



Entities and Attributes:

1. Department

Attributes: Department Name, Web Address, Phone Number, Email Address, Mailing Address: Street Address, City, State, Zip Code.

2. Building

Attributes: Building Name, Number of Rooms, Number of Floors

3. Rooms

Attributes: Room Number, Area, Phone Numbers, Max Capacity (Conference Rooms)

4. Employee

Attributes: Employee ID (Primary Key), Name, Year of Birth, Email Addresses

5. Measurement

Attributes: Date, Time, Sound Value, Temperature Value, Light Value

Relationships:

1. Department Entity Relationships:

- D-E: Department-Employee Relationship (One-to-Many)
- Each department can have multiple employees (One department can have many employees).
- D-B: Department-Building Relationship (Not mentioned in the design description, but can assume a relationship where a department is associated with a building.)
- Each department may be located in a building (One department can be in one building).

2. Building Entity Relationships:

- B-R: Building-Room Relationship (One-to-Many)
- Each building can have multiple rooms (One building can have many rooms).

3. Room Entity Relationships:

- R-E: Room-Employee Relationship (Many-to-Many)
- Each room can have multiple employees, and each employee can work in multiple rooms (Many employees can work in many rooms).
- R-M: Room-Measurement Relationship (One-to-Many)
- Each room can have multiple measurement records (One room can have many measurements).

4. Employee Entity Relationships:

- E-D: Employee-Department Relationship (Many-to-Many)
- Each employee can work in multiple departments, and each department can have multiple employees (Many employees can work in many departments).

5. Measurement Entity Relationships:

- M-R: Measurement-Room Relationship (Many-to-One)
- Each measurement is associated with one room (Many measurements are associated with one room).

In the explanations:

- "One-to-Many" means one entity is associated with many instances of another entity.
- "Many-to-One" means many entities are associated with one instance of another entity.
- "Many-to-Many" means many entities can be associated with many instances of another entity.