

DBMS SQL

Lesson 14: Introduction to Data
Dictionary

Lesson Objectives

- To understand the following topics:
 - Identifying key data dictionary components
 - Identifying the contents and uses of Data Dictionary
 - Querying the Data Dictionary



Introduction to Data Dictionary

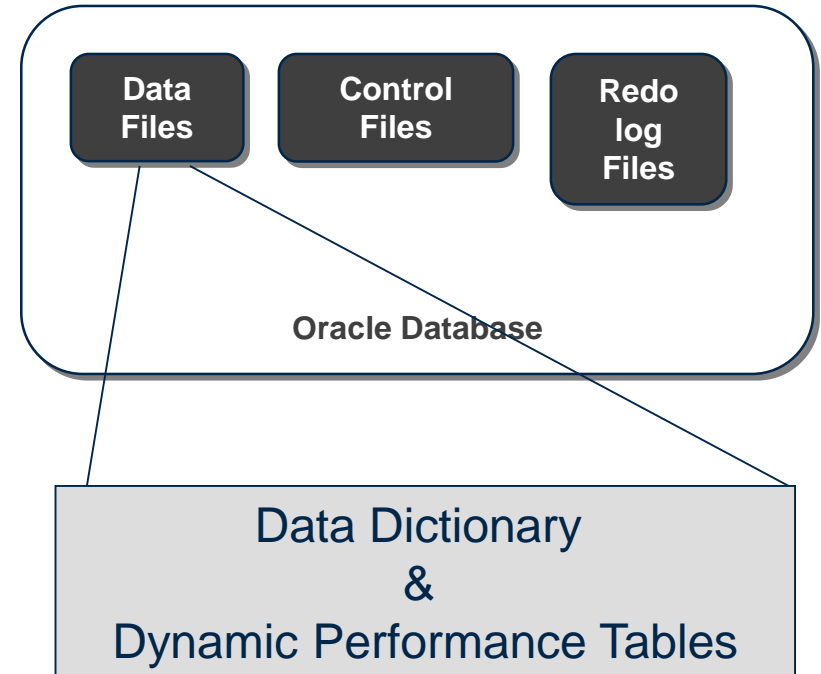
- Oracle uses the term “Data Dictionary” for its system catalogs.
 - Each Oracle database has its own set of “system tables” and “views”, which store information about both the physical and logical database structure.
 - The Data Dictionary objects are read-only.
 - That is to say, no database user ever manually modifies these objects.
 - However, Oracle RDBMS itself automatically updates data in these objects in response to specific actions.

Contents of Data Dictionary

- The Data Dictionary contains:
 - Definitions of all schema objects in the database
 - Information about the amount of space that is allocated for, and is currently used by, the schema objects
 - Default values for columns
 - Information about Integrity Constraints
 - Names of Oracle users
 - Privileges and roles that have been granted to each user
 - Auditing information
 - Other database information in general

Structure of Data Dictionary

- During database creation, the Oracle server creates the following additional object structures within the data files:
 - Data Dictionary Tables
 - Dynamic Performance Tables



Data Dictionary Tables

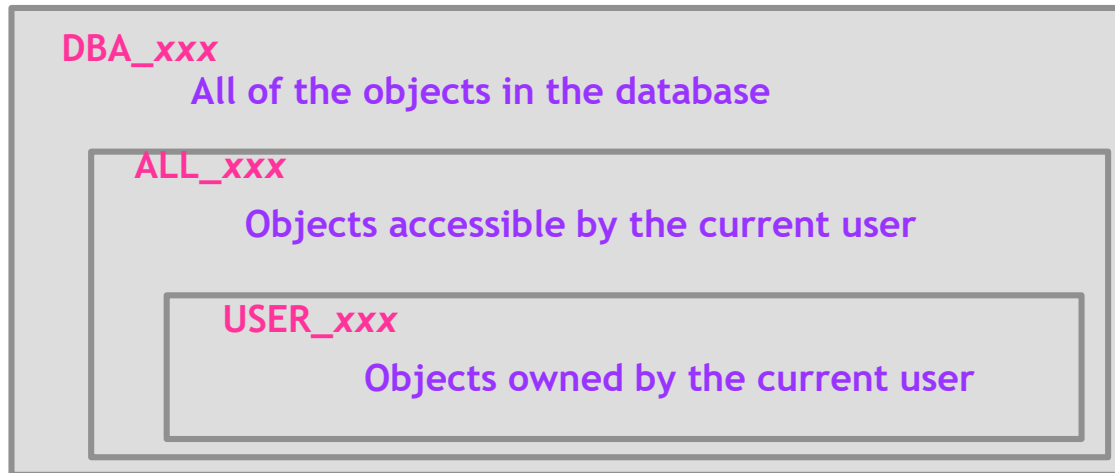
- The Data Dictionary is a set of read-only “tables” and “views”, which record, verify, and provide information about its associated database.
 - Data Dictionary describes the database and its objects.
 - Data Dictionary includes two types of objects:
 - Base tables
 - Store description of database
 - Created with CREATE DATABASE
 - Data Dictionary views
 - Summarize base table information
 - Created using catalog.sql script

How is the Data Dictionary Used?

- Three primary uses of Data Dictionary:
 - Used by Oracle Server to find information about:
 - Users
 - Schema objects
 - Storage structures
 - Modified by Oracle Server when a DDL statement is executed
 - Used by users and DBAs as a read-only reference for information about the database.

Data Dictionary View Categories

- Data Dictionary View categories are:
 - The Data Dictionary consists of three main sets of “static views”, which are distinguished from each other by their scope:
 - DBA: What is in all the schemas?
 - ALL: What can the user access?
 - USER: What is in the user's schema?



Some Data Dictionary tables

- Given below are a few examples of Data Dictionary:
 - General Overview
 - DICTONARY, DICT_COLUMNS
 - Schema objects
 - DBA_TABLES, DBA_INDEXES, DBA_TAB_COLUMNS, DBA_CONSTRAINTS
 - Space allocation
 - DBA_SEGMENTS, DBA_EXTENTS
 - Database structure
 - DBA_TABLESPACES, DBA_DATA_FILES

Using the Data Dictionary Tables

- Example 1:

- To list details of tables owned by current user:

```
SQL>SELECT TABLE_NAME, TABLESPACE_NAME, BLOCKS FROM  
USER_TABLES;
```

- Example 2:

- The USER_ERRORS data dictionary view contains information about the last error that occurred in a user's schema.

```
SQL>SELECT * FROM USER_ERRORS;
```

Summary

- In this lesson you have learnt about:
 - Use of the Data Dictionary Views to retrieve information about the database and instance
 - Obtaining information about Data Dictionary Views from `DICTIONARY` and `DICT_COLUMNS`



Review Question

- Question 1: Data Dictionary contains definitions of all schema objects in the database.
 - True / False
- Question 2: DBA_ views are intended for all users in database.
 - True / False
- Question 3: Data dictionary view category ALL_xxx displays all the information from the schema of the current user.
 - True / False

