***What You're Aiming For***

***The objective is to design the Entity-Relationship (ER) model for the employee participation information system, which manages the assignment of employees to various projects within the organization.***

***Instructions***

***To build this model, consider the following details:***

* ***Each employee is characterized by their number (Num\_E), name, position, salary, and the department they are assigned to. An employee can only work in one department.***
* ***A department is identified by a number (Num\_S) and is characterized by its label, and the name of its manager. A department can have multiple employees.***
* ***A project is identified by a project number (Num\_P) and is characterized by its title, start date, end date, and the department to which it is assigned. A project is specific to one department, and a department can have multiple projects.***

***Additionally, the role of each employee in a project must be tracked.***

***Tasks***

1. ***Identify Elements:***
   * ***Identify entities, attributes, and relationships based on the provided information.***
2. ***Specify Relationships:***
   * ***Clearly define all relationships' cardinalities (e.g., one-to-many, many-to-many).***

1. Entities and Attributes

i. Entity: Employee

* Primary Key: Num\_E
* Attributes:
  + Name
  + Position
  + Salary
* Relationship: Assigned to one Department
  + Participates in many Projects

ii. Entity: Department

* Primary Key: Num\_S
* Attributes:
  + Label
  + ManagerName
* Relationships:
  + Has many Employees
  + Has many Projects

iii. Entity: Project

* Primary Key: Num\_P
* Attributes:
  + Title
  + StartDate
  + EndDate
* Relationships:
  + Assigned to one Department
  + Involves many Employees (each with a specific Role)

2. Relationship Cardinalities

| Relationship | Entities Involved | Cardinality | Notes |
| --- | --- | --- | --- |
| Works\_For | Employee → Department | Many-to-One (N:1) | Each employee works in one department |
| Has\_Employees | Department → Employee | One-to-Many (1:N) | A department has many employees |
| Assigned\_To | Project → Department | Many-to-One (N:1) | Each project is assigned to one department |
| Has\_Projects | Department → Project | One-to-Many (1:N) | A department can manage multiple projects |
| Participation | Employee ↔ Project | Many-to-Many (M:N) | With attribute Role |