

1. ER Diagram - Cut and paste the ER or UML diagram from whatever tool that you decide to use.
 2. Overview - An overview of the entire model (from one to four paragraphs) presenting the model, design decisions, and general assumptions.
 3. Detailed description of one entity type - Discuss in detail one entity type, including its attributes.
 4. Detailed description of one relationship type - Discuss in detail one entity type.
 5. List of model requirements (see below for structure, each deliverable should be addressed). List and discuss how each deliverable is modeled.
 6. Physical Schema - The physical schema that results from mapping the ER diagram to relations, including any assumptions in the mapping. The Schema can be a list of create table statements. You may include a screen dump of your physical schema if your tool supports it.
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Our ER diagram is about a hospital. The main entities modeled by our diagram is the hospital itself, employees, ambulances, and patients. Employees are subdivided via inheritance. An employee can be either a doctor or a nurse (Not both). A doctor can be a physician and/or a surgeon. The main relationships we wanted to model were employs, visits, and serves. These link the hospital and the employees, the patients and the hospitals, and the ambulance and the hospital, respectively. We designed inheritance with a relationship in-between parent and child entities. The relationship indicates by name if the inheritance is disjoint or overlapping. For ternary relationships we had to create an attribute to take the place of the relationship, and create sub relationships between the entities and the main relationship. We had to use crow's feet notation, but that presented no problems with our design.

The ambulance entity is a simple entity. An ambulance only relates to a hospital and has simple attributes. An ambulance can serve many hospitals and each hospital can have many ambulances that serve it, so the relationship is many to many. Each ambulance has a unique vehicle ID that is the key. The hospital may also want to know additional information about their shared fleet of ambulances such as the mileage, and year (for upgrades) and the make and model. This way the hospitals can see which ambulances have the best longevity.

Aides is a relationship between doctors and nurses. This is a many to many relationship with partial participation on both sides. A nurse can aid many doctors or none at all. A doctor can receive aid from many nurses or none at all.

- 1) A many-one relationship type with total participation on the one side
Hospital to employee. A hospital can have many employees and every employee must be employed by one hospital.
- 2) A many-many relationship type
Hospital to ambulance. One hospital can have zero to many ambulances. One ambulance can service many hospitals.
- 3) A ternary relationship type

A visit must consist of one hospital, one doctor, and one patient. A hospital, a doctor, and a patient can have many visits

4) A disjoint inheritance hierarchy

A doctor and a nurse are both employees. Doctors and nurses have all of the attributes of an employee, but an employee can only be a doctor or a nurse.

5) An overlapping inheritance hierarchy

A doctor can be a physician, an operator, or both. Physicians and operators have all of the attributes of a doctor.

6) A composite attribute

The address of the hospital contains a street number, a state, and a zipcode.

7) A multivalued attribute

A patient can have multiple phone numbers: ie work, cell, home.

8) A one-one relationship type with total participation on at least one side

If a patient is under 18 they must have another patient be their legal guardian. A patient over 18 does not need to be a guardian and can only be a guardian to one patient.

9) A one-many relationship type with partial participation on both sides

A nurse can help many doctors or none at all. A doctor can be helped by many nurses or none at all.

10) A relationship with an attribute(s)

A doctor's second opinion can either confirm or not confirm the first doctor's opinion. The information is stored on the relationship table.

11) A weak-entity type

A prescription must be made by a doctor. Without that it is not unique or identifiable so the prescriptions borrows the doctor's id.

12) A reflexive relationship type

A doctor can receive or give a second opinion. The two parties involved in a second opinion are both doctors.



