Review of the Data Dictionary
Objectives

This lesson covers the following objectives:

• Describe the purposes of the Data Dictionary

• Differentiate between the three types of Data Dictionary views

• Write SQL SELECT statements to retrieve information from the Data Dictionary

• Explain the use of DICTIONARY as a Data Dictionary search engine
Purpose

• Imagine that you have created many procedures and/or functions, as well as tables and other database objects.
• It’s hard to remember all their names, isn’t it?
• The Data Dictionary remembers this information for you.
What Is the Data Dictionary?

• Every Oracle database contains a Data Dictionary.

• All database objects, such as tables, views, users and their privileges, procedures, functions, and so on are automatically registered in the Data Dictionary when they are created.

• If an object is later altered or dropped, the Dictionary is automatically updated to reflect the change.

• Think of the Dictionary as an automatically-managed master catalog of everything in the database.
How Can You Read the Dictionary?

There are two classes of tables from which you can `SELECT` to view information from the Dictionary:

- The `USER_*` tables contain information about objects that you own, usually because you created them.
  - **Examples:** `USER_TABLES`, `USER_INDEXES`.
- The `ALL_*` tables contain information about objects that you have privileges to use.
  - These include the `USER_*` information as a subset, because you always have privileges to use the objects that you own.
  - **Examples:** `ALL_TABLES`, `ALL_INDEXES`.


How Can You Read the Dictionary?

A third class of tables you can `SELECT` to view information from the Dictionary are normally only available to the Database Administrator:

• The `DBA_*` tables contain information about everything in the database, no matter who owns them.

• **Examples:** `DBA_TABLES`, `DBA_INDEXES`. 
Viewing Information in the Dictionary

• Although you are not allowed to modify the dictionary yourself, you can `DESCRIBE` and `SELECT` from Dictionary tables.

• For example, to see information about all the tables that you have privileges to use:

  `DESCRIBE ALL_TABLES`
Viewing Information in the Dictionary

• The output from this shows that many columns of data are held about each table.
• You decide you only want to see the name and owner, so you enter:

```
SELECT table_name, owner FROM ALL_TABLES;
```
Another Example

- Suppose you want to see all the objects that you own. You could `SELECT ... from USER_TABLES, then from USER_INDEXES, then from USER_SEQUENCES, then from ....` for each type of object.

- But, it is easier to use `USER_OBJECTS`, which shows all the objects of every type:

  ```sql
  SELECT object_type, object_name FROM USER_OBJECTS;
  ```
Another Example

- Remember that you can use **WHERE conditions**, **ORDER BY**, **GROUP BY**, and so on with the Dictionary tables, just like regular tables.

- Suppose you want to see how many objects of each type you own:

  ```sql
  SELECT object_type, COUNT(*) FROM USER_OBJECTS GROUP BY object_type;
  ```
Using the Super-View **DICTIONARY**

- Several hundred Dictionary tables exist and no one can remember the names of all of them.
- You don’t have to!
- A super-view called **DICTIONARY** (or **DICT** for short) lists all the Dictionary tables.
- You can use **DICT** like an Internet search engine to show the names and descriptions (comments) of a relevant subset of Dictionary tables.
- The next slide shows how to do this.
Using the Super-View DICTIONARY

• First try:

```
SELECT COUNT(*) FROM DICT WHERE table_name LIKE 'USER%';
```

• You see that there are more than a hundred USER_* tables.

• Can you remember which one of them shows you information about which table columns are indexed?

• Most people can’t.
Using the Super-View DICTORIZATION

• You can reasonably assume that all Dictionary tables that describe indexes have names containing the substring ‘IND’.

• So:

```
SELECT * FROM DICT WHERE table_name LIKE 'USER%IND%';
```

• Now you can see that the table you want is USER_IND_COLUMNS.
Viewing the Dictionary using Application Express

• The Object Browser in Application Express provides an easier way to see much of the Dictionary information.

• To use it, go to SQL Workshop -> Object Browser -> Browse and click the desired object type.
Review of the Data Dictionary

Viewing the Dictionary using Application Express

• Much easier, isn’t it?

• So why do you still need to know about the USER_* and ALL_* tables?

• The Object Browser does not show everything:
  – It shows only the objects that you own, not other objects that you are allowed to use.
  – It shows only a subset of information about each object.
  – It does not show all the possible object types.
Terminology

Key terms used in this lesson included:

• ALL_* tables
• Data Dictionary
• DBA_* tables
• USER_* tables
Summary

In this lesson, you should have learned how to:

• Describe the purposes of the Data Dictionary

• Differentiate between the three types of Data Dictionary views

• Write SQL `SELECT` statements to retrieve information from the Data Dictionary

• Explain the use of `DICTIONARY` as a Data Dictionary search engine