

Data dictionary

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SYS/SYSTEM

- In Oracle, the SYS and SYSTEM users are two key administrative accounts.
- The SYS user owns the data dictionary and all internal database objects (such as tables and views) that are necessary for the Oracle database to function. It's the most powerful user and is usually only used by the system itself or for very low-level tasks by the Database Administrator.
- The SYSTEM user is slightly less powerful than the SYS user, but still an administrative account. The SYSTEM user is primarily used for general database administration tasks like creating and managing other users, granting roles and privileges, and managing certain resources. It doesn't own the core database objects, but it can still perform many administrative tasks and create additional schemas.
- In practice, the SYSTEM user is often used by DBAs for routine administrative tasks, while SYS is reserved for more critical and low-level maintenance.

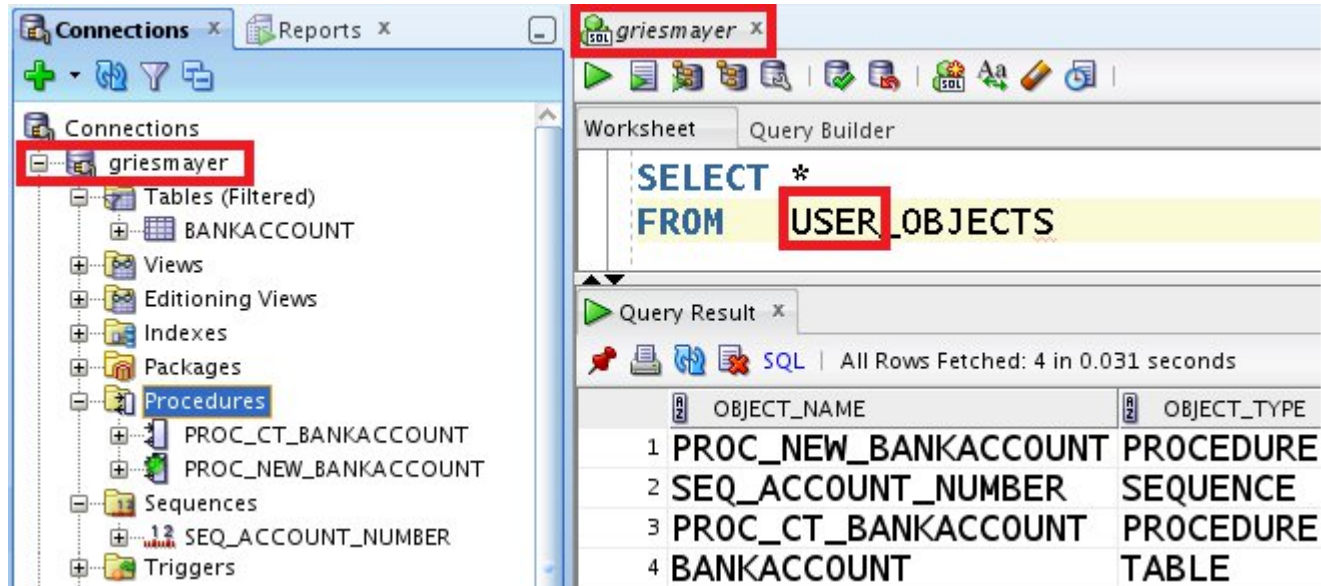
meta data

- The Oracle Data Dictionary is a set of read-only tables and views that provide detailed information about the Oracle database's structure and its components.
- It is an essential component of the Oracle database system, offering metadata about the objects and data stored within the database.
- The term metadata is often defined as data about data.
- That is, data that provides information about the tables, views, constraints, stored procedures, etc. stored within the database.

- A table will store information such as:
 - name
 - creation date
 - names and data types of the attributes
 - the owner
 - data storage

USER

- USER's view (what is in the user's schema). Refer to the user's own private environment in the database, including information about schema objects created by the user.



The screenshot shows the SQL Developer interface. The 'Connections' pane on the left has 'griesmayer' selected. The 'Query Builder' pane shows the following SQL query:

```
SELECT *  
FROM USER_OBJECTS
```

The 'Query Result' pane shows the following data:

| | OBJECT_NAME | OBJECT_TYPE |
|---|----------------------|-------------|
| 1 | PROC_NEW_BANKACCOUNT | PROCEDURE |
| 2 | SEQ_ACCOUNT_NUMBER | SEQUENCE |
| 3 | PROC_CT_BANKACCOUNT | PROCEDURE |
| 4 | BANKACCOUNT | TABLE |

ALL

- Expanded user's view (what the user can access). Views with the prefix ALL refer to the user's overall perspective of the database. These views return information about schema objects to which the user has access through public or explicit grants of privileges and roles, in addition to schema objects that the user owns.

The screenshot displays two instances of SQL Developer. The top instance shows the 'thomas' user's view of the database, with 'Tables (Filtered)' containing 'BANK_ACCOUNT' and 'BANK_TRANSACTIONS'. The bottom instance shows the 'griesmayer' user's view, where 'Tables (Filtered)' includes 'BANKACCOUNT' and 'BANK_TRANSACTIONS'. The central query window shows the SQL command: `CREATE TABLE BANK_TRANSACTIONS` and `SELECT * FROM ALL TABLES WHERE OWNER in ('THOMAS', 'GRIESMAYER');`. The query results show two rows: one for 'GRIESMAYER BANKACCOUNT' and one for 'THOMAS BANK_TRANSACTIONS', both in the 'USERS' tablespace.

```
CREATE TABLE BANK_TRANSACTIONS
```

```
SELECT *
FROM ALL TABLES
WHERE OWNER in ('THOMAS', 'GRIESMAYER');
```

| | OWNER | TABLE_NAME | TABLESPACE_NAME |
|---|------------|-------------------|-----------------|
| 1 | GRIESMAYER | BANKACCOUNT | USERS |
| 2 | THOMAS | BANK_TRANSACTIONS | USERS |

DBA

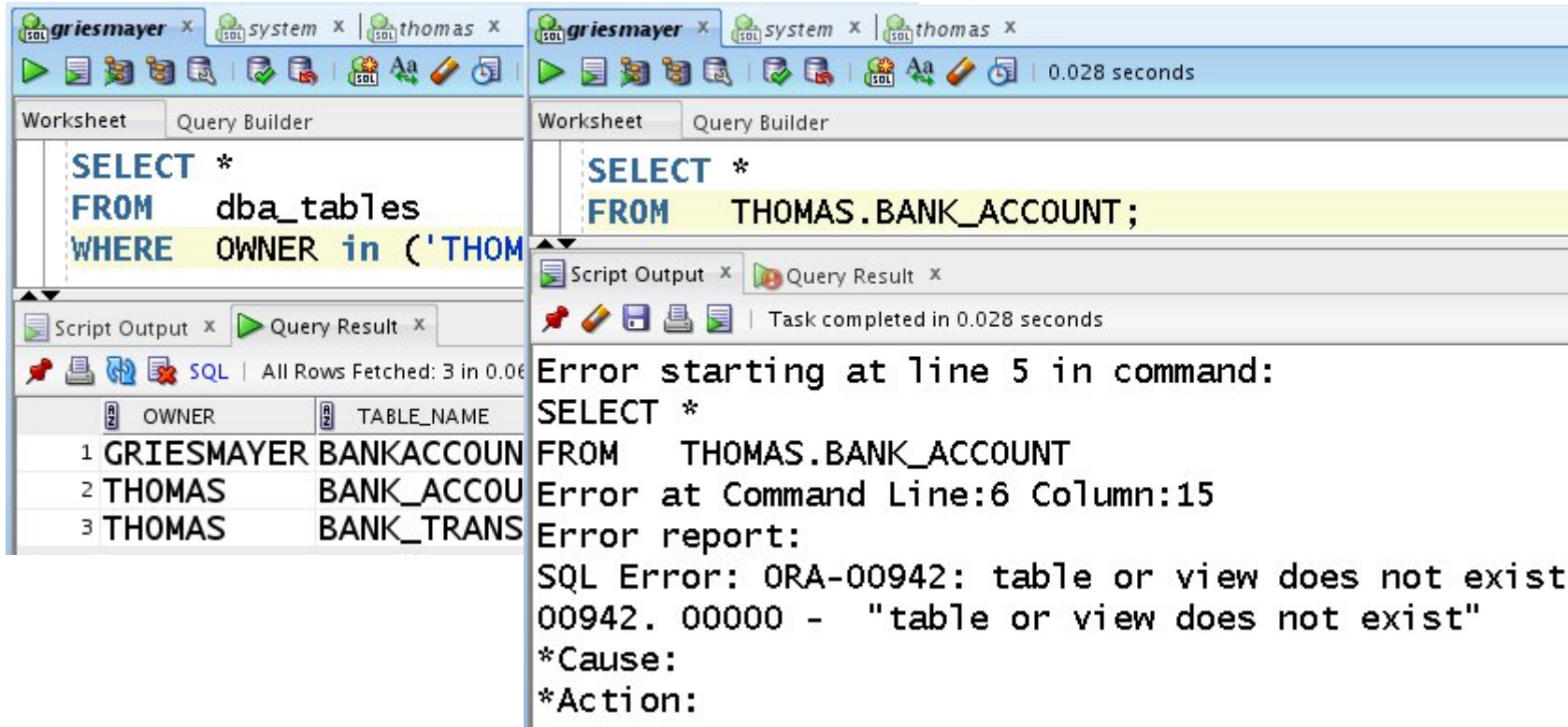
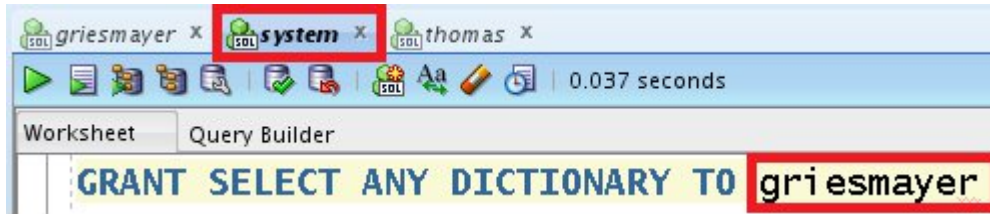
- Database administrator's view (what is in all users' schemas). Views with the prefix DBA show a global view of the entire database.

The screenshot shows the Oracle SQL Developer interface. The 'Connections' tree on the left shows two users: 'griesmayer' and 'thomas'. Under 'griesmayer', the table 'BANKACCOUNT' is highlighted with a red box. Under 'thomas', the tables 'BANK_ACCOUNT' and 'BANK_TRANSACTIONS' are highlighted with a red box. The 'system' user is also highlighted with a red box in the top toolbar. The main window shows a SQL query in the Query Builder:

```
SELECT *  
FROM DBA_TABLES  
WHERE OWNER in ('THOMAS', 'GRIESMAYER');
```

