ENTITY RELATIONSHIP DIAGRAMS

Week 5 – Sample solutions

EXERCISE 1 - JANUARY PAPER 2013-2014 QUESTION

➢**Requirements**

➢The database must store book, author, publisher and warehouse information.

➢For every book you must capture the title, isbn, year and price information. The isbn value is unique for a book.

➢For every author you must store an id, name, address and the URL of their homepage. Each author can write many books, and each book can have many authors, for example.

➢For every publisher you must store an id, name, address, phone number and an URL of their website.

➢Books are stored at several warehouses, each of which has a code, address and phone number.

➢A book has only one publisher.

➢The warehouse stocks many different books. A book may be stocked at multiple warehouses.

➢The database records the number of copies of a book stocked at various warehouses.

➢Design an ER diagram for such a bookstore. Your ER diagram must show entities, attributes and the relationships between entities. [Document any assumptions that you make] (16 marks)

EXERCISE 1 - JANUARY PAPER 2013-2014 SAMPLE SOLUTION
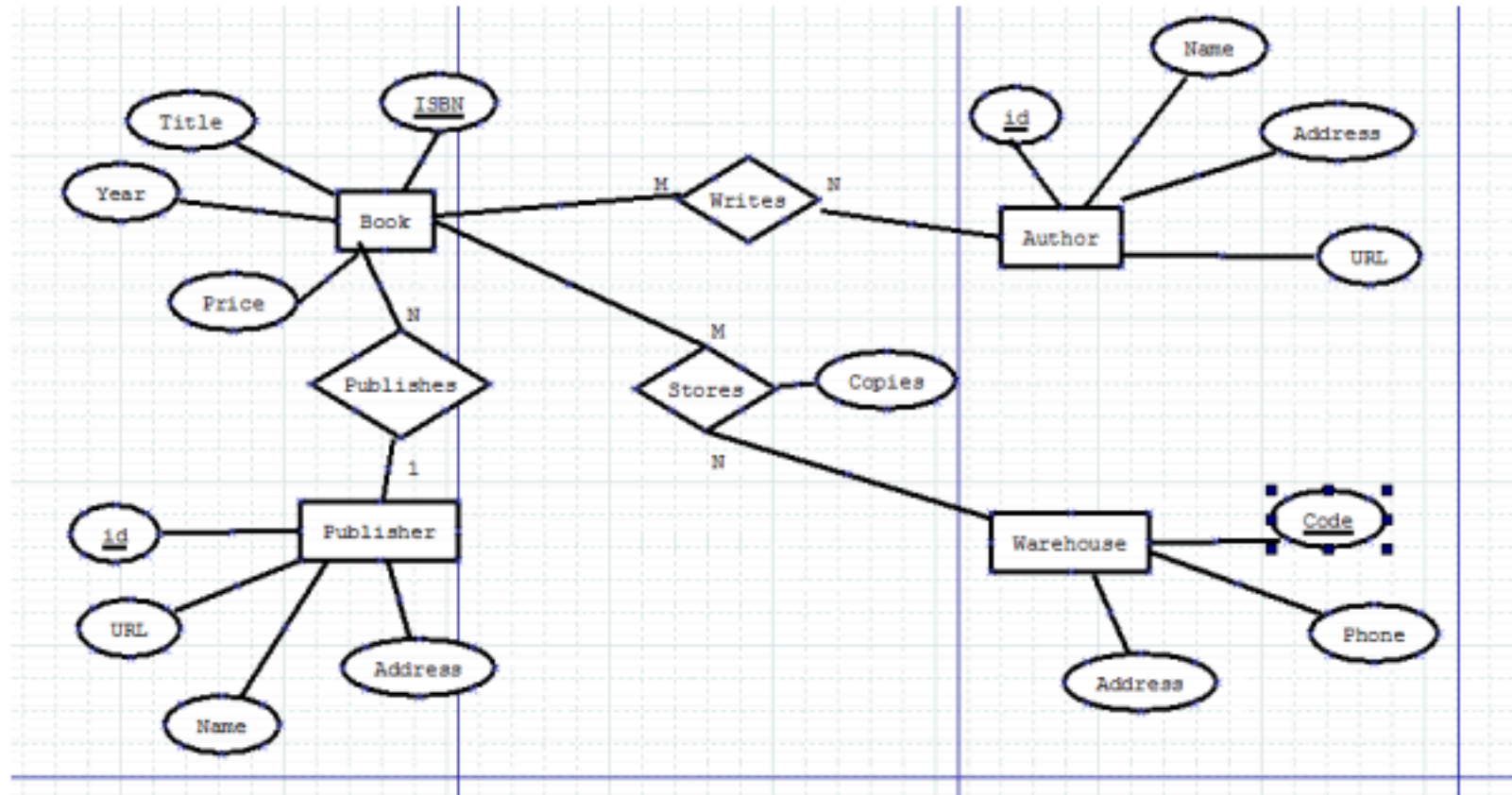
EXERCISE 2 - AUGUST 2014: EXAM QUESTION

