

### **Goal:**

The aim of the practice is for students to be able to translate a perception of the real world into a collection of objects (entities) and relationships.

### **Learning outcomes and content covered**

At the end of the practice, students must be able to design standard logic models by interpreting the entity-relationship diagrams. You will perform the following tasks:

- Identifies, selects and sorts the information that the database should contain, according to user requirements.
- Analyze the information to be represented and decide the design for the database, according to the user's requirements.
- Defines entities: name, attributes, attribute domains, and key fields.
- Define relationships: name, attributes, and degree.
- Performs the logical design of the database using the Entity-Relationship model.
- Uses graphical tools to represent logical design

### **Tasks to perform**

#### **Design the Entity Relationship model of the following statement:**

We want to address the environmental problems of toxic and hazardous waste, and the incorrect management, which causes significant damage to the environment and human health.

The information to be considered corresponds from the time a waste is produced by a center or production company, until the waste is in a safe place. The waste receives a special treatment such as incineration, storage in safety tanks, etc. It is desired to consider the information of the producers of waste, the waste, the companies that transport the waste until the safe places and the transfer of the waste, taking into account the type of transport, the container, etc.

To build the Entity-Relationship model, we will take into account that a producing company produces a large number of waste, consisting of a variable number of chemical constituents.

Waste can be produced with the same number of chemical constituents but different quantities of those.

Production companies assign a unique code to the waste they produce, which allows them to differentiate different productions from the same products. In addition, more than one company can assign the same code to the waste it produces.

The waste can be transferred in its entirety (total amount of it) or in parts, or never be transferred. In each waste shipment is sent to a single destination.

More than one transport company can take part in a single transfer, using the same or different transport system. The kilometers and the cost of the transport must be stored.

The waste is transferred in a type of packaging determined by the production company and which does not vary throughout its transfer.

It is interesting to know the date of arrival at the destination and the treatment of the waste once it arrives at the destination.

For safety reasons, it is considered that only a waste from a production company can be transferred in a single transfer.

### **Correction criteria**

- Total score: 100.
  - Entity definition: 15
  - Relationship and cardinality definition: 20
  - Attributes definition (entities and relationships): 15
  - Diagram: 50

### **Document**

The document must contain a written specification for the entities, their attributes, and the relationship between each entity. Also, it must contain the ER diagram of the given scenario.