

Oracle Data Dictionary

The Oracle data dictionary is one of the most important components of the Oracle DBMS.

It contains all information about the structures and objects of the database such as

- tables,
- columns,
- users,
- data files etc.

The data stored in the data dictionary are also often called [metadata](#). Although it is usually the domain of database administrators (DBAs), the data dictionary is a valuable source of information for end users and developers.

The data dictionary consists of two levels:

- The internal level contains all base tables that are used by the various DBMS software components and they are normally not accessible by end users.
- The external level provides numerous views on these base tables to access information about objects and structures at different levels of detail.

Data Dictionary Tables

An installation of an Oracle database always includes the creation of three standard Oracle users:

SYS This is the owner of all data dictionary tables and views. This user has the highest privileges to manage objects and structures of an Oracle database such as creating new users.

SYSTEM is the owner of tables used by different tools such SQL*Forms, SQL*Reports etc. This user has less privileges than SYS.

PUBLIC This is a “dummy” user in an Oracle database. All privileges assigned to this user are automatically assigned to all users known in the database.

Data Dictionary Contains...

The tables and views provided by the data dictionary contain information about

- users and their privileges,
- tables, table columns and their data types, integrity constraints, indexes,
- statistics about tables and indexes used by the optimizer,
- privileges granted on database objects,
- storage structures of the database.

Viewing the data dictionary

The SQL command

```
select * from DICT[IONARY];
```

```
select * from DICT;
```

TABLE_NAME	COMMENTS
USER_RESOURCE_LIMITS	Display resource limit of the user
USER_PASSWORD_LIMITS	Display password limits of the user
USER_CATALOG	Tables, Views, Synonyms and Sequences owned by the user
ALL_CATALOG	All tables, views, synonyms, sequences accessible to the user
USER_CLUSTERS	Descriptions of user's own clusters
ALL_CLUSTERS	Description of clusters accessible to the user

lists all tables and views of the data dictionary that are accessible to the user. The selected information includes the name and a short description of each table and view. Before issuing this query, check the column definitions of [DICT\[IONARY\]](#) using `desc DICT[IONARY]` and set the appropriate values for column using the `format` command.

The query

```
select * from TAB;
```

retrieves the names of all tables owned by the user who issues this command.

```
select * from TAB;
```

TNAME	TABTYPE	CLUSTERID
DEPT	TABLE	
EMP	TABLE	
BONUS	TABLE	
SALGRADE	TABLE	
DUMMY	TABLE	
DENEME	TABLE	
EMPLOYEE	TABLE	
EMPINFO	TABLE	
STORE_INFO	TABLE	
GEO	TABLE	

10 rows selected.

The query

select * from COL;

TNAME	COLNO	CNAME	COLTYPE	WIDTH	SCALE	PRECISION	NULLS	DEFAULTVAL	CHARACTER_SET_NAME
GEO	2	STORE_NAME	VARCHAR2	15			NULL		CHAR_CS
GEO	1	REGION_NAME	VARCHAR2	10			NULL		CHAR_CS
STORE_INFO	3	DDATE	DATE	7			NULL		
STORE_INFO	2	SALES	NUMBER	22	0	5	NULL		
STORE_INFO	1	STORE_NAME	VARCHAR2	15			NULL		CHAR_CS
EMPINFO	6	STATE	VARCHAR2	20			NULL		CHAR_CS
EMPINFO	5	CITY	VARCHAR2	20			NULL		CHAR_CS
EMPINFO	4	AGE	NUMBER	22	0	3	NULL		
EMPINFO	3	SICIL	NUMBER	22	0	5	NULL		
EMPINFO	2	LAST	VARCHAR2	20			NULL		CHAR_CS

Data Dictionary Views

The views provided by the data dictionary are divided into three groups:

USER, ALL , and DBA.

The group name builds the prefix for each view name. For some views, there are associated synonyms as given in brackets below.

USER : Tuples in the USER views contain information about objects owned by the account performing the SQL query (current user)

USER TABLES	all tables with their name, number of columns, storage information, statistical information etc. (TABS)
USER CATALOG	tables, views, and synonyms (CAT)
USER COL COMMENTS	comments on columns
USER CONSTRAINTS	constraint definitions for tables
USER INDEXES	all information about indexes created for tables (IND)
USER OBJECTS	all database objects owned by the user (OBJ)
USER TAB COLUMNS	columns of the tables and views owned by the user (COLS)
USER TAB COMMENTS	comments on tables and views
USER TRIGGERS	triggers defined by the user
USER USERS	information about the current user
USER VIEWS	views defined by the user

ALL : Rows in the ALL views include rows of the USER views and all information about objects that are accessible to the current user. The structure of these views is analogous to the structure of the USER views.

ALL CATALOG	owner, name and type of all accessible tables, views, and synonyms
ALL TABLES	owner and name of all accessible tables
ALL OBJECTS	owner, type, and name of accessible database objects
ALL TRIGGERS	...
ALL USERS	...
ALL VIEWS	...

Retreiving Data Dictionaries:

```
select * from USER_TABLES ;
```

```
select * from USER_COL_COMMENTS;
```

```
select * from USER_OBJECTS ;
```

.....

```
select * from ALL_CATALOG ;
```

....

DBA : The DBA views encompass information about all database objects, regardless of the owner. Only users with DBA privileges can access these views.

DBA_TABLES	tables of all users in the database
DBA_CATALOG	tables, views, and synonyms defined in the database
DBA_OBJECTS	object of all users
DBA_DATA_FILES	information about data files
DBA_USERS	information about all users known in the database

Retrieving database objects (requires dba privileges):

```
select * from DBA_TABLES ;
```

...

```
select * from DBA_USERS ;
```