The previous chapters in this book focus on topics such as managing users, basic security, tables, indexes, and constraints. This chapter focuses on extracting information from the data dictionary regarding those topics. Each of the sections in this chapter contains one or more SQL queries that demonstrate how to extract information from the data dictionary regarding a specific type of database object.

The Oracle data dictionary houses information about all aspects of the database. It stores critical information about the physical characteristics of the database, users, objects, and dynamic performance metrics. A senior-level DBA must possess an expert knowledge of the data-dictionary views. This chapter focuses on how you can use the information in the data dictionary.

This chapter is a turning point in the book. It divides the book between basic DBA tasks and more advanced topics. You must have a solid understanding of the data dictionary and how to proactively extract information and reactively resolve issues. The first few sections of this chapter detail the data-dictionary architecture. Sections after that contain techniques and queries that you can use to retrieve information about the database.

Data-Dictionary Architecture

If you ever inherit a database and are asked to maintain and manage it, typically you’ll inspect the contents of the data dictionary to determine the physical structure of the database and see what events are currently transacting. Toward this end, Oracle provides to two general categories of data-dictionary views:

- Static USER/ALL/DBA views
- Dynamic V$ and GV$ views

The USER/ALL/DBA views contain metadata (information) describing the physical makeup of the database. For example, when you create a table, the description of that table is considered metadata and is stored in the database. Whenever you change the definition of an object, Oracle updates the data dictionary correspondingly. You typically use these views to view the structure of the database and information about users and corresponding objects.

The V$ and GV$ views provide real-time statistics about events currently transacting in the database. You use these views to determine which users are connected to the database, what SQL is executing, whether system bottlenecks exist, and so forth.

Static Views

Oracle describes a subset of the data-dictionary views as static. These views are based on physical tables maintained internally by Oracle. Oracle’s documentation states that these views are static in the sense
that the data they contain doesn’t change at a rapid rate (at least, not rapid when compared to the dynamic V$ and GV$ views). These views are stored in the SYSTEM tablespace.

The term static can sometimes be a misnomer. For example, the DBA SEGMENTS and DBA EXTENTS views change dynamically as the amount of data in your database grows and shrinks. Regardless, Oracle has made the distinction between static and dynamic, and it’s important to understand this architectural nuance when querying the data dictionary. There are three types or levels of static views:

- **USER**
- **ALL**
- **DBA**

The USER views contain information available to the current user. For example, the USER_TABLES view contains information about tables owned by the current user. No special privileges are required to select from the USER-level views.

At the next level are the ALL static views. The ALL views show you all object information the current user has access to. For example, the ALL_TABLES view displays all database tables on which the current user can perform any type of Data Manipulation Language (DML) operation. No special privileges are required to query from the ALL-level views.

Next are the DBA static views. The DBA views contain metadata describing all objects in the database (regardless of ownership or access privilege). To access the DBA views, you must have a DBA role or SELECT_CATALOG_ROLE granted to the current user.

The static views are based on internal Oracle tables such as USER$, TAB$, and IND$. If you have access to the SYS schema, you can view underlying tables directly via SQL. For most situations, you only need to access the static views that are based on the underlying internal tables.

The data-dictionary tables (like USER$, TAB$, and IND$) are created during the execution of the CREATE DATABASE command. As part of creating a database, the sql.bsq file is executed, which builds these internal data-dictionary tables. The sql.bsq file is usually located in the ORACLE_HOME/rdbms/admin directory; you can view it via an operating system editing utility (such as vi in Unix or Notepad in Windows).

The static views are created when you run the catalog.sql script (usually, you run this script after the CREATE DATABASE operation succeeds). The catalog.sql script is located in the ORACLE_HOME/rdbms/admin directory. Figure 10–1 shows the process of creating the static data-dictionary views.

![Figure 10–1. Creating the static data-dictionary views](image)

Static views such as DBA_USERS, DBA_TABLES, and DBA_INDEXES are built on the static tables (such as USER$, TAB$ and IND$). You can view the creation scripts of these static views by querying the TEXT column of DBA_VIEWS. For example, this query selects the TEXT column of DBA_VIEWS:

```sql
SELECT TEXT FROM DBA_VIEWS WHERE VIEW_NAME = 'DBA_USERS';
```