
ORACLE
Academy

Database Design

2-3
Entity Relationship Modeling and ERDs

ORACLE Academy

Objectives

This lesson covers the following objectives:

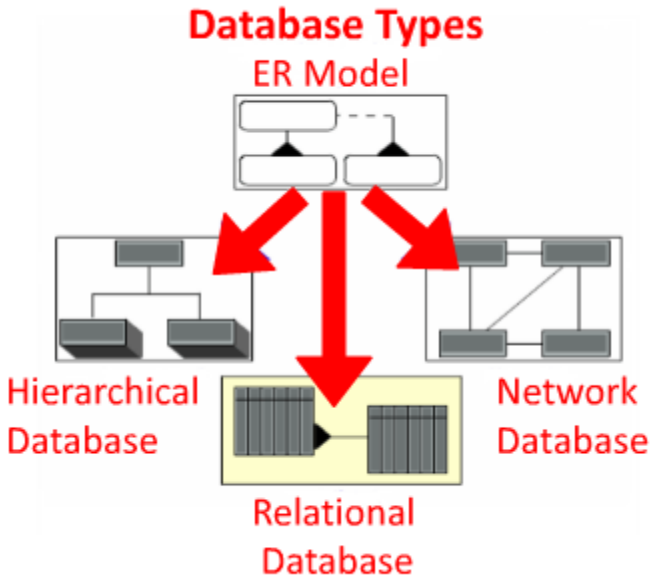
- Define the meaning of “implementation-free” as it relates to data models and database design implementation
- List the four goals of entity relationship modeling
- Identify an entity relationship diagram (ERD)

Purpose

- An entity relationship diagram (ERD) is a consistent tool that can be used to represent the data requirements of a business regardless of the type of database that is used, and even in the absence of one!

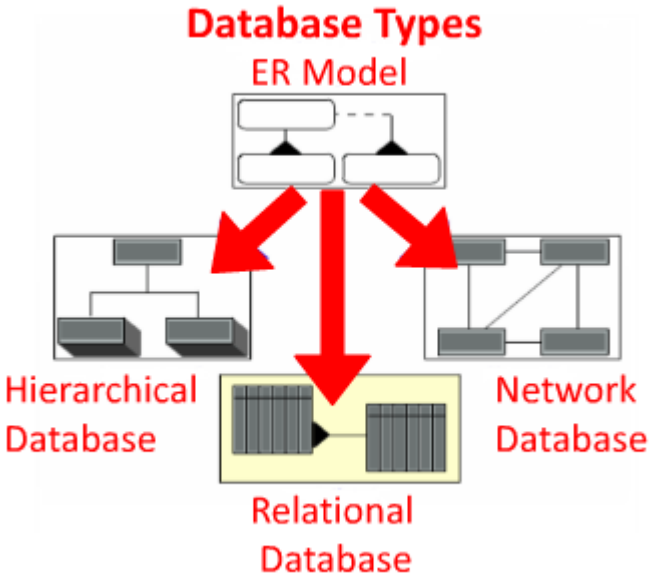
Implementation-Free Models

- A good conceptual data model stays the same regardless of the type of database the system is eventually built—or implemented—on.
- This is what we mean when we say that the model is "implementation-free."



Implementation-Free Models

- The data model should stay the same even if a database is not used at all.
- For example: when the data is eventually stored on pieces of paper in a filing cabinet.



What is an Entity Relationship Model?

An Entity Relationship Model:

- Is a list of all entities and attributes as well as all relationships between the entities that are of importance.
- Provides background information such as entity descriptions, data types, and constraints.
- Note: The model does not require a diagram, but the diagram is typically a very useful tool.

Goals of ER Modeling

There are four goals of ER modeling:

- Capture all required data
- Ensure that data appears only once
- Model no data that is derivable from other data already modeled
- Locate data in a predictable, logical place

Goals of ER Modeling

- Imagine your school record—from your earliest days in school, data about you was captured.
- Your absences, discipline history, classes taken, and grades earned are probably part of your record.
- This data needs to be stored in a logical way, to allow accessing and updating records to be carried out easily and efficiently.
- Following the goals of ER Modeling helps to achieve this.

