CS631 ASSIGNMENT 2 – DAVID GOMEZ CAMARGO

1. BASIC TERM DEFINITIONS AND EXAMPLES:

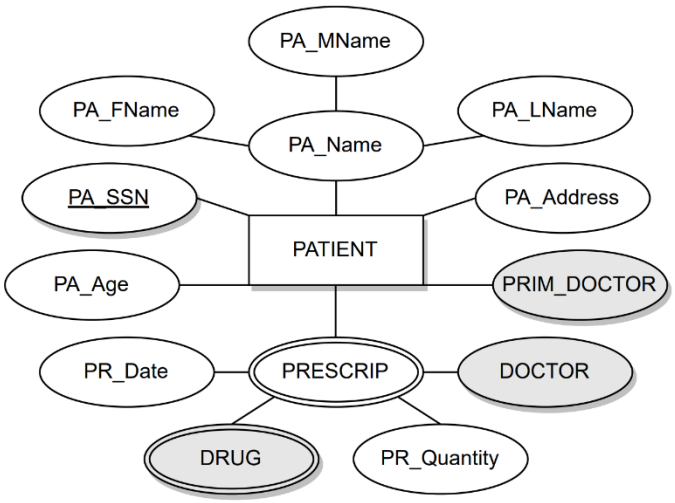
- **Entity:** An entity is a thing in the real world. It may be an object with a physical existence or an object with a conceptual existence. For example, a man, a building, a company, a school etc.
- **Weak entity:** Weak entity is described as an entity that cannot be uniquely identified by its characteristics or attributes alone at only exits when owned by another one. For example, the dependents of an employee.
- **Attribute:** Attribute is a property of an object or an entity. For example, a car has a color, a brand name, a model number, an owner's name, type, etc.
- **Attribute value:** Attribute value is the real data of a particular entity for each of its attributes. In other word, associated with each real-world entities are certain attributes that describe that entity, the value of these attributes for any entity is called attribute value. For example, attribute value of first_name of attribute of student_name can be David.
- **Relationship instance:** Each relationship instance is an association of entities, where the association includes exactly one entity from each participating entity type. Each such relationship instance represents the fact that the entities participating are related in some way in the corresponding situation. For example, in relationship type works_for associates one employee and department, which associates each employee with the department for which the employee works. Each relationship instance in the relationship set works_for associates one employee and one department.
- **Composite attribute:** Composite attribute is an attribute that can be divided into smaller subparts, which represent more basic attributes with dependent meanings, is called a composite attribute. For example, the Address attribute consists of several domains such as house number, street number, city, country, etc.
- **Multivalued attribute:** A multi-valued attribute can have more than one value at one time. For example, address of a person is a multi-valued attribute since a person can have more than one address such as Present and Permanent address. Upper and lower bounds may be placed on the number of values in a multi-valued attribute. For example, a bank may limit the number of addresses recorded for a single customer to two.
- **Derived attribute:** If an attribute's value can be determined from the values of other attributes, then the attribute is derivable, and is said to be a derived attribute. Example: consider attributes for an employee: birth date, current age; here, age is derivable by subtracting the birth date from the current date.
- **Key attribute:** Each real-world entity is unique in itself. There are certain attributes whose value is different for all similar type of entities. Those attributes are called key attributes. These attributes are used to specify uniqueness constraint in relation. For example, a house has a registration number. This is a key of all entity of house.
- **Value set (domain):** There is a range of values from which a particular attribute can take value for an attribute of a real world entity. For example, salary attribute of an employee

must have value, let, from $2000 to $12000, and then all integers in range $2000 to $12000 are domain of attribute salary.

