Class 3: ER diagram

Name: ID: Date:

**Objective:**  
The goal of this activity is to practice designing schema diagrams based on given requirements. Focus on practicing rather than achieving perfect accuracy—you will not lose points for mistakes.

**Guidelines:**

* Feel free to ask questions, refer to lecture notes, discuss with your peers (for this in-class activity, you can blame your peers for your mistakes!!).
* However, use references as a guide rather than copying solutions directly.

1. Design a **database schema** based on the following **requirements:**

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 several projects, each of which has a unique name, a unique number, and a single location.

The database will store each employee’s name, social security number, 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. It is required to keep track of the current number of hours per week that an employee works on each project, as well as the direct supervisor of each employee (who is another employee).

The database will keep track of the dependents of each employee for insurance purposes, including each dependent’s name, sex (gender), birth date, and relationship to the employee.

List the entities, attributes, attribute types and your explanation:

|  |  |  |
| --- | --- | --- |
| **Entity Types** | **Attributes (Type:** Key, Composite, multivalued**)** | **Explanation** |
| Department  Employee | Name (Key),  Name (composite), Works\_on (multivalued), | Unique name is a key attribute,  Name is composed of F\_name and L\_name, |

**Complete the diagram with entities and attributes:**

EMPLOYEE

**List relationships and types:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Relationship type** | **Relation between** | **Cardinality ratio and**  **Explanation** | | **Participation and**  **Explanation** | |
| 1. Manages | 1. EMPLOYEE 2. DEPARTMENT | 1:1 | One employee manages one department and vice versa. | P:T | Some employees manage, but all departments are managed. |

**Complete the diagram with entities, relations and relation attributes:**

EMPLOYEE

DEPARTMENT

MANAGES

1

1