

MIS 320 Database Management Systems: Assignment 3

1. This is a **group assignment**. Your group may discuss this assignment with your classmates, but your answers should be your own. There will be a severe penalty for submitting copied answers. Make sure that you review the slides, book chapter and in-class solutions.
2. This assignment is due at 11:59 PM on **Friday, February 23rd, 2024**. Please submit your assignment on Canvas as a file upload. Both docx and pdf file uploads will be allowed. You can either submit typed answers or handwritten answers. DO NOT use a google document.
3. Please indicate your **roster name** in your homework submission. **10 points will be deducted from your grade for missing your name.**
4. Stay true to the diagram provided even if it doesn't describe the current business reality. The goal of the assignment is to depict multiple technical situations to you so you learn the tools well.
5. Make sure to familiarize yourself with the **grading rubric** at the end of this assignment. I will be using it to grade your assignment.
6. You will notice that problem #1 in this assignment is the solution to problem #1 in **assignment 1**; problem #2 is the solution to problem #3 in **assignment 2**; and problem #3 is the solution to problem #1 in **assignment 2**. This is to increase your understanding and decrease your workload.

I pledge on my honor that I have not given or received any unauthorized assistance on this assignment.

Your Roster Names:

Sign: Giselle Echeverria

Date: 02/23/2024

Sign: Janida Magallanes

Date: 02/23/2024

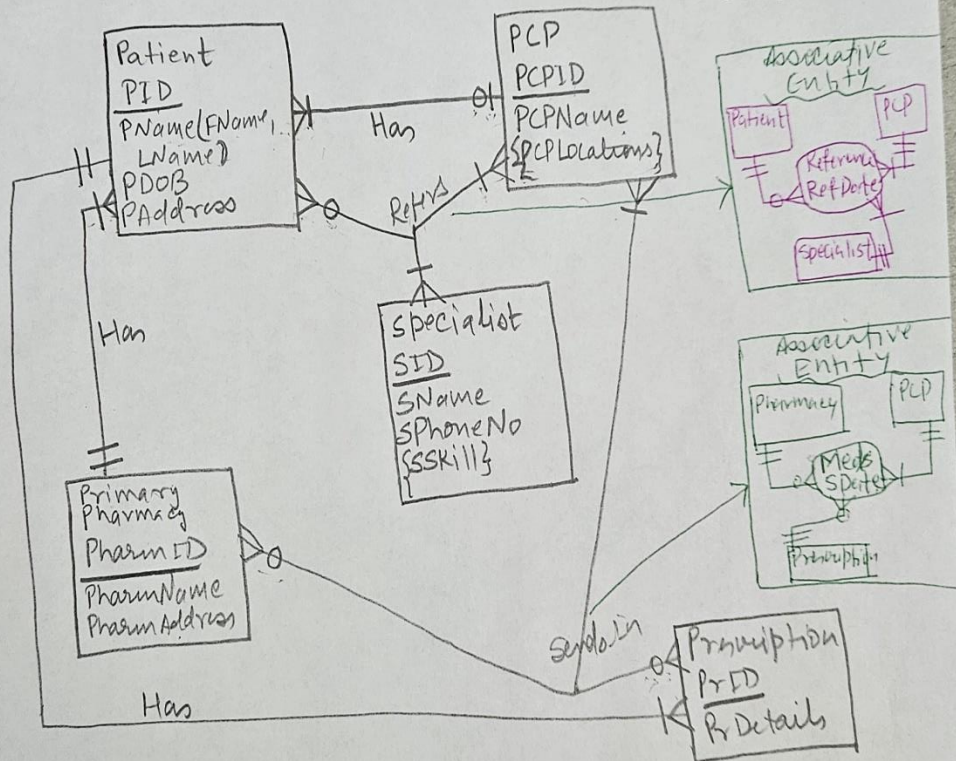
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Date:

1. A patient may or may not have a primary care provider (PCP). PCPs can have a number of patients. PCPs refer patients to specialists. Patients have a primary pharmacy. Primary pharmacies can have a number of patients. PCPs send in prescriptions to pharmacies. A patient can have one or more prescriptions and a prescription can be for only one patient. Create the E/R diagram for the business situation described above. Make your assumptions explicit. The attributes are below.