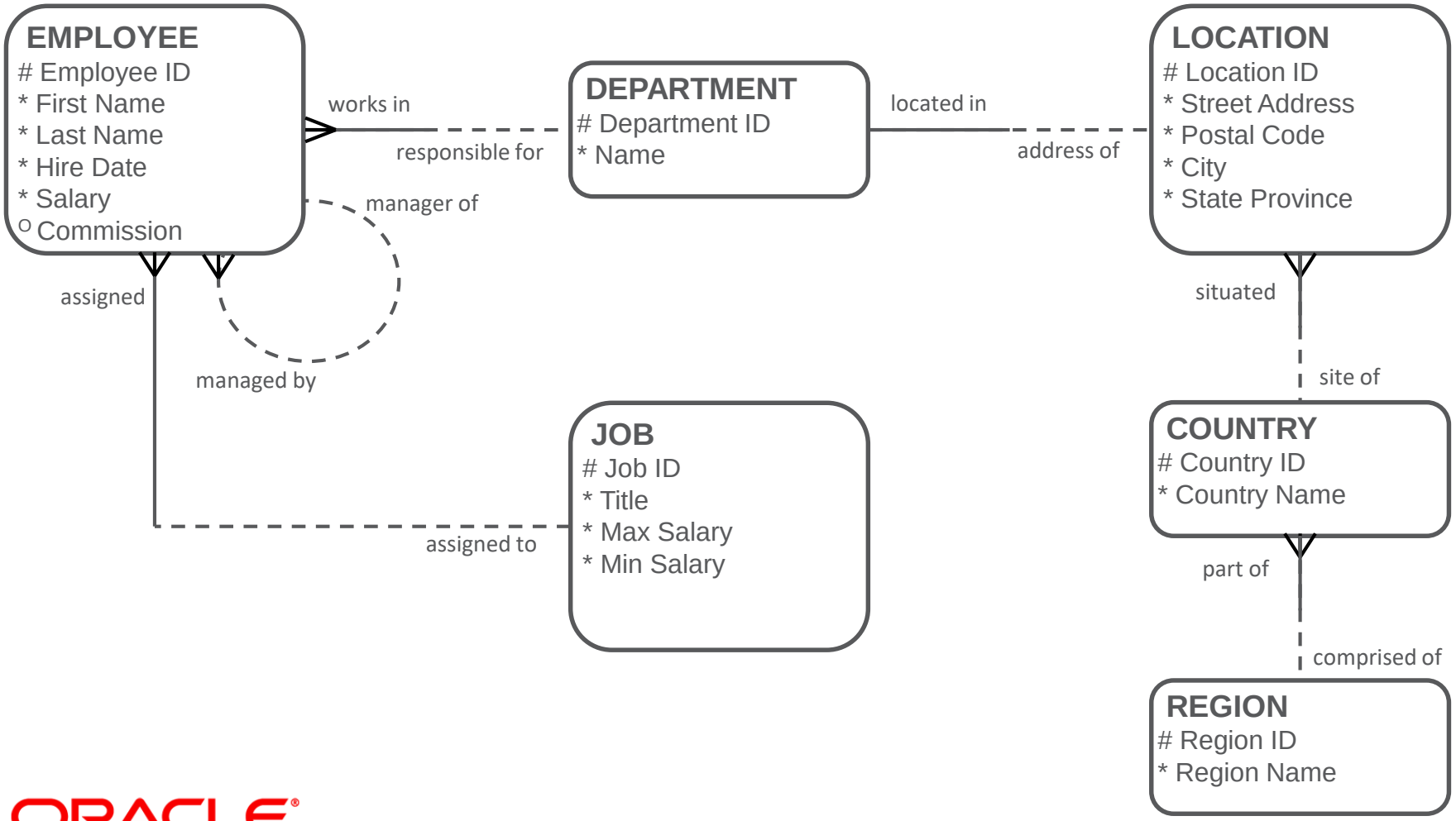
H.R. Department Business Scenario

- Read the complete business scenario for the Human Resource Department below.
- Then examine the completed ERD.
  - I manage the Human Resources Department for a large company. We need to store data about each of our company's employees. We need to track each employee's first name, last name, job or position, hire date and salary. For each employee on commission, we also need to track his/her potential commission. Each employee is assigned a unique employee number.

H.R. Department Business Scenario

- Read the complete business scenario for the Human Resource Department below.
- Then examine the completed ERD.
  - Our company is divided into departments. Each employee reports to a department -- for example, accounting, sales, or development. We need to know the department responsible for each employee and the department location. Each department has a unique number.
  - Some of the employees are managers. We need to know each employee's manager and all of the employees that are managed by each manager.

H.R Department ERD



Terminology

Key terms used in this lesson included:

- Entity relationship diagram (ERD)
- Implementation-free

Summary

In this lesson, you should have learned how to:

- Define the meaning of “implementation-free” as it relates to data models and database design implementation
- List the four goals of entity relationship modeling
- Identify an entity relationship diagram (ERD)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