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# DBMS LAB 5 - ER DIAGRAM

**WHAT IS AN ER DIAGRAM ?**

An Entity–relationship model (ER model) describes the structure of a database with the help of a diagram, which is known as Entity Relationship Diagram (ER Diagram). An ER model is a design or blueprint of a database that can later be implemented as a database. The main components of the E-R model are: entity set and relationship set.

An ER diagram shows the relationship among entity sets. An entity set is a group of similar entities and these entities can have attributes. In terms of DBMS, an entity is a table or attribute of a table in a database, so by showing the relationship among tables and their attributes, the ER diagram shows the complete logical structure of a database.

Here are the geometric shapes and their meaning in an E-R Diagram:

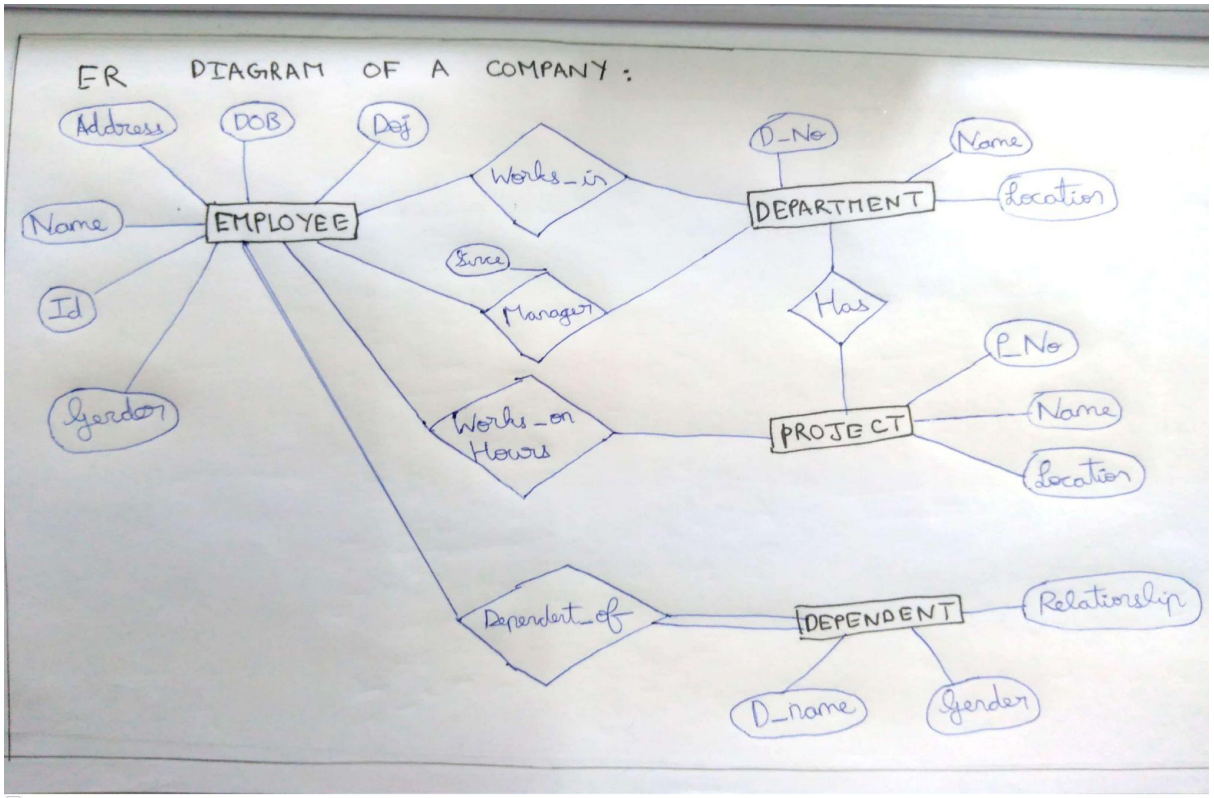
**Rectangle:** Represents Entity sets.

**Ellipses:** Attributes

**Diamonds:** Relationship Set
**Lines:** They link attributes to Entity Sets and Entity sets to Relationship Set
**Double Ellipses:** Multivalued Attributes
**Dashed Ellipses:** Derived Attributes
**Double Rectangles:** Weak Entity Sets
**Double Lines:** Total participation of an entity in a relationship set

**ER DIAGRAM OF A COMPANY :**
The ER diagram of a Company has the following description :

- Company has several departments.
- Each department may have several locations.
- Departments are identified by a name, D_no, Location.
- A Manager controls a particular department.
- Each department is associated with a number of projects.
- Employees are identified by name, id, address, dob, date_of_joining.
- An employee works in only one department but can work on several projects.
- We also keep track of the number of hours worked by an employee on a single project.
- Each employee has dependent
- Dependent has D_name, Gender and relationship.




This Company ER diagram illustrates key information about the Company, including entities such as employee, department, project and dependent. It allows us to understand the relationships between entities.
Entities and their Attributes are

- Employee Entity : Attributes of Employee Entity are Name, Id, Address, Gender, Dob and Doj.
  Id is the Primary Key for an Employee Entity.
- Department Entity : Attributes of the Department Entity are D_no, Name and Location.
  D_no is the Primary Key for the Department Entity.
- Project Entity : Attributes of Project Entity are P_No, Name and Location.
  P_No is the Primary Key for the Project Entity.

- Dependent Entity : Attributes of Dependent Entity are D_no, Gender and relationship.

Relationships are :

- Employees work in Departments –
  Many employees work in one Department but one employee can not work in many departments.
- Manager controls a Department –
  the employee works under the manager of the Department and the manager records the date of the employee's joining in the department.
- Department has many Projects –
  One department has many projects but one project can not come under many departments.
- Employee works on project –
  One employee works on several projects and the number of hours worked by the employee on a single project is recorded.
- Employee has dependents –
  Each Employee has dependents. Each dependent is dependent on only one employee.