2. PHARMACEUTICAL COMPANY

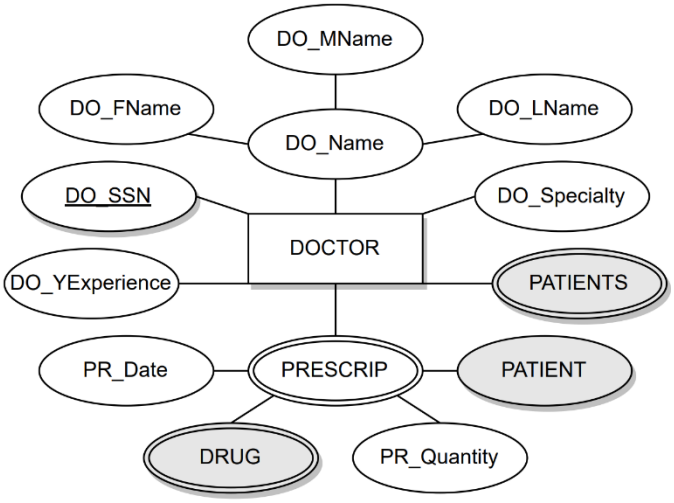
a) PATIENT

Grey attributes will later represent relationships with said entity.



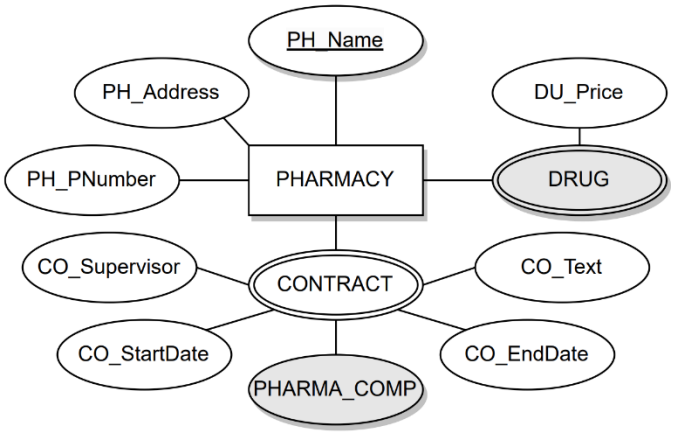
- **COMPOSITE ATTRIBUTES:** PA_Name and Prescription.
- **KEY ATTRIBUTES:** PA_SSN.
- **MULTIVALUED ATTRIBUTES:** Prescription and Drug.
- **REGULAR ATTRIBUTE:** PA_Address, PA_FName, PA_MName, PA_LName, PA_Age, PR_Date, PR_Quantity and Doctor.

b) DOCTOR



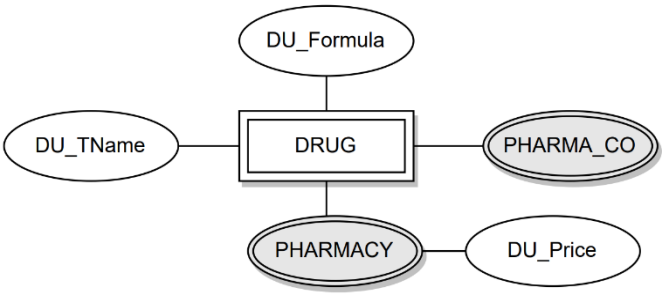
- **COMPOSITE ATTRIBUTES:** DO_Name and Prescription.
- **KEY ATTRIBUTES:** DO_SSN.
- **MULTIVALUED ATTRIBUTES:** Prescription, Drug and Patients.
- **REGULAR ATTRIBUTE:** DO_Address, DO_FName, DO_MName, DO_LName, DO_YExperience, DO_Specialty, PR_Date and PR_Quantity.

