Clinical Trial Database Management System

Conceptual Models (EER and UML)

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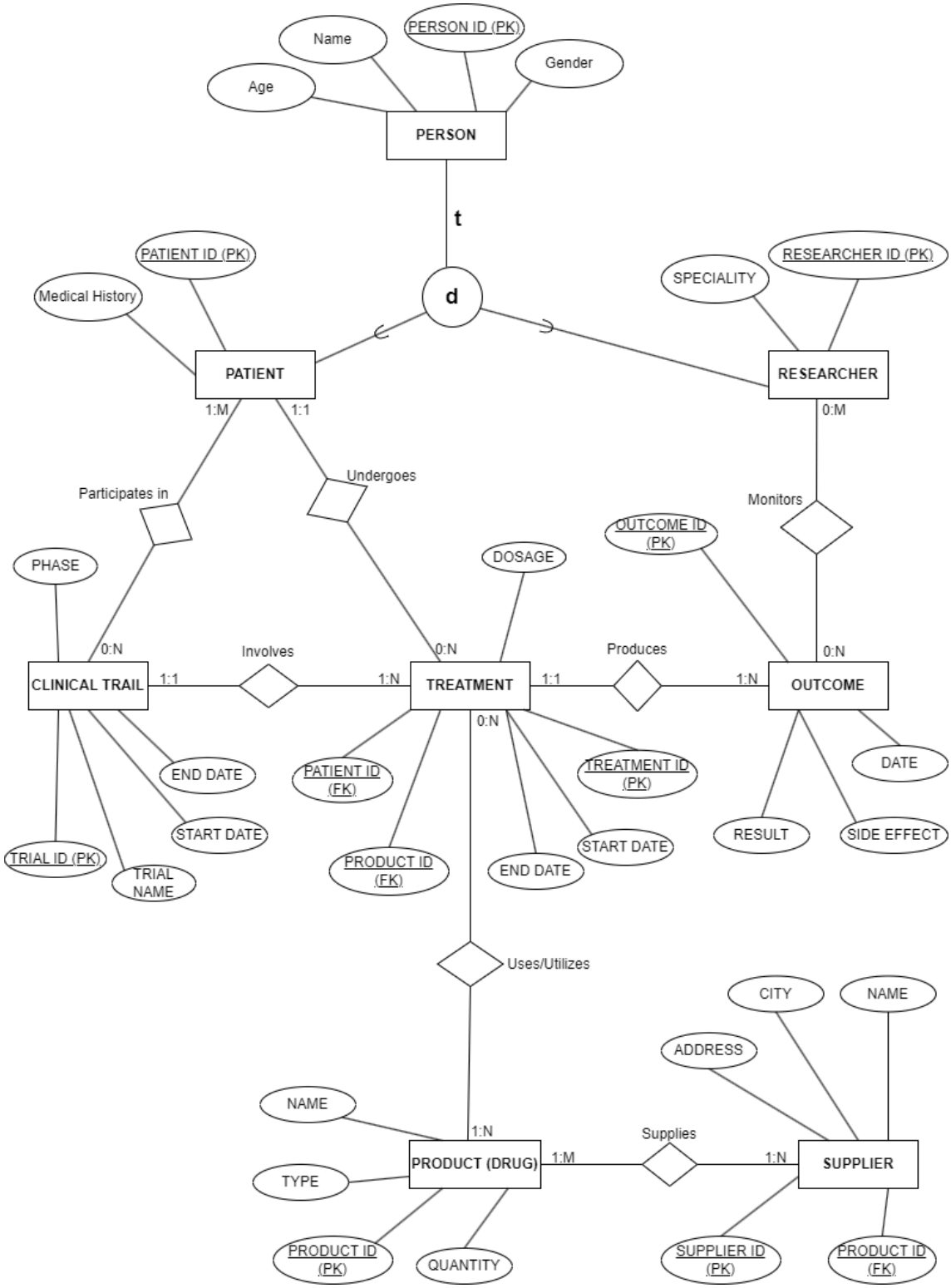
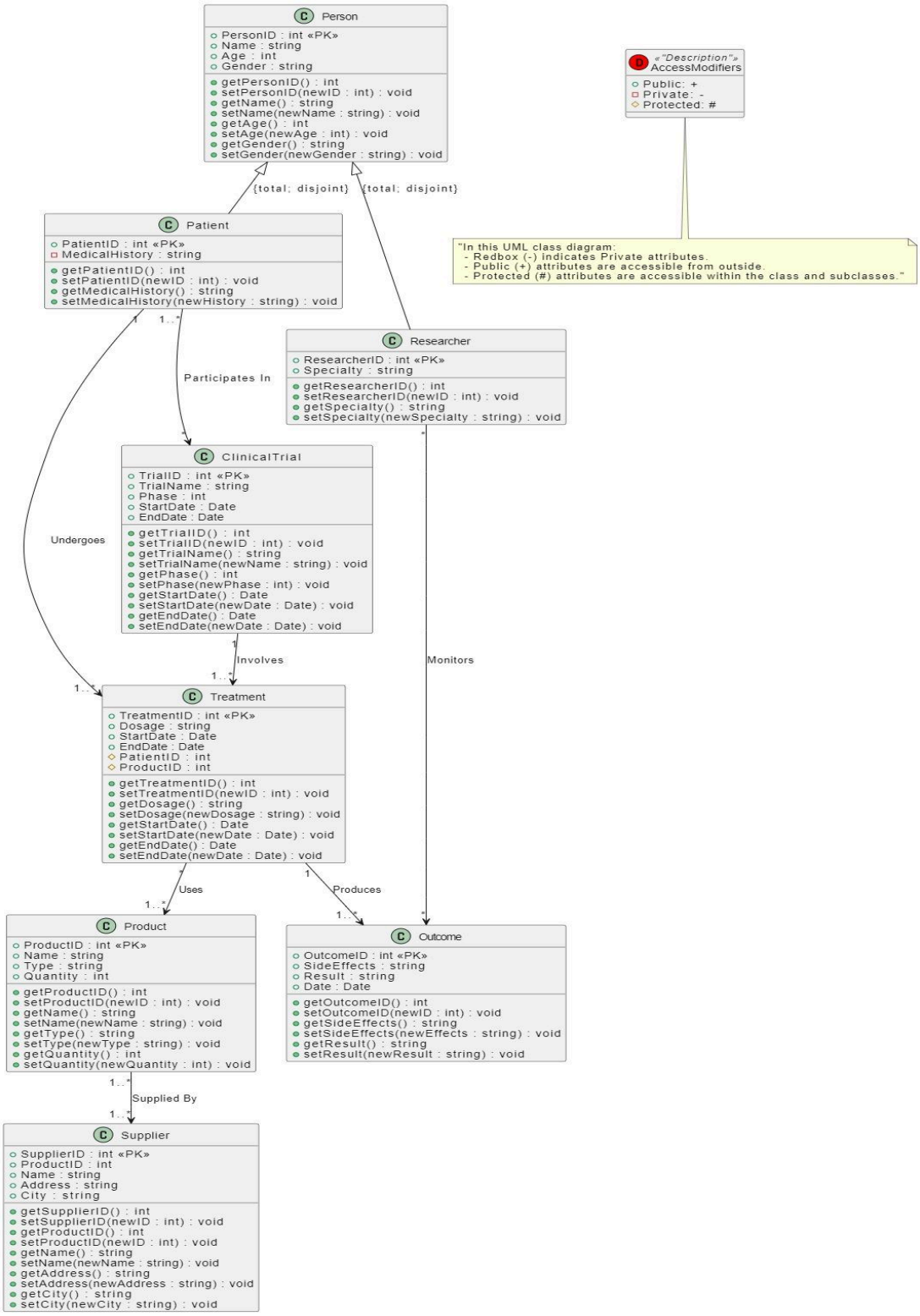
EER MODEL DIAGRAM



