor records for auditing purposes.

7. Log Tables:

To enhance security and tracking, log tables are used to maintain a record of critical operations:

- **User Activity Log**: Stores login/logout attempts and actions performed by users.
- **Database Change Log**: Records modifications to patient details, appointments, and prescriptions.
- **Error Log**: Captures system errors and exceptions for debugging.

8. Challenges and Solutions:

- **Database Connectivity Issues**: Solved using ADO.NET with proper connection strings.
- **User Authentication**: Implemented secure login with role-based access.
- **Data Consistency**: Ensured through normalized database design.
- **Audit & Security**: Implemented log tables and triggers to monitor and secure data changes.

9. Conclusion:

The **Skylines Hospital Management System** successfully streamlines hospital operations, making management more efficient and reducing manual errors. With role-based access, structured data storage, and user-friendly interfaces, the system significantly enhances hospital workflow.

10. Future Enhancements:

- Implement a web-based version.
- Integrate real-time notifications.
- Add reporting and analytics features.
- Enhance security with additional logging mechanisms.
- Improve database triggers for automated data validation.