c) PHARMACY



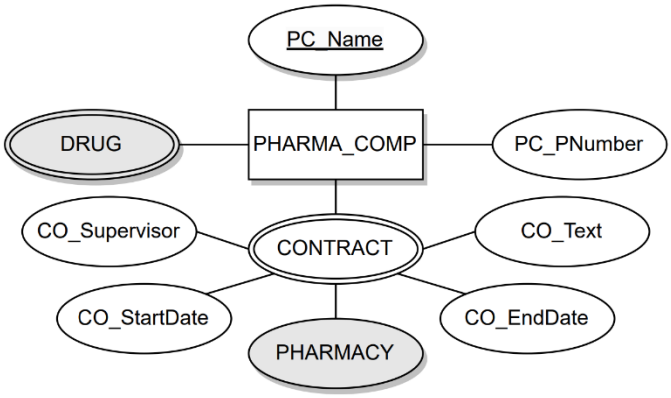
- **COMPOSITE ATTRIBUTES:** Contract and Drug.
- **KEY ATTRIBUTES:** PH_Name.
- **MULTIVALUED ATTRIBUTES:** Contract and Drug.
- **REGULAR ATTRIBUTE:** DU_Price, CO_Text, CO_EndDate, Pharma_Comp, CO_StartDate, CO_Supervisor, PH_PNumber and PH_Address.

d) DRUG



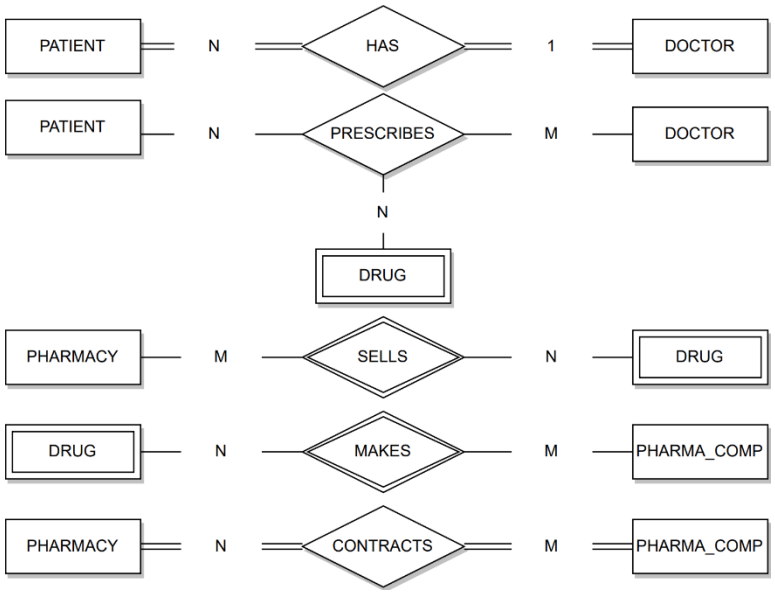
- **COMPOSITE ATTRIBUTES:** Pharmacy.
- **MULTIVALUED ATTRIBUTES:** Pharmacy, Pharma_CO.
- **REGULAR ATTRIBUTE:** DU_Price, DU_Formula and DU_TName.

