DAT251x

Introducing Data Modeling

Lab 04 | Designing Physical Models

Estimated time to complete this lab is 60 minutes

Overview

In this lab, you will use the output of Lab 02, Normalizing Data and Lab 03, Designing Logical Data Models to build a Physical Data Model. This will involve preparing an Entity Relationship Diagram (ERD).

Note: The four labs in this course are accumulative. You cannot complete this lab if you did not successfully complete **Lab 03**.

Getting Started

In this exercise, you will review the exhibits and case study story provided in previous labs. Since the deliverables for this lab are in both a text format and graphic format, you can use hand0-drawn diagrams or desktop software such as Microsoft Excel or other drawing applications to complete your work.

Exercise 1: Preparing to Transform a Logical Data Model to a Physical Data Model

In this exercise, you will create a draft Entity Relationship Diagram based the output of the previous labs.

Review your Logical Data Model from the previous lab to validate its completeness and correctness. Look for:

- Good names that follow the naming guidelines given during the course.
- Matching datatypes between Primary Keys and Foreign Keys
- All entities and attributes have good definitions
- All datatypes are appropriate for the data the will contain
- All business requirements have been met

Exercise 2: Transform Names to Physical Names

In this exercise, you will need to take the following steps to transform the logical names to physical names using the Airport Valet Parking naming standards:

1. Replace any spaces with underscores.
2. Replace any special characters (dashes, slashes, ampersands, etc.) with underscores or just remove them.
3. Ensure that none of your names exceed the Airport Valet Parking corporate naming standard maximum length of 75 characters. If you need to abbreviate names, do so consistently.
4. Ensure that all table names are singular.

Examples

Customer
Given Name
Family Name
@Twitter Name

Customer
GivenName
FamilyName
TwitterName

Exercise 3: Choose Primary Keys

In this exercise, you will choose the primary keys for each table. Your primary key column or set of columns must be:

- Mandatory
- Unique
- Non-changing
- Short (INTEGER, BIGINT, etc.)
- A single column

Exercise 4: Apply Data Protection

In this exercise, review the attributes that you marked as needing extra protection and apply security requirement (cell level encryption, table level encryption or database encryption) and data masking requirement. If you mask data, include what the mask must look like.

Don't worry about the exact syntax to apply these protections as these would change based on the DBMS and version you are designing for.

Examples

Customer

GivenName	
FamilyName	Masked (AAAXXXXXX)
NationalNumber	Encrypted – Masked (99XXXXXXXXX)

Exercise 5: Physical Entity Relationship Diagram

Product a Physical Data Model Entity Relationship Diagram with physical names, physical primary keys, foreign keys, relationships, datatypes, NULLs, Defaults, constraints and any other physical properties you identified in this lab.