Oracle Database Foundations

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Online Course

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Course Modules

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What is a Database?

1. Database Concepts
- Describe the components of a database system
- Explain the purpose of a database

2. Types of Databases Models
- Describe types of database models (relational, object oriented, etc.,
- Compare the differences between the different types of databases

3. Relational Database Concepts
- Describe the characteristics of a relational database
- Explain the importance of relational databases in business
- List the major transformations in database technology

4. Defining Levels of Data Abstraction
- Define the terminology used for database storage
- Describe levels of data abstraction used in relational databases

5. Gathering Requirements for Database Design
- Gather requirements to implement a database solution
- Explain business rules

The Language of Database and Data Modelling

6. Defining a Table in a Database
- Describe the structure of a single table

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7. Using Conceptual Data Modelling
- Describe a conceptual data model
- Explain the components of a conceptual/logical model

8. Defining Instance and Schema in Relational Databases
- Examine examples of an entity and a corresponding table
- Examine examples of an attribute and a corresponding column
- Explain instances and schemas in a relational database

9. Using Unique Identifiers, Primary and Foreign Keys
- Identify unique identifiers and a corresponding primary key
- Define composite and compound primary keys
- Define relationships and corresponding foreign keys
- Define barred relationships and the corresponding primary keys

Data Modelling – Creating the Physical Model

10. Creating Physical Data Models

- Create a physical data model
- Compare conceptual and physical data models

11. Documenting Business Requirements and Rules

- Importnce of clearly communicating & accurately capturg database
- Identify structural business rules
- Identify procedural business rules
- Business rules that must be enforced by additional programming

12. Defining Supertype and Subtype Entity Relationships

- Describe an example of an entity
- Define supertype and subtype entities
- Implement rules for supertype and subtype entities

13. Using Attributes

- Describe attributes for a given entity
- Identify and provide examples of instances
- Distinguish between mandatory and optional attributes
- Distinguish between volatile and nonvolatile attributes

14. Using Unique Identifiers (UIDs)

- Define the types of unique identifiers
- Select a unique identifier using business rules
- Define a candidate unique identifier
- Define an artificial unique identifier

15. Identifying Relationships

- Explain one-to-one, one-to-many, and many-to-many relationships
- Identify the optionality necessary for a relationship
- Identify the cardinality necessary for a relationship
- Identify nontransferable relationships
- Name a relationship
- Create ERDish sentences to represent ERDs
- Create ERDs to represent ERDish sentences

16. Resolving Many Relationships & Composite Unique Identifiers

- Resolve a many-to-many relationship using an intersection entity
- Variations of unique identifiers after creation of an intersection
- Define a barred relationship
- Identify composite unique identifiers

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17. Identifying Hierarchical, Recursive, and Arc Relationships
- Define a hierarchical relationship
- Define a recursive relationship
- Define an arc relationship
- Identify UIDs in a hierarchical, recursive and arc relationship model
- Construct a model using recursion and hierarchies
- Similarities and differences in an arc relationship & a supertype

18. Tracking Data Changes Over Time
- Explain necessity of tracking data changes over time
- Identify data that changes over time
- Identify the changes in unique identifiers after adding the element

19. Validating Data Using Normalization
- Define the purpose of normalization
- Define the rules of First, Second, and Third Normal Forms
- Apply the rules of First, Second, and Third Normal Form

Mapping the Physical Model

20. Mapping Entities, Columns and Data Types

- Map entities to identify database tables to be created from an ERD
- Identify column data types from an ERD
- Common data types used to store values in a relational database

21. Mapping Primary, Composite Primary and Foreign Keys

- Identify primary keys from an ERD
- Identify which ERD attributes would make candidate primary keys
- Describe the purpose of a foreign key in an Oracle Database
- Identify foreign keys from an ERD
- Relationship between primary keys, composite primary keys

Introduction to SQL

22. Using Structured Query Language (SQL)

- Explain the relationship between a database and SQL

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23. Using Data Definition Language (DDL)

- Describe the purpose of DDL
- Use DDL to manage tables and their relationships

24. Data Manipulation Language (DML) and (TCL)

- Describe the purpose of DML
- Use DML to manage data in tables
- Use TCL to manage transactions

25. Defining and using Basic Select statements

- Connection between an ERD and a Relational Database using SQL
- Build a SELECT statement to retrieve data from an Oracle Database
- Use the WHERE clause to the SELECT statmnt to filter query results

26. Displaying Sorted Data

- Use the ORDER BY clause to sort SQL query results

27. Defining Table Joins

- Describe the different types of joins and their features
- Use joins to retrieve data from multiple tables

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