e) PHARMACEUTICAL COMPANY



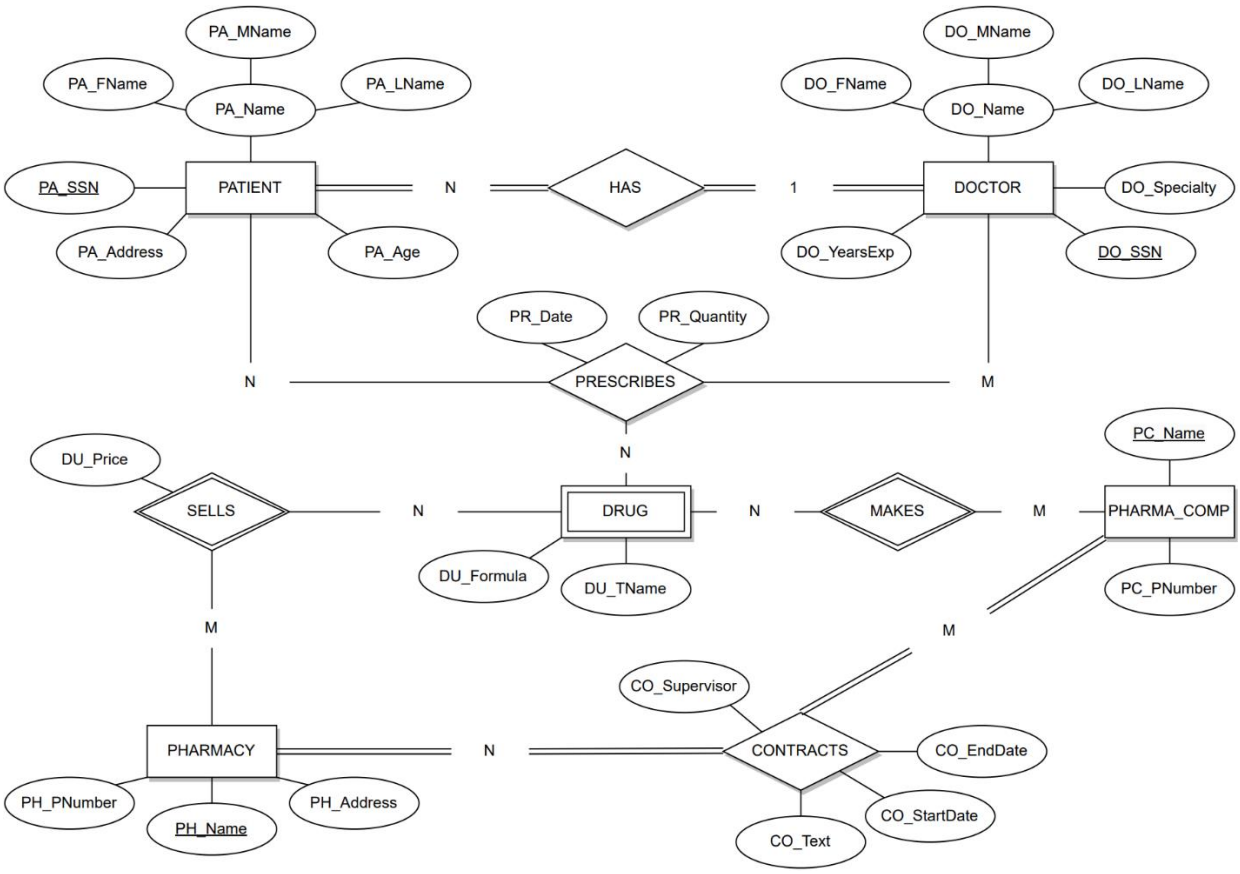
- COMPOSITE ATTRIBUTES: Contract.
- KEY ATTRIBUTES: PC_Name.
- MULTIVALUED ATTRIBUTES: Contract and Drug.
- REGULAR ATTRIBUTE: CO_Text, CO_EndDate, Pharmacy, CO_StartDate, CO_Supervisor and PC_PNumber.

f) RELATIONSHIPS



- REGULAR RELATIOSHIP: Has and Contract.
- IDENTIFIYING RELATIOSHIP: Sells and Makes.
- TERNARY RELATIOSHIP: Prescribes.

g) ER DIAGRAM


PA_MName
PA_FName
PA_Name
PA_LName
PA_SSN
PATIENT
N
HAS
1
DOCTOR
DO_MName
DO_FName
DO_Name
DO_LName
DO_Specialty
PA_Address
PA_Age
DO_YearsExp
DO_SSN
PR_Date
PR_Quantity
PRESCRIBES
N
M
N
DU_Price
SELLS
N
DRUG
N
MAKES
M
PHARMA_COMP
PC_Name
DU_Formula
DU_TName
PC_PNumber
M
M
CO_Supervisor
PHARMACY
N
CONTRACTS
CO_EndDate
PH_PNumber
PH_Name
PH_Address
CO_StartDate
CO_Text