Patient: PID, PName, PDOB, PAddress [PName is a composite attribute]
 PCP: PCPID, PCPName, PCPLocations [PCPLocations is a multi-valued attribute]
 Specialist: SID, SName, SPhoneNo, SSkill [SSkill is a multi-valued attribute]
 PrimaryPharmacy: PharmID, PharmName, PharmAddress
 Prescription: PrID, PrDetails

[25 points]



Assumptions

- (1) PCPs must have at least one patient.
- (2) A patient may not be referred to a specialist. If a patient is referred, they must be referred by at least one physician to at least one specialist.
- (3) Pharmacies have at least one patient.
- (4) Prescriptions may not be sent by a PCP. Prescriptions may not be sent to the primary pharmacy. If a prescription is sent, it must be sent by a PCP.

Patient: PID, FName, LName, PDOB, PAddress, PharmID [PharmID is also FK to PrimaryPharmacy]

PCP: PCPID, PCPName

PCPLocation: PCPID, PCPLocations [PCPID is also FK to PCP]

Specialist: SID, SName, SPhoneNo,

SpecialistSkill: SID, Skill [SID is also FK to Specialist]

Reference: ReferenceID, SID, PCPID, PID, RefDate [SID, PID, and PCPID are also FK to Specialist, Patient, and PCP]

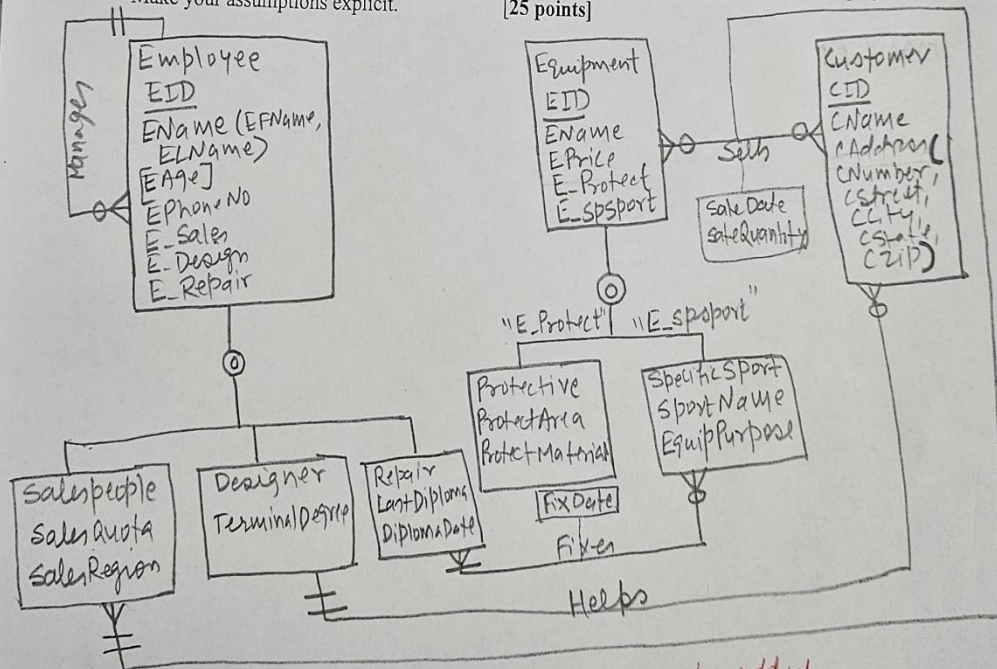
PrimaryPharmacy: PharmID, PharmName, PharmAddress

Prescription: PrID, PrDetails, PID [PID is also FK to Patient]

Meds: MedsID, PharmID, PrID, PCPID, SDate [PharmID, PrID, and PCPID are also FK to PrimaryPharmacy, Prescription, and PCP]

3. Draw an EER diagram for the following description. A sport equipment manufacturing company wants to build a database for its products. Equipment are of two types: protective and specific sport. Other types of equipment can be added. All equipment have three attributes: EID, EName, and EPrice. Protective equipment have two attributes: ProtectArea, and ProtectMaterial. Specific Sport equipment have two attributes: SportName, and EquipPurpose. It is possible for an equipment to be both protective and specific sport. The company has three types of employees: salespeople, designers and repair staff. It is possible for an employee to belong to more than category. All employees share these attributes: EID, EName (EName, ELName), EAge and EPhoneNo. EAge is a derived attribute. Salespeople have two additional attributes: SalesQuota, SalesRegion. Designers have an additional attribute: TerminalDegree. It is important for the company to maintain the last diploma that a Repair staff received and the date on which they did. Sales staff sell equipment to customers. Customer attributes include: CID, CName and CAddress. CAddress is a composite attribute, consisting of CNumber, CStreet, CCity, CState, and CZip. The date and quantity of the sale must be captured and stored. Repair staff fix any number of specific sport equipment and specific sport equipment can be fixed by any number of repair staff. It is important to store the date on which the equipment is fixed. A designer can help any number of customers and a customer can be helped by only one designer. An employee can manage zero to many other employees and an employee can be managed by only one employee. Make your assumptions explicit.

[25 points]



- Assumptions
- (1) Other types of employees can be added
 - (2) An equipment may not be sold and a customer may not need an equipment but a sale occurs, then an employee must participate.
 - (3) Repair staff may not fix any specific sport equipment.
 - (4) A specific sport equipment must be fixed by at least one repair employee.
 - (5) A designer may not help any customer.

Equipment: EID, EName, EPrice, E_Protect, E_SpSport

Customer: CID, CName, CNumber, CStreet, CCity, CState, CZip, DesignerEID [DesignerEID is also FK to Designer]

Protective: ProtectiveEID, ProtectArea, ProtectMaterial [ProtectiveEID is also FK to Equipment]

SpecificSport: SpSportID, SportName, EquipPurpose [SpSportEID is also FK to Equipment]

Sales: SalesID, CID, EID, SalesPersonEID, SaleDate, SaleQuantity [CID, EID, and SalesPersonEID are also FK to Customer, Equipment, and SalesPeople]

SalesPeople: SalesPersonEID, SalesQuote, SalesRegion [SalesPersonEID is also FK to Employee]

Employee: EID, EFName, ELName, EAge, EPhoneNo, E_Sales, E_Desgin, E_Repair

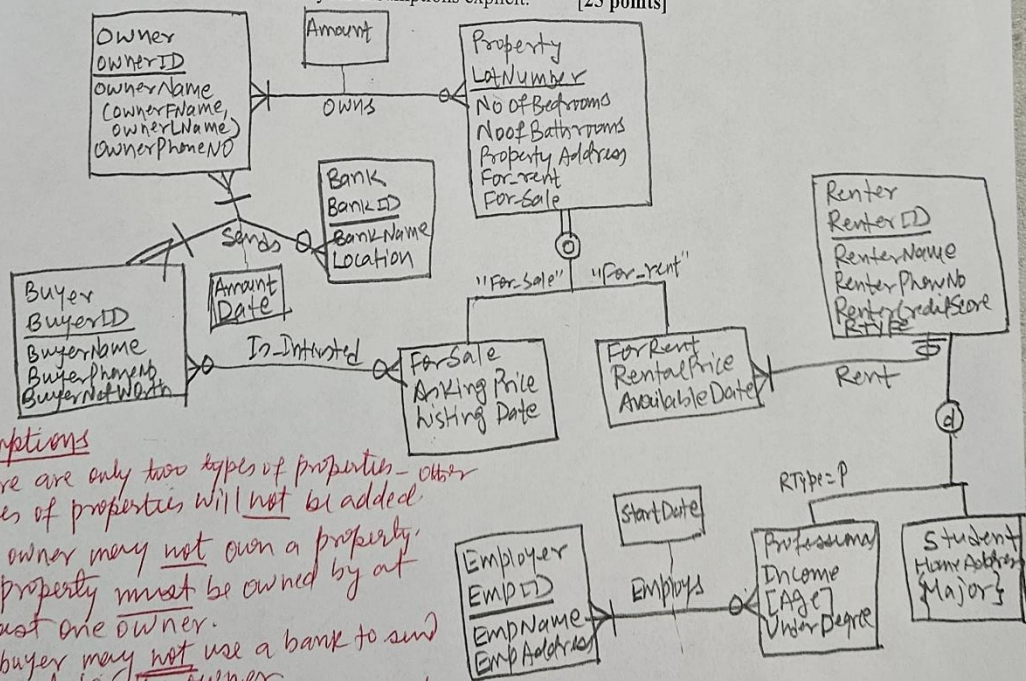
Designer: DesignerEID, TerminalDegree [DesignerEID is also FK to Employee]