UML DIAGRAM


Person
PersonID : int «PK»
Name : string
Age : int
Gender : string
getPersonID() : int
setPersonID(newID : int) : void
getName() : string
setName(newName : string) : void
getAge() : int
setAge(newAge : int) : void
getGender() : string
setGender(newGender : string) : void
«"Description"»
AccessModifiers
Public: +
Private: -
Protected: #
{total; disjoint}
{total; disjoint}
Patient
PatientID : int «PK»
MedicalHistory : string
getPatientID() : int
setPatientID(newID : int) : void
getMedicalHistory() : string
setMedicalHistory(newHistory : string) : void
"In this UML class diagram:
- Redbox (-) Indicates Private attributes.
- Public (+) attributes are accessible from outside.
- Protected (#) attributes are accessible within the class and subclasses."
Researcher
ResearcherID : int «PK»
Specialty : string
getResearcherID() : int
setResearcherID(newID : int) : void
getSpecialty() : string
setSpecialty(newSpecialty : string) : void
Participates In
ClinicalTrial
TrialID : int «PK»
TrialName : string
Phase : int
StartDate : Date
EndDate : Date
getTrialID() : int
setTrialID(newID : int) : void
getTrialName() : string
setTrialName(newName : string) : void
getPhase() : int
setPhase(newPhase : int) : void
getStartDate() : Date
setStartDate(newDate : Date) : void
getEndDate() : Date
setEndDate(newDate : Date) : void
Undergoes
Involves
Monitors
Treatment
TreatmentID : int «PK»
Dosage : string
StartDate : Date
EndDate : Date
PatientID : int
ProductID : int
getTreatmentID() : int
setTreatmentID(newID : int) : void
getDosage() : string
setDosage(newDosage : string) : void
getStartDate() : Date
setStartDate(newDate : Date) : void
getEndDate() : Date
setEndDate(newDate : Date) : void
Uses
Produces
Product
ProductID : int «PK»
Name : string
Type : string
Quantity : int
getProductID() : int
setProductID(newID : int) : void
getName() : string
setName(newName : string) : void
getType() : string
setType(newType : string) : void
getQuantity() : int
setQuantity(newQuantity : int) : void
Outcome
OutcomeID : int «PK»
SideEffects : string
Result : string
Date : Date
getOutcomeID() : int
setOutcomeID(newID : int) : void
getSideEffects() : string
setSideEffects(newEffects : string) : void
getResult() : string
setResult(newResult : string) : void
Supplied By
Supplier
SupplierID : int «PK»
ProductID : int
Name : string
Address : string
City : string
getSupplierID() : int
setSupplierID(newID : int) : void
getProductID() : int
setProductID(newID : int) : void
getName() : string
setName(newName : string) : void
getAddress() : string
setAddress(newAddress : string) : void
getCity() : string
setCity(newCity : string) : void

ENTITY AND ATTRIBUTES:

1. **Patient:** Includes Patient ID, Name, Age, Gender, Medical History.
2. **Researcher:** Includes Researcher ID , Speciality, Name, Age, Gender.
3. **Clinical Trial:** Includes Trial ID, Trial Name, Phase, Start Date, End Date.
4. **Treatment:** Includes Treatment ID, Product ID (Drug used), Dosage, Start Date, End Date, Patient ID.
5. **Outcome:** Includes Outcome ID, Side Effects, Result, Date.
6. **Product (Drug):** Includes Product ID, Name, Type, Quantity.
7. **Supplier:** Includes Supplier ID, Name, Address, City, Product ID (Product Supplied).

RELATIONSHIP BETWEEN ENTITIES:

1. **Patient Participates in Clinical Trial**: A patient can participate in multiple clinical trials.
2. **Clinical Trial Involves Treatment**: A clinical trial can involve multiple treatments.
3. **Patient Undergoes Treatment**: A patient undergoes one or more treatments.
4. **Treatment Produces Outcome**: A treatment can result in multiple outcomes.
5. **Treatment Uses Product (Drug)**: A treatment uses multiple products (drugs).
6. **Product Supplied by Supplier**: A product can be supplied by multiple suppliers.
7. **Researcher Monitors Outcome**: A researcher can monitor multiple outcomes.

CARDINALITIES BETWEEN ENTITIES:

1. A patient can participate in zero to many clinical trials; each clinical trial must involve at least one patient.
2. A clinical trial can include one to many treatments; each treatment must belong to exactly one trial.
3. A patient can undergo zero to many treatments; each treatment is assigned to exactly one patient.
4. A treatment can have one to many outcomes; each outcome must be tied to exactly one treatment.
5. A product (drug) can be used in zero to many treatments; each treatment must use at least one product.
6. A product (drug) can be supplied by multiple, but at least one supplier is mandatory; a supplier can provide multiple but at least one product.
7. A researcher can monitor zero to many outcomes; each outcome can have multiple researchers monitoring it.