E-Governance System – Database Schema Document

1. Overview

This document describes the database schema for the **E-Governance Grievance Redressal System**. The schema is designed to manage users, roles, departments, grievances, grievance history, categories, and notifications in a structured and relational manner. It ensures data integrity, traceability of grievance actions, and efficient reporting using relational constraints.

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2. Tables and Descriptions

2.1 Users

Stores information about all system users including citizens, officers, supervisors, and administrators.

Column Name	Data Type	Description
Id	int (PK)	Unique identifier for the user
FullName	varchar(100)	Full name of the user
Email	varchar(150)	Unique email address
PasswordHash	varchar	Encrypted password hash
RoleId	int (FK)	References Roles(Id)
DepartmentId	int (FK, Nullable)	References Departments(Id)
IsActive	bit	Indicates whether the user is active

Relationships:

- Many Users → One Role
- Many Users → One Department (optional)

2.2 Roles

Defines roles available in the system.

Column Name	Data Type	Description
Id	int (PK)	Role identifier
Name	varchar(50)	Role name (Admin, Citizen, Officer, Supervisor)

2.3 Departments

Represents government departments responsible for handling grievances.

Column Name	Data Type	Description
Id	int (PK)	Department identifier
Name	varchar(100)	Department name

2.4 Categories

Defines grievance categories mapped to departments.

Column Name	Data Type	Description
Id	int (PK)	Category identifier
Name	varchar(100)	Category name
DepartmentId	int (FK)	References Departments(Id)

Relationship:

- Many Categories → One Department

2.5 Grievances

Stores grievance details submitted by citizens.

Column Name	Data Type	Description
Id	int (PK)	Grievance identifier
Title	varchar(150)	Grievance title
Description	text	Detailed grievance description
CitizenId	int (FK)	References Users(Id)
CategoryId	int (FK)	References Categories(Id)
DepartmentId	int (FK)	References Departments(Id)
AssignedToId	int (FK, Nullable)	References Users(Id)
Status	varchar(30)	Current grievance status
CreatedAt	datetime	Submission timestamp
ResolvedAt	datetime (Nullable)	Resolution timestamp
IsEscalated	bit	Escalation flag

Relationships:

- Many Grievances → One User (Citizen)
- Many Grievances → One Category
- Many Grievances → One Department
- Many Grievances → One Assigned Officer

2.6 GrievanceHistories

Tracks the action history of each grievance.

Column Name	Data Type	Description
Id	int (PK)	History record identifier
GrievanceId	int (FK)	References Grievances(Id)
Action	varchar(30)	Action taken (Submitted, Assigned, Resolved, etc.)
Remarks	varchar(500)	Additional remarks
PerformedById	int (FK)	References Users(Id)
ActionAt	datetime	Timestamp of action

Relationships:

- Many History Records → One Grievance
- Many History Records → One User

2.7 Notifications

Stores notifications sent to users regarding grievance updates.

Column Name	Data Type	Description
Id	int (PK)	Notification identifier
UserId	int (FK)	References Users(Id)
GrievanceId	int (FK)	References Grievances(Id)
Message	varchar	Notification content
Type	varchar	Notification type
IsRead	bit	Read status

2.8 __EFMigrationsHistory

Maintains Entity Framework migration history.

Column Name	Data Type	Description
MigrationId	varchar (PK)	Migration identifier
ProductVersion	varchar	EF Core version

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3. Referential Integrity & Constraints

- Primary keys uniquely identify records in each table.
- Foreign keys enforce relationships between entities.
- Restrictive delete behavior prevents accidental data loss.
- Unique constraint on Users.Email ensures no duplicate accounts.

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4. Conclusion

The database schema is normalized and well-structured to support grievance lifecycle management, role-based access, reporting, and auditing. It efficiently supports LINQ-based querying, aggregation, and reporting required for the E-Governance System.