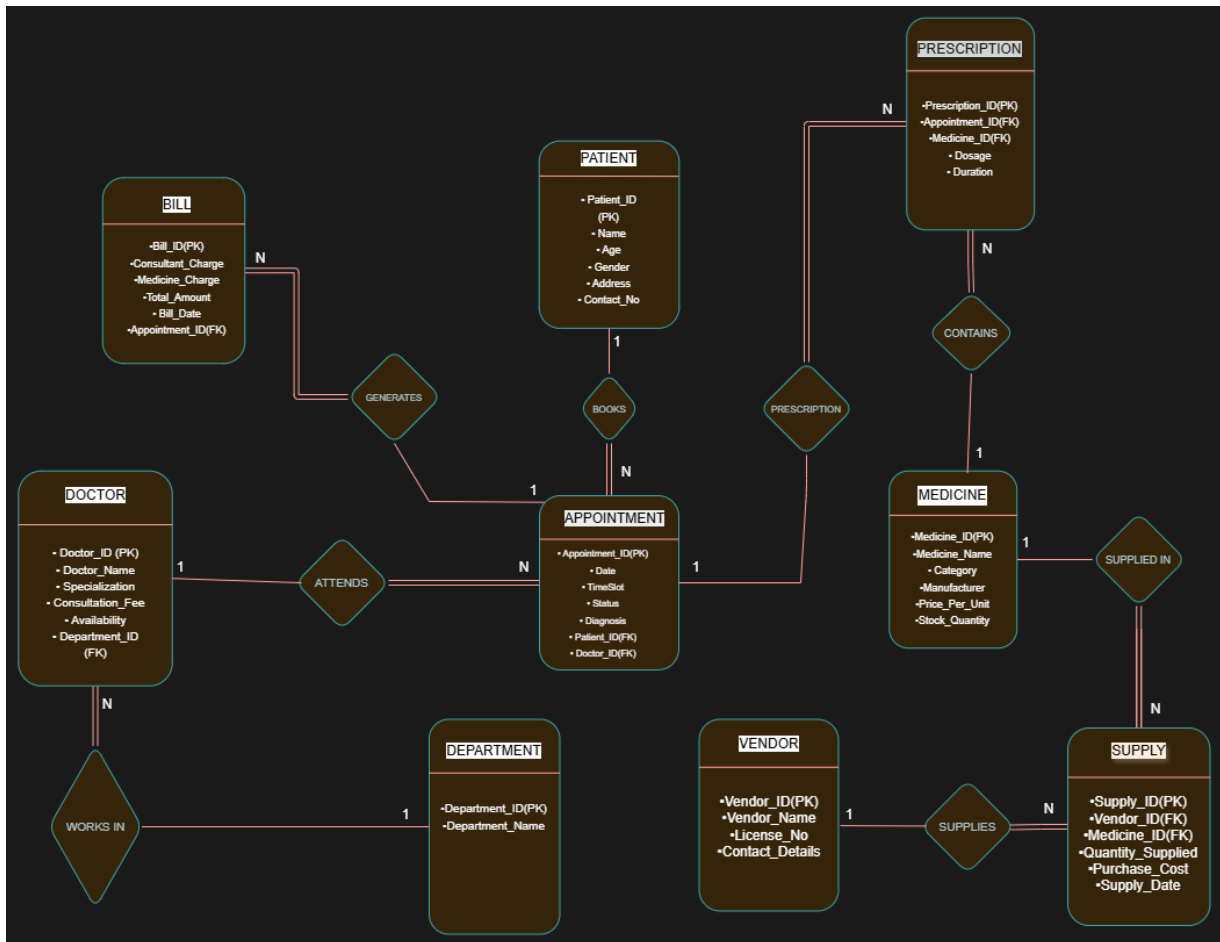


DBMS Course Project – Task 2

Conceptual E–R Model and Relational Schema

1. Conceptual E–R Diagram

The Entity–Relationship (E–R) diagram for the Hospital Management System (HMS) is designed based on the business requirements defined in Task–1. It models patients, doctors, appointments, prescriptions, billing, medicine inventory, vendors, and departments.



2. Notation and Constraints

- Double lines indicate **Total (Full) Participation**.
- Single lines indicate **Partial Participation**.
- Cardinality is represented using **1** and **N**.
- **Primary Keys** are underlined.
- **Foreign Keys** are marked using (FK).

3. Entity Sets

- **Patient**(Patient_ID, Name, Age, Gender, Address, Contact_No)
- **Doctor**(Doctor_ID, Doctor_Name, Specialization, Consultation_Fee, Availability, Department_ID(FK))
- **Department**(Department_ID, Department_Name)
- **Appointment**(Appointment_ID, Date, TimeSlot, Status, Diagnosis, Patient_ID(FK), Doctor_ID(FK))

- **Prescription**(Prescription_ID, Appointment_ID(FK), Medicine_ID(FK), Dosage, Duration)
- **Medicine**(Medicine_ID, Medicine_Name, Category, Manufacturer, Price_Per_Unit, Stock_Quantity)
- **Vendor**(Vendor_ID, Vendor_Name, License_No, Contact_Details)
- **Supply**(Supply_ID, Vendor_ID(FK), Medicine_ID(FK), Quantity_Supplied, Purchase_Cost, Supply_Date)
- **Bill**(Bill_ID, Consultant_Charge, Medicine_Charge, Total_Amount, Bill_Date, Appointment_ID(FK))

4. Relationship Sets

- **Books:** Patient (1) — Appointment (N)
- **Attends:** Doctor (1) — Appointment (N)
- **Generates:** Appointment (1) — Bill (1)
- **Works_In:** Doctor (N) — Department (1)
- **Prescription:** Appointment (1) — Prescription (N)
- **Contains:** Prescription (N) — Medicine (N)
- **Supplies:** Vendor (1) — Supply (N)
- **Supplied_In:** Medicine (1) — Supply (N)

5. Relational Schema

- Patient(Patient_ID, Name, Age, Gender, Address, Contact_No)
- Department(Department_ID, Department_Name)
- Doctor(Doctor_ID, Doctor_Name, Specialization, Consultation_Fee, Availability, Department_ID)
- Appointment(Appointment_ID, Date, TimeSlot, Status, Diagnosis, Patient_ID, Doctor_ID)
- Prescription(Prescription_ID, Appointment_ID, Medicine_ID, Dosage, Duration)
- Medicine(Medicine_ID, Medicine_Name, Category, Manufacturer, Price_Per_Unit, Stock_Quantity)
- Vendor(Vendor_ID, Vendor_Name, License_No, Contact_Details)
- Supply(Supply_ID, Vendor_ID, Medicine_ID, Quantity_Supplied, Purchase_Cost, Supply_Date)
- Bill(Bill_ID, Consultant_Charge, Medicine_Charge, Total_Amount, Bill_Date, Appointment_ID)

6. Team Member Contributions

- **Rohit Sharma:** Designed and developed the complete E–R diagram based on business requirements.
- **Sameer:** Derived the relational schema from the conceptual E–R model.
- **Harsh:** Refined the document formatting and improved the overall presentation of the PDF.

7. Conclusion

The proposed E–R model accurately represents the hospital’s business requirements and provides a strong foundation for relational schema creation, indexing, and data population in Task–3.

Project Details

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