Repair: RepairEID, LastDiploma, DiplomaDate [RepairEID is also FK to Employee]

EmpManage: EID, ManagerName, EmpNoCount

Fixes: FixesID, SpSportID, RepairEID, FixDate [SpSportID and RepairEID are also FK to SpecificSport and Repair]

1. Draw an EER diagram for the following description. A property management company manages two types of properties – those for sale and those for rent. It is possible for a property to be for both rent and sale. All properties have the following attributes: LotNumber, NoOfBedrooms, NoOfBathrooms and PropertyAddress. An owner can own multiple properties and a property can be owned by multiple owners. The amount that these owners paid for these properties is important to maintain. Owners' attributes include OwnerID, OwnerName (which is a composite attribute containing OwnerFName, OwnerLName) and OwnerPhoneNo. Properties for sale have additional attributes, including AskingPrice and ListingDate. Properties for rent also have additional attributes, including RentalPrice and AvailableDate. Buyers can be interested in zero or more properties for sale and properties for sale can receive interest from zero or more buyers. Renters can rent one or more properties and a property can be rented to zero or one renter. Buyers have the following attributes: BuyerID, BuyerName, BuyerPhoneNo and BuyerNetWorth. Renters have the following attributes: RenterID, RenterName, RenterPhoneNo and RenterCreditScore. Buyers send payments via their banks to the owners. The amount of payment is an important attribute to capture at the relationships level as is the date of payment. Banks have the following attributes: BankID, BankName, BankLocation. Renters are of two types – students and professionals. Other types of renters can also be added later. Students have additional attributes, such as HomeAddress and Majors; Majors is a multivalued attribute. Professionals have additional attributes, such as Income, Age (derived attribute) and UndergradDegree. Professionals must be employed by at least one employer and an employer may employ many professionals. Employers have the following attributes: EmpID, EmpName, EmpAddress. The date on which a professional starts working for an employer is an important attribute to maintain. Make your assumptions explicit. [25 points]



Assumptions

1. There are only two types of properties – other types of properties will not be added.
2. An owner may not own a property.
3. A property must be owned by at least one owner.
4. A buyer may not use a bank to send payment to the owner.
5. A renter may not be a student and a professional at the same time.

Owner: OwnerID, OwnerFName, OwnerLName, OwnerPhoneNo

Bank: BankID, BankName, Location

Buyer: BuyerID, BuyerName, BuyerPhone, BuyerNetWorth

AmountPayment: AmountPaymentID, OwnerID, BankID, BuyerID, AmountDate [OwnerID, BankID, and BuyerID are also FK to Owner, Bank, and Buyer]

Property: LotNumber, NoOfBedrooms, NoOfBathrooms, PropertyAddress, For_rent, For_sale

ForSale: ForSaleLotNumberID, AskingPrice, ListingDate [ForSaleLotNumberID is also a FK to Property]

ForRent: ForRentLotNumberID, RentalPrice, AvailableDate [ForRentLotNumberID is also a FK to Property]

Amount: AmountID, LotNumber, OwnerID, Amount [LotNumber and OwnerID are also FK to Property and Owner]

Renter: RenterID, RenterName, RenterPhoneNo, RenterCreditScore, RType

Student: StudentRenterID, HomeAddress [StudentRenterID is also FK to Renter]

StudentMajor: StudentRenterID, Major [StudentRenterID is also FK to Student]

Professional: ProfessionalID, Income, Age, UndergradDegree

Employer: EmpID, EmpName, EmpAddress

Employs: EmploysID, ProfessionalID, EmpID, StartDate [ProfessionalID and EmpID are also FK to Professional and Employer]

Grading Rubric for Assignment 3

Errors in Creating Tables from the E/R Diagram	Penalty
Primary key and foreign key not underlined (PK should be underlined solid and FK should be underlined dotted)	-1 for each, up to -2
No table created for many-to-many relationships	-2
Incorrect keys for many-to-many relationships	-2
Incorrect conversion of entities and relationships to tables	-2 each, up to -4
Overall Document	
Is the document clear, readable and understandable?	-5 if no