P3: Logical ERD Model

Group: 19

Healthcare Management System

Brief Description of Changes:

The following updates were made to the initial ERD :

1. **Resolved Many-to-Many Relationships**: Many-to-many relationships like Doctor to Nurse were replaced with an associative entity called Treatment(attributes: TreatmentID, description, cost, AppointmentID, DoctorID)
2. **Normalization (3NF)**: Multivalued and composite attributes were removed to convert the system to 3rd Normal Form, ensuring each attribute is atomic and non-redundant
3. **Primary and Foreign Keys**: Primary keys and foreign keys are assigned for each entity and relationships are defined while maintaining referential integrity
4. **Simplified Relationships**: All relationships are now one-to-one (1:1) or one-to-many (1)

Address

(FK) PatientID
StreetAddress
UnitNumber
City
State
ZipCode
HomePhone

Patient

(PK) PatientID
Name
DoB
Gender
Contact
(FK) InsuranceID.

Treatment

(PK) TreatmentID
Description
Cost
(FK) AppointmentID
(FK) DoctorID

Nurse

(PK) NurseID
Certification Level
(FK) DepartmentID
Experience

Admin Staff

(PK) StaffID
Role
(FK) BillingId
(FK) AppointmentID

Doctor

(PK) DoctorID
Speciality
(FK) DepartmentID
Experience

Appointment

(PK) AppointmentID
Date
Time
(FK) PatientID
(FK) DoctorID
Status

Medical Record

(PK) RecordID
(FK) PatientID
(FK) DoctorID
Diagnosis
Date
TreatmentPlan

Department

(PK) DepartmentID
Name
HeadOfDepartment

Insurance

(PK) InsuranceID
ProviderName
PolicyNumber
Coverage

Billing

(PK) BillID
(FK) PatientID
(FK) AppointmentID
TotalAmount
Payment Status
(FK) InsuranceID

Medication

(PK) MedicationID
Name
Dosage
Frequency
Cost

Relationships (labels):
- assigned to
- lives in
- has insurance
- pays
- books
- prescribed in
- administered by
- administers
- prescribed by
- provides support for
- prescribes
- fills
- part of
- processes
- assigned to
- part of
- contains
- written for
- conducted by
- consists of
- supported by
- filled by
- consists of
- paid for
- has prescribed
- paid by
- processed by
- purchased by
- paid by
- paid from
- billed for
- mentioned in
- prescribed by