➢United Direct Artists (UDA) is an insurance broker that specialise in insuring paintings for galleries. You are required to design a database for this company.

➢The database must store painters, paintings, and galleries information.

➢Painters have a unique number, Name, and phone number

➢Paintings have unique number, title and price

➢Galleries have unique number, owner, phone number, commission rate and address

➢A painting is painted by a particular artist, and that painting is exhibited in a particular gallery. A gallery can exhibit many paintings, but each painting can be exhibited in only one gallery. Similarly, a painting is painted by a single painter, but each painter can paint many paintings.

EXERCISE 2 - AUGUST 2014: SAMPLE SOLUTION
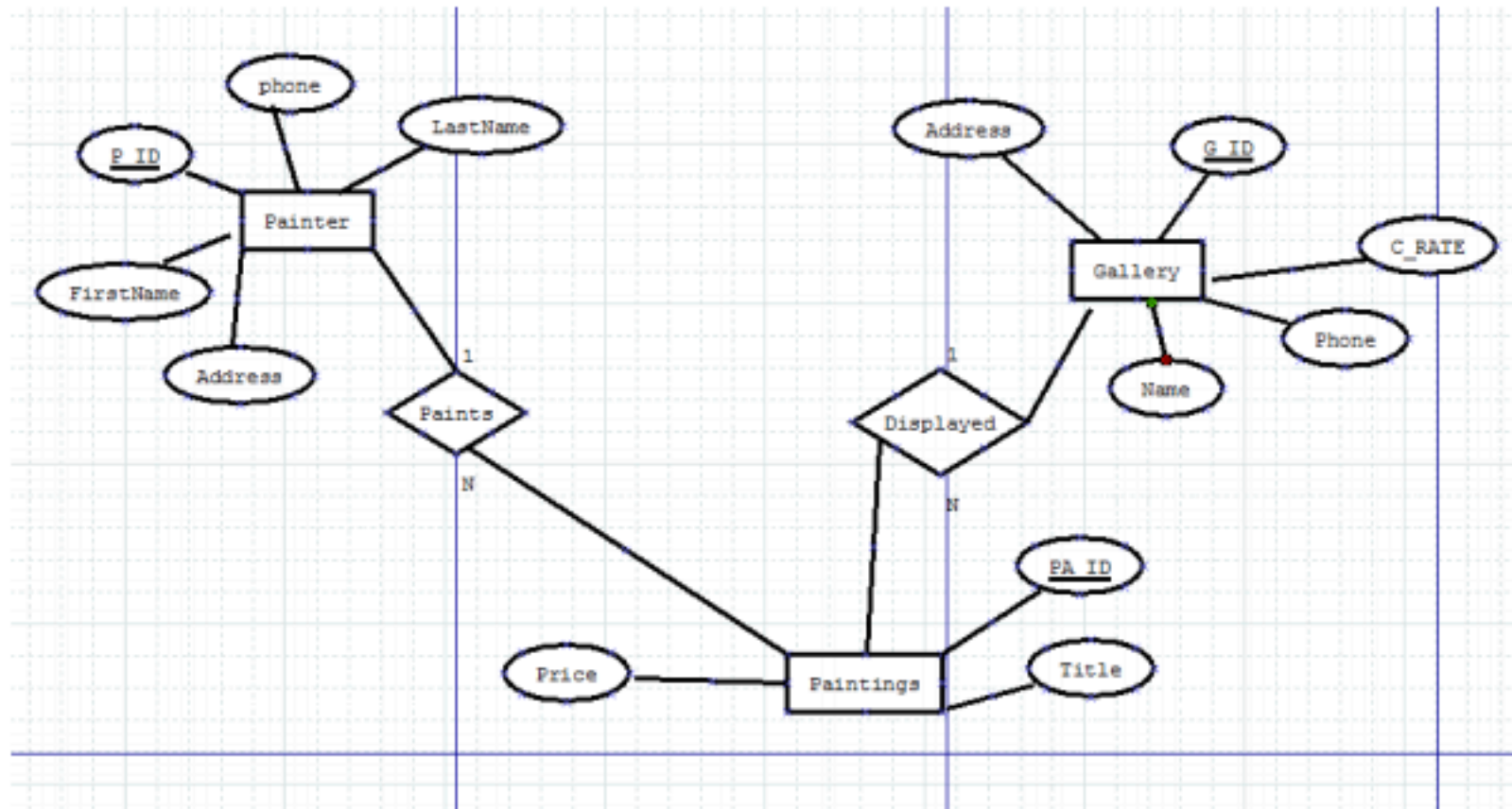
EXERCISE 3 – MORE DETAILED EXAMPLE…

➢ Book Example: Fundamentals of Database Systems (Elmasri & Navathe)

➢Company Database

COMPANY DATABASE-QUESTION

- The company is organized into departments. Each department has a unique name, a unique number, and a particular employee who manages the department. We keep track of the start date when that employee began managing the department. A department may have several locations.

- A department controls a number of projects, each of which has a unique name, a unique number, and a single location.

- We store each employee's name, Social Security number,[2] address, salary, sex (gender), and birth date. An employee is assigned to one department, but may work on several projects, which are not necessarily controlled by the same department. We keep track of the current number of hours per week that an employee works on each project. We also keep track of the direct supervisor of each employee (who is another employee).

