

Data dictionary

Data dictionary ? What is it ?

Data dictionary, (system catalog, system repository) contains information about the database objects like tables, views, sequences, etc created by the database users

Data dictionary is implemented as a relational database

Data dictionary is a collection of relational tables, also called as system tables, and owned by user **SYSTEM**

Root table of data dictionary

Users have the privileges on some of the system tables

Direct read only access to the system tables is provided by the data dictionary views

Root table of data dictionary

Table **DICT**

```
SQL> describe DICT;
```

Name	Null?	Type
TABLE_NAME		VARCHAR2 (30)
COMMENTS		VARCHAR2 (4000)

```
SELECT *
FROM DICT
WHERE TABLE_NAME = 'USER_TABLES';
```

Root table of data dictionary

Find information about view **USER_TABLES**

```
SELECT *
FROM DICT
WHERE TABLE_NAME = 'USER_TABLES';
```

TABLE_NAME	COMMENTS
USER_TABLES	Description of the user's own tables

Categories of data dictionary views

User views: database objects owned by a user **USER_ ...** (e.g. **USER_TABLES**, **USER_VIEWS**, ...)

All views: database objects accessible by a user **ALL_ ...** (e.g. **ALL_TABLES**, **ALL_VIEWS**, ...)

Database administrator views (**SYSTEM**, **SYS**) **DBA_ ...** (e.g. **DBA_TABLES**, **DBA_VIEWS**, ...)

Dynamic performance views (**SYSTEM**, **SYS**) **V\$_ ...** (e.g. **V\$SESSION**, **V\$LOCK**, ...)

other views **CHAINED_ROWS**, **COL**, **SESSION_ROLES**, etc

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USER_ ... data dictionary views

Views on system tables whose names begin with a prefix **USER_** contain information about all objects currently owned by a user

```
USER_TABLES,  
USER_VIEWS,  
USER_CONSTRAINTS,  
USER_TAB_COLUMNS,  
...
```

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ALL_ ... data dictionary views

Views on system tables whose names begin with a prefix **ALL_** contain information about all objects currently owned by all users

```
ALL_TABLES,  
ALL_VIEWS,  
ALL_CONSTRAINTS,  
ALL_TAB_COLUMNS,  
...
```

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DBA_ ... data dictionary views

Views on system tables whose names begin with a prefix **DBA_** contain information about all objects in a database

Only database administrator has the rights to access **DBA_** views

```
DBA_TABLES,  
DBA_DATA_FILES,  
DBA_USERS,  
...
```

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V\$... data dictionary views

V\$ category consists of in-memory tables that show useful information how the system has been set up and what is its current performance

Only database administrator has the rights to access **V\$** views

```
V$SESSION,  
V$TRANSACTION,  
V$SESS_IO,  
V$PROCESS,  
...
```

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Other data dictionary views

Other views are created to provide compatibility with ANSI data dictionary standard

```
DICT_COLUMNS,  
EXCEPTIONS,  
INDEX_STATS,  
...
```

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Accessing data dictionary

Find the names tables owned by a user

```
SELECT TABLE_NAME  
FROM USER_TABLES;
```

Find the constraints owned by a user

```
SELECT TABLE_NAME, CONSTRAINT_NAME  
FROM USER_CONSTRAINTS;
```

List the attribute names and attribute types defined for a given table

```
SELECT TABLE_NAME, COLUMN_NAME, DATA_TYPE  
FROM USER_TAB_COLUMNS;  
WHERE table_name = '...' );
```

List the names of all users

```
SELECT USERNAME  
FROM ALL_USERS;
```

References

Ramakrishnan R., Gehrke J., *Database Management Systems*, chapter 12.1,
<https://admin.uow.edu.au/oradocs/Reference Manual>