



IT214: Database Management System

Prof. PM Jat

Project Title: Electronic Medical Records

Team ID: G1-T10

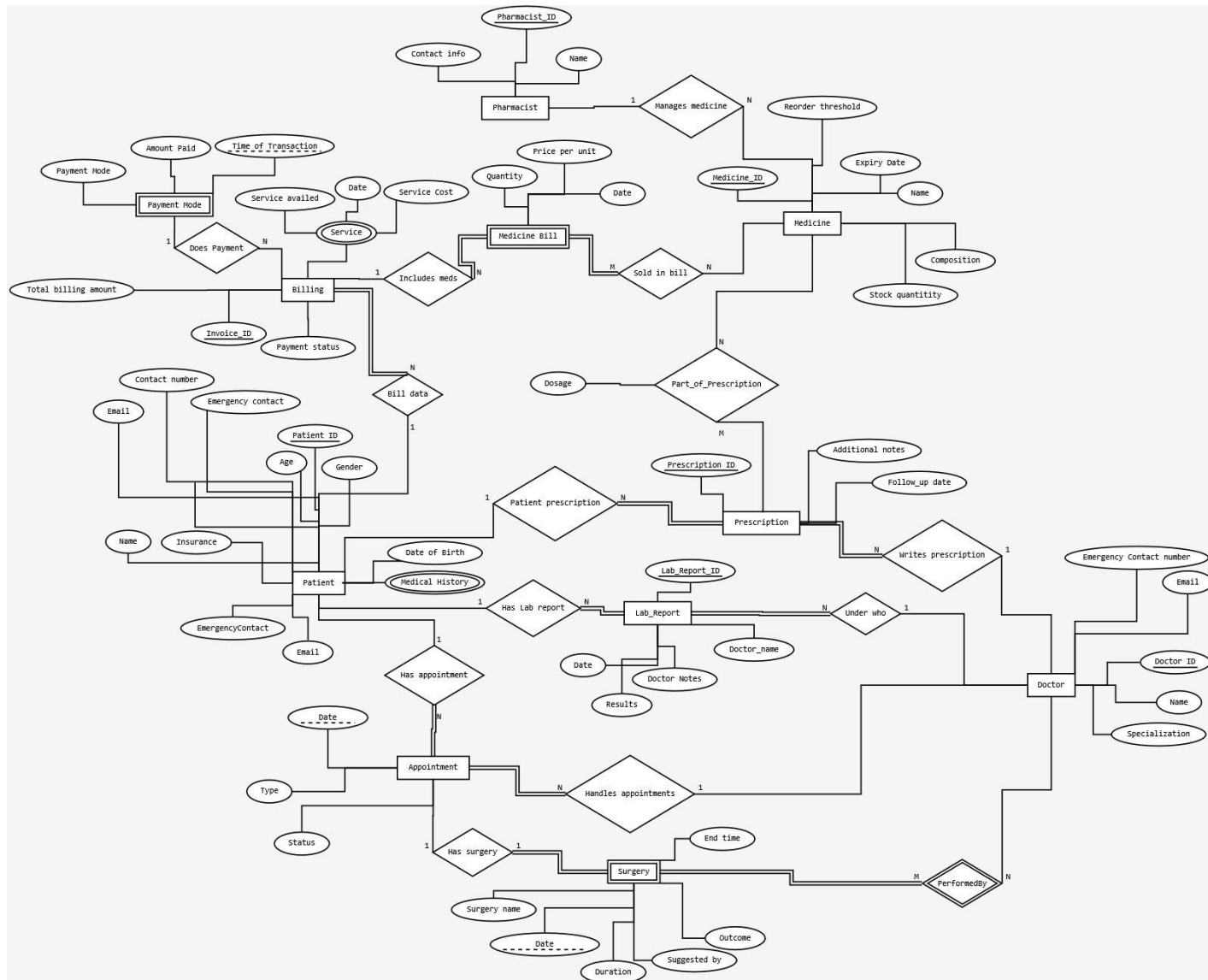
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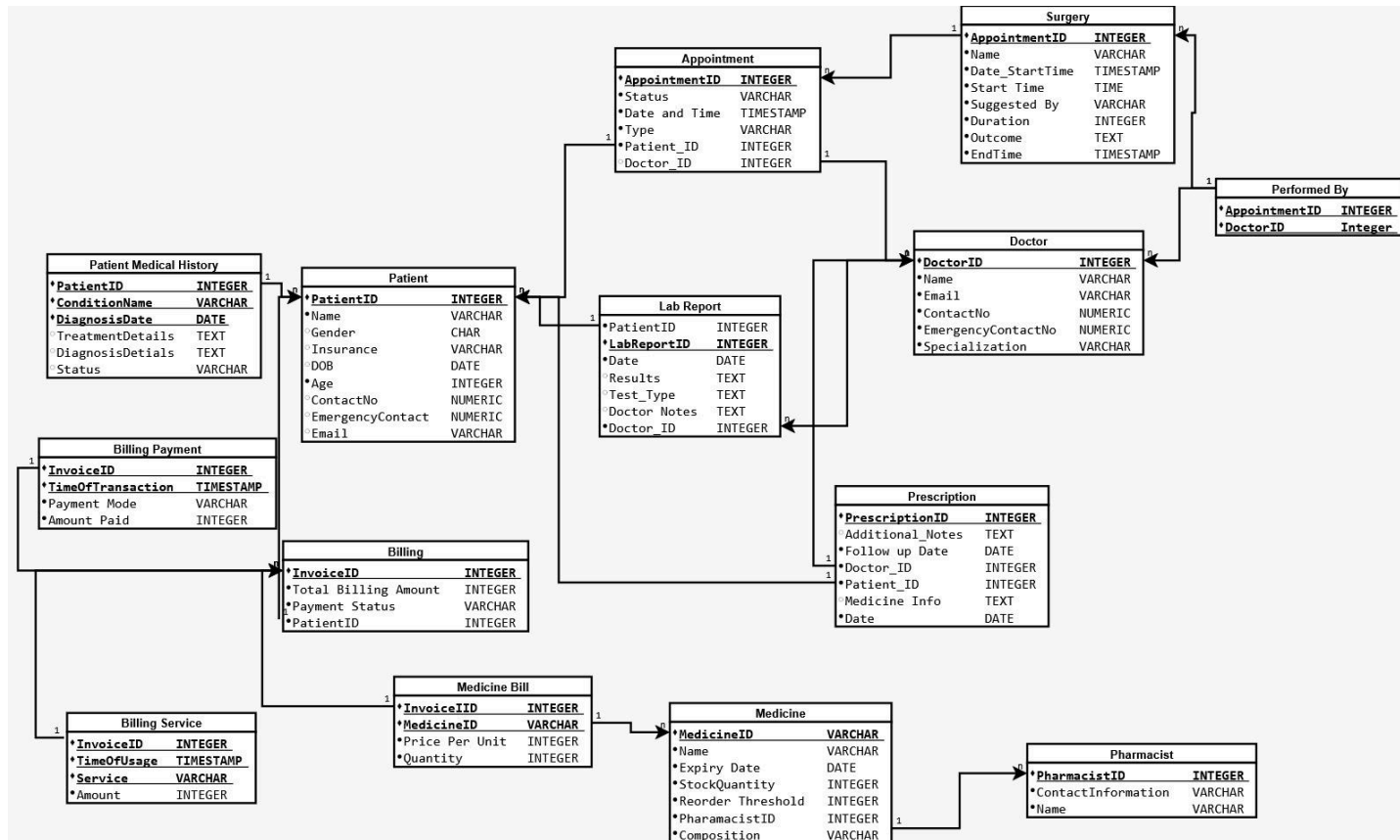
Objective:

Design and implement a database which serves as an electronic repository of health-related information of patients. The **Electronic Medical Records (EMR)** systems will enable authorized persons within a single organization to create, gather and manage data efficiently for better patient consultation, streamline accounting procedures and improve the management of various medical supplies and equipment in the inventory.

ER Diagram:



Relational Schema:



Normalization Proofs (BCNF or Not?)

Relation	Primary Key (Candidate Key)	Functional Dependencies (FDs)	LHS Superkey?	BCNF?
Patient	{PatientID}	PatientID → {Name, Age, Gender, EmergencyContact, Email, ContactNumber, DateOfBirth, InsuranceDetails}	Yes (PatientID is the PK)	Yes
PatientMedicalHistory	{PatientID, ConditionName, DiagnosisDate}	(PatientID, ConditionName, DiagnosisDate) → {TreatmentDetails, DiagnosisDetails, Status}	Yes (Composite key is the LHS of every FD)	Yes
Doctor	{DoctorID}	DoctorID → {Name, Specialization, EmergencyContact, Email}	Yes	Yes
Pharmacist	{PharmacistID}	PharmacistID → {Name, ContactInformation}	Yes	Yes
Medicine	{MedicineID}	MedicineID → {Name, StockQuantity, ExpiryDate, ReorderThreshold, PharmacistID, Composition}	Yes	Yes



Appointment	{AppointmentID}	AppointmentID → {PatientID, DoctorID, DateTime, Type, Status}	Yes	Yes
Prescription	{PrescriptionID}	PrescriptionID → {PatientID, DoctorID, FollowUpDate, AdditionalNotes}	Yes	Yes
PrescriptionMedicine	{PrescriptionID, MedicineID}	(PrescriptionID, MedicineID) → Dosage	Yes	Yes
LabReport	{LabReportID}	LabReportID → {PatientID, DoctorID, TestType, Date, Results, DoctorNotes}	Yes	Yes
Billing	{InvoiceID}	InvoiceID → {PatientID, TotalBillingAmount, DateofInvoice, PaymentStatus}	Yes	Yes
BillingService	{InvoiceID, TimeOfUsage, ServiceName}	(InvoiceID, TimeOfUsage, ServiceName) → ServiceCost	Yes	Yes
BillingPayment	{InvoiceID, TimeOfTransaction }	(InvoiceID, TimeOfTransaction) → {PaymentMode, AmountPaid}	Yes	Yes
MedicineBill	{InvoiceID, MedicineID}	(InvoiceID, MedicineID) → {Quantity, PricePerUnit}	Yes	Yes



Surgery	{AppointmentID, Date_StartTime}	(AppointmentID, Date_StartTime) → {SurgeryName, Duration, SuggestedBy, Outcome, EndTime}	Yes	Yes
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→ Here, Every non-trivial FD in our design has a left-hand side that is a candidate key (or superkey) of its relation. **Therefore, all of our relations are in BCNF, So the whole database is in BCNF.**