- We want to keep track of the dependents of each employee for insurance purposes. We keep each dependent's first name, sex, birth date, and relationship to the employee.
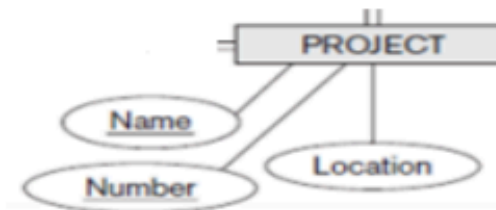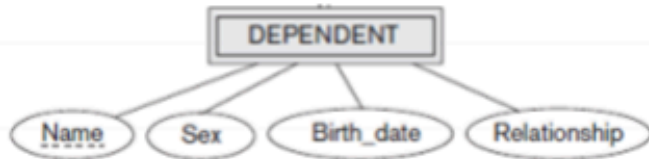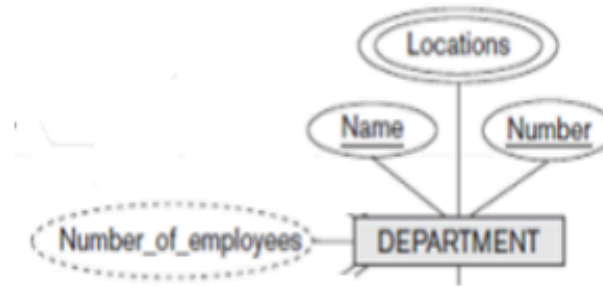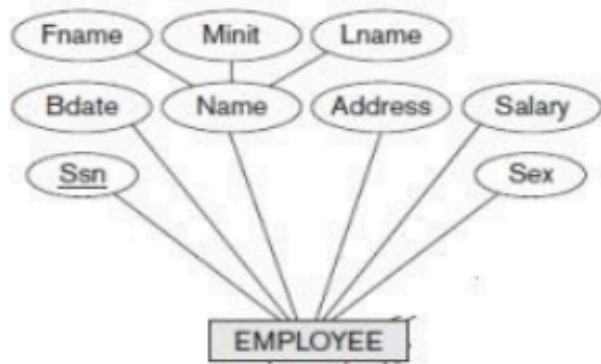
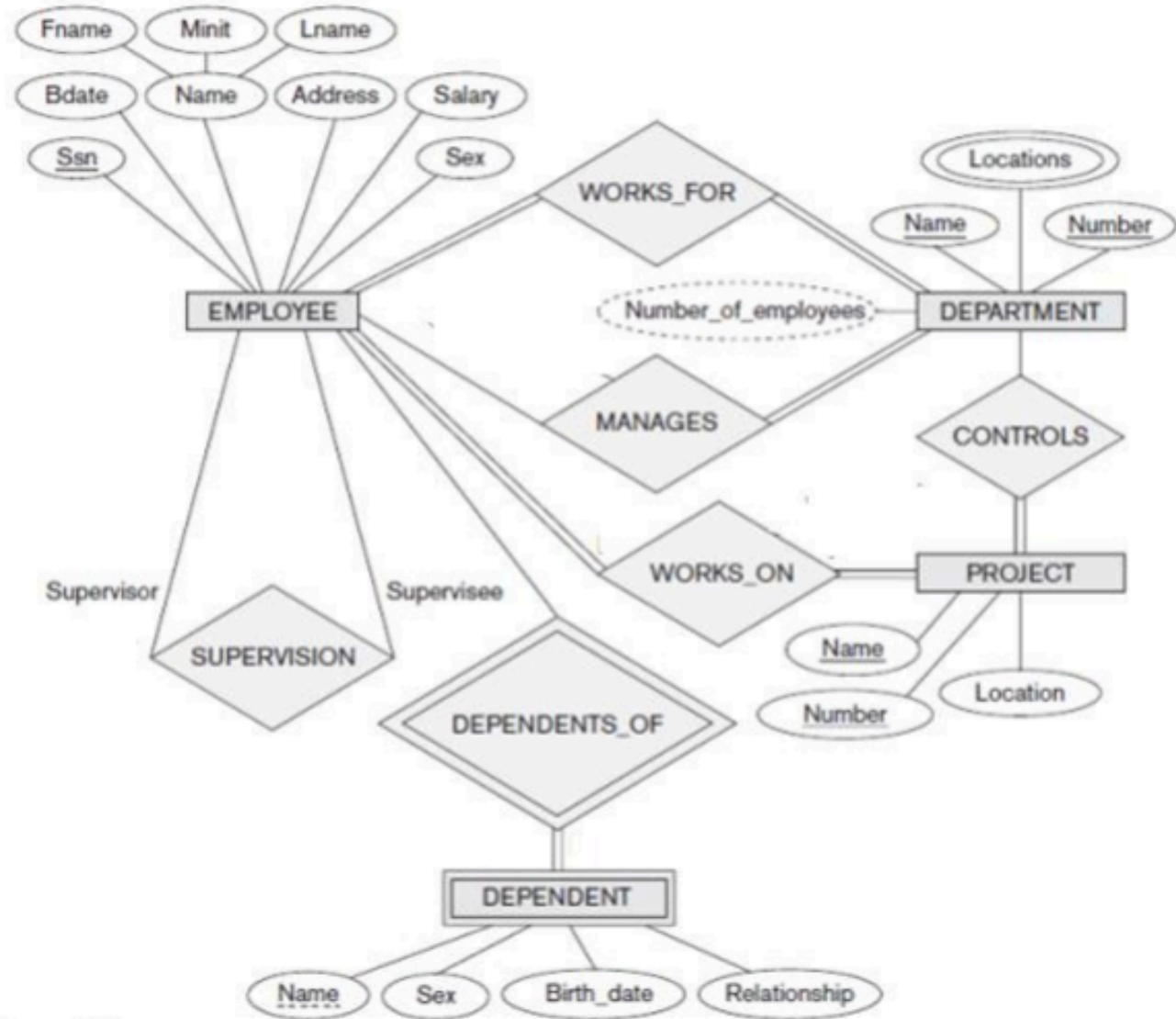## REPRESENT THE ABOVE IN A ER DIAGRAM.

IN STEPS…
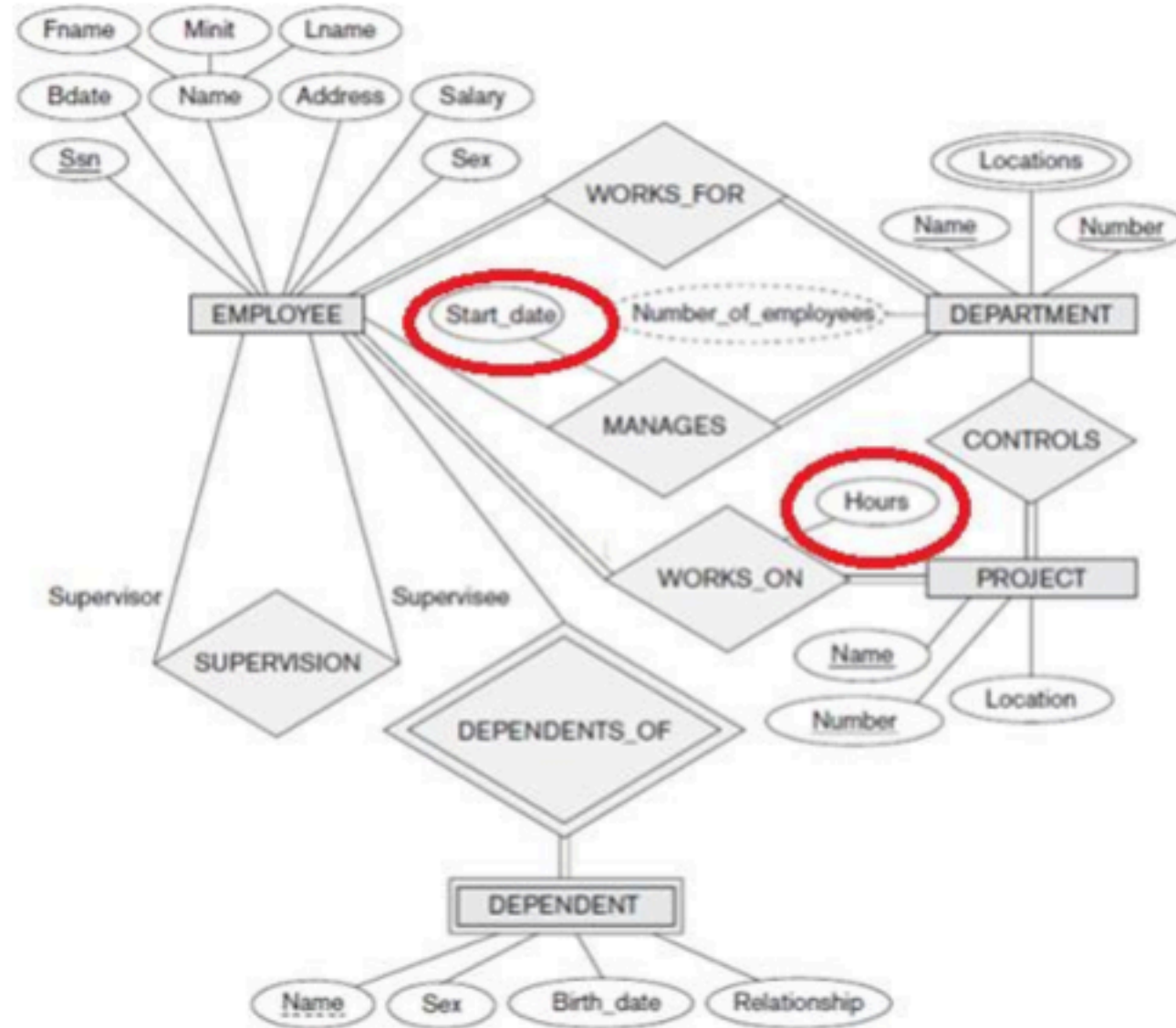# WHAT ARE THE ENTITIES?
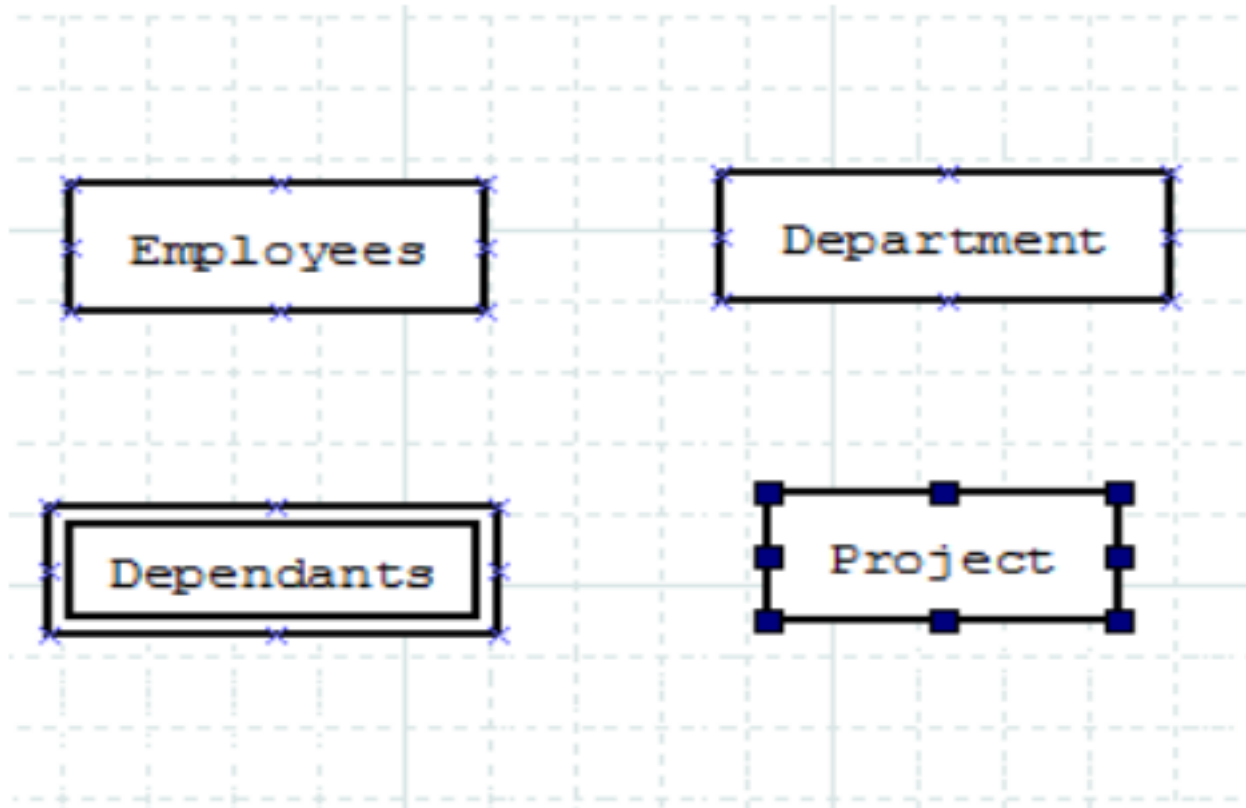
WHAT ARE THE ATTRIBUTES

WHAT ARE THE RELATIONSHIPS

WHAT ARE THE RELATIONSHIPS ATTRIBUTES

WHAT IS THE MAXIMUM CARDINALITY OF THE RELATIONSHIPS