Hospital Management System

P3 - EER Diagram

Overview:

- The primary objective of this project is to develop a comprehensive system for efficiently managing and organising diverse data associated with patients, staff members , dispensary, and various other hospital-related information.
- This database system is intended to facilitate the hospital's oversight of all transactions and empower informed decision-making in alignment with the organisation's ambient vision.

Entities Explanation:

Sr_No	Entity	Relationship and Attributes
1	Patient	This is the main entity that will book an appointment for specific doctors and its attributes include Patient ID as a primary key , Patient_Name, Patient_Address, Patient_Phone.
2	PatientDisease History	This associative entity gives information about **patients** who are currently admitted with specific **diseases** having foreign keys as Patient ID ,Disease_ID and Record_Number as primary key followed by Admission Reason, Admission Date, Primary Doctor Name, Discharge Date attributes.
3	Doctor	This is the subtype for a specialized employee entity which stores information about doctors which includes Doctor_Id as a primary key followed by Doctor_Specialty, Admission_Date.
4	Ward	This entity stores information about Patients using Patient_ID as a foreign key , Room_ID as a primary key and followed by Ward_Type, Bed_Number, Floor_Number attributes.
5	Dispensary	This entity stores information about pharmaceutical logistics items having Item_ID as primary key , Department_ID and Item_type_number as foreign key and as per business rules we have assumed a single dispensary followed by Last Stock-up Date, Quantity attributes.
6	Appointment	This is an associative entity which gives information about appointment details where **patients** book an appointment to a specific **doctor** having Patient_ID and Doctor_ID as Foreign Key , Appointment_ID as primary key followed by start_date_time , end_date_time attributes.

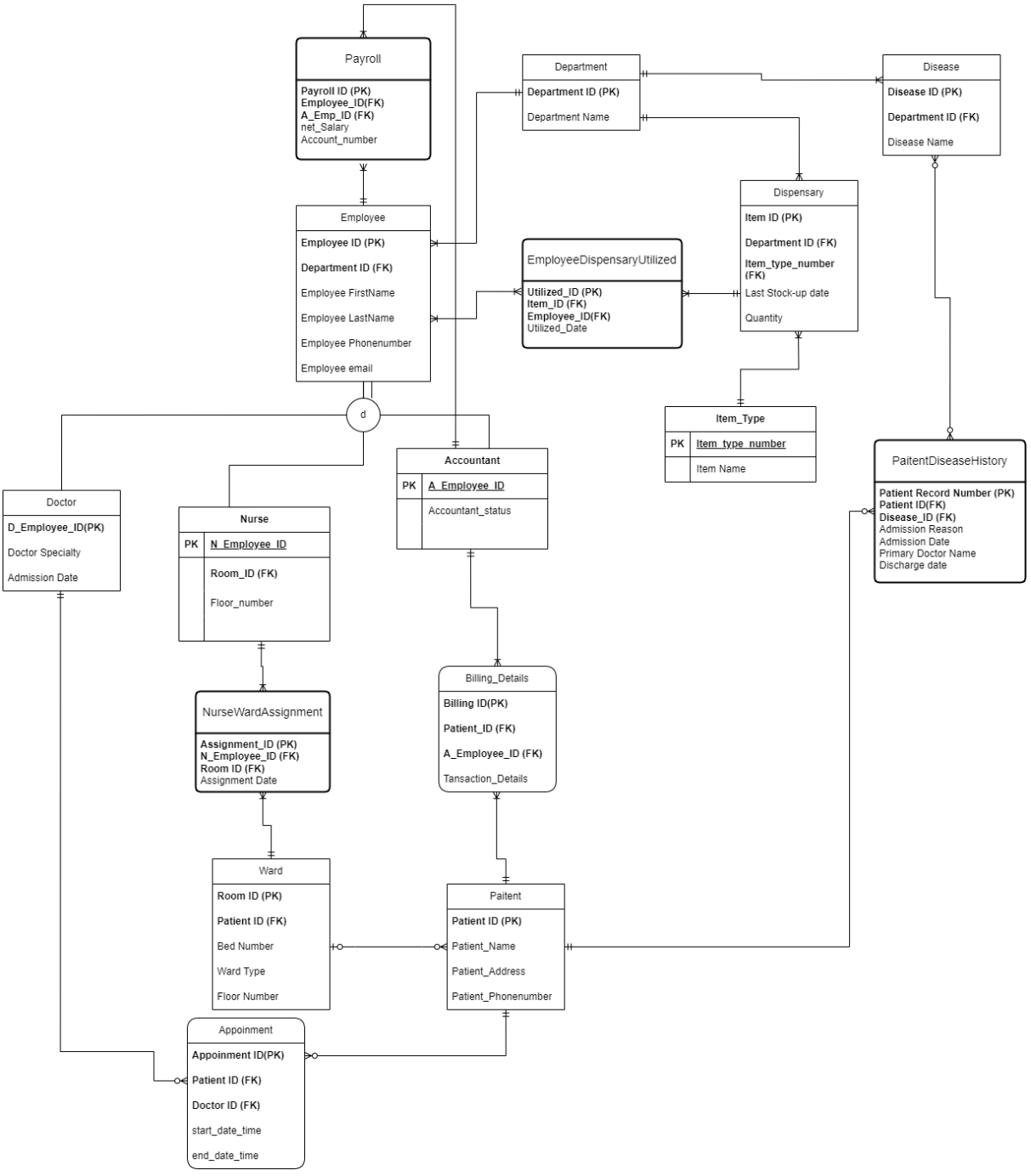
7	Payroll	This is an associative entity that manages salary records of employees and also handles payment transactions of patients having Employee_ID and A_Emp_ID (Accountant employee ID) as foreign key, payroll_id as primary key followed by net Salary and account number as other attributes.
8	Employee	This is the main specialized entity that defines all the employees working in a hospital. The attributes include Employee_ID as primary key, Employee_FirstName, Employee_LastName, Employee_Phone, Employee_Email, Department_ID as a foreign key as many employees will belong to a single department.
9	Department	This entity defines that there is only one single department assumed as per business rules and scope having Department_ID as a primary key and Department_Name as other attribute.
10	Disease	This entity belongs to a single department that can have multiple diseases. The attributes include Disease_ID as primary key, Disease_Name and Department_ID as foreign key.
11	Item_type	This entity includes multiple items to be present in a single dispensary having Item_type_number as primary key and item name as other attribute.
12	EmployeeDispensaryUtilized	This is an associative entity where multiple employees utilizes multiple dispensary items having Employee_ID and Item_ID as foreign key followed by utilized_ID as primary key and Utilized_Date as other attribute.
13	Nurse	This is the subtype of a specialized employee entity who takes care of patients assigned to a specific ward having room_id as a foreign key and N_Emp_ID(nurse_Employee_ID) as primary key followed by nurse_floor as other attribute.
14	Accountant	This is the subtype of a specialized employee entity who handles all employees payroll information and billing transaction of patients having A_Employee_ID as primary key and Accountant status as other attribute.
15	NurseWardAssignment	This is an associative entity where a nurse is assigned to a specific ward based on patient details having N_Employee_ID and Room_ID as foreign key , Assignment_ID as primary key and Assigned Date as other attribute.
16	Billing_Details	This is an associative entity where Accountant manages billing transactions of patients having patient_ID , A_Employee_ID as foreign key and billing_ID as primary key followed by transaction_details as other attribute.

Key Relationships/Assumptions:

- An employee is a specialized entity which has subtypes as Doctor , Ward and Accountant that belong to a **department (as per business rules/scope we have assumed single department)** having Department ID as a foreign key in Employee entity .
- Considering our business rule for one department we have assumed a **single dispensary** which has multiple dispensary items (such as medicines , needles , cotton etc) having item_type_number as a foreign key in the Dispensary entity.
- Multiple dispensary items can be utilized by many employees through **EmployeeDispensaryUtilized** associative entity having item_ID and Employee_ID as foreign keys.
- **Accountant** subtype entity is responsible for handling Patients billing transaction using Billing_Details associative entity and also managing all employees payroll activities using Payroll associative entity.
- **Nurse** subtype entity is assigned to a specific ward using NurseWardAssignment associative entity.
- **Doctor** subtype entity prescribes Patients based on Appointment taken through Appointment associative entity.
- Multiple diseases can be present in a single department.
- Patients having specific diseases from a single department can be retrieved through PatientDiseaseHistory associative entity.

This below EER is designed to model the relationships and attributes of the entities in a hospital database, making it a valuable tool for designing and implementing a relational database system for a hospital management system.

EER diagram:


Payroll
Payroll ID (PK)
Employee_ID(FK)
A_Emp_ID (FK)
net_Salary
Account_number
Department
Department ID (PK)
Department Name
Disease
Disease ID (PK)
Department ID (FK)
Disease Name
Employee
Employee ID (PK)
Department ID (FK)
Employee FirstName
Employee LastName
Employee Phonenumber
Employee email
EmployeeDispensaryUtilized
Utilized_ID (PK)
Item_ID (FK)
Employee_ID(FK)
Utilized_Date
Dispensary
Item ID (PK)
Department ID (FK)
Item_type_number (FK)
Last Stock-up date
Quantity
d
Item_Type
PK
Item_type_number
Item Name
Accountant
PK
A_Employee_ID
Accountant_status
PaitentDiseaseHistory
Patient Record Number (PK)
Patient ID(FK)
Disease_ID (FK)
Admission Reason
Admission Date
Primary Doctor Name
Discharge date
Doctor
D_Employee_ID(PK)
Doctor Specialty
Admission Date
Nurse
PK
N_Employee_ID
Room_ID (FK)
Floor_number
NurseWardAssignment
Assignment_ID (PK)
N_Employee_ID (FK)
Room ID (FK)
Assignment Date
Billing_Details
Billing ID(PK)
Patient_ID (FK)
A_Employee_ID (FK)
Tansaction_Details
Ward
Room ID (PK)
Patient ID (FK)
Bed Number
Ward Type
Floor Number
Paitent
Patient ID (PK)
Patient_Name
Patient_Address
Patient_Phonenumber
Appoinment
Appoinment ID(PK)
Patient ID (FK)
Doctor ID (FK)
start_date_time
end_date_time

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