# Laboratory 3

Title of the Laboratory Exercise: data model to relational model

1. Introduction and Purpose of Experiment

The ER schema is to be converted into a relational schema as data cannot be stored in an ER schema. A relation schema gives the basic information describing a table or relation. It is the logical definition of a table. This includes a set of column names, and the data types associated with each column. By doing this lab, students will be able to map ER schema to relational schema.

1. Aim and Objectives

Aim

* To map data model to relational model

Objectives

At the end of this lab, the student will be able to

* Map ER schema to relational schema
* Insert tuples using SQL commands for the developed database schema

1. Experimental Procedure
   * 1. Map all the components in the ER diagram to corresponding relation entities and instances
     2. Insert tuples using SQL commands
     3. Design SQL commands using aggregate functions in SQL
     4. Execute SQL commands
     5. Test the executed commands
     6. Document the Results
     7. Analyse and discuss the outcomes of your experiment
2. Questions
3. Consider the ER diagram you have drawn in Laboratory 2. Convert the ER diagram to corresponding relational database schema.
4. Insert the tuples (minimum five) for the developed database schema using SQL commands. Perform aggregate functions in SQL based on the developed database schema.
5. Calculations/Computations/Algorithms

Step 1: Mapping of Regular Entity Types

MANAGER

|  |  |  |
| --- | --- | --- |
| mgr\_id | mgr\_username | mgr\_password |

EMPLOYEE

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| emp\_id | emp\_name | emp\_type | emp\_contact\_no | emp\_address | last\_paid\_on |

PROJECT

|  |  |  |  |
| --- | --- | --- | --- |
| project\_id | project\_name | project\_type | project\_status |

DEPARTMENT

|  |  |  |
| --- | --- | --- |
| dept\_id | dept\_name | dept\_budget |

Step 2: Mapping of Weak Entity Types

SALARY

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| emp\_id | salary\_type | base\_salary | gross\_salary | allowance |

Step 3: Mapping of Binary 1:1 Relation Types

SALARY

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| sal\_emp\_id | salary\_type | base\_salary | gross\_salary | allowance |

Step 4: Mapping of Binary 1:N Relation Types

EMPLOYEE

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| emp\_id | mgr\_id | dept\_id | emp\_name | emp\_type | last\_paid\_on |

Step 5: Mapping of Binary M:N Relationship Types

UNDERTAKES

|  |  |
| --- | --- |
| emp\_id | project\_id |

Step 6: Mapping of Multivalued attributes

EMP\_CONTACT\_NOS

|  |  |
| --- | --- |
| emp\_id | emp\_contact\_no |

EMP\_ADDRESSES

|  |  |
| --- | --- |
| emp\_id | emp\_address |

Step 7: Mapping of N-ary Relationship Types

There are no N-ary relationships in the ER Diagram

1. Presentation of Results

EMPLOYEE

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| emp\_id | mgr\_id | dept\_id | emp\_name | emp\_type | last\_paid\_on |

EMP\_CONTACT\_NOS

|  |  |
| --- | --- |
| emp\_id | emp\_contact\_no |

EMP\_ADDRESSES

|  |  |
| --- | --- |
| emp\_id | emp\_address |

MANAGER

|  |  |  |
| --- | --- | --- |
| mgr\_id | mgr\_username | mgr\_password |

PROJECT

|  |  |  |  |
| --- | --- | --- | --- |
| project\_id | project\_name | project\_type | project\_status |

UNDERTAKES

|  |  |
| --- | --- |
| emp\_id | project\_id |

SALARY

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| sal\_emp\_id | salary\_type | base\_salary | gross\_salary | allowance |

DEPARTMENT

|  |  |  |
| --- | --- | --- |
| dept\_id | dept\_name | dept\_budget |

1. Conclusions
2. Comments

1. Limitations of Experiments

2. Limitations of Results

3. Learning happened

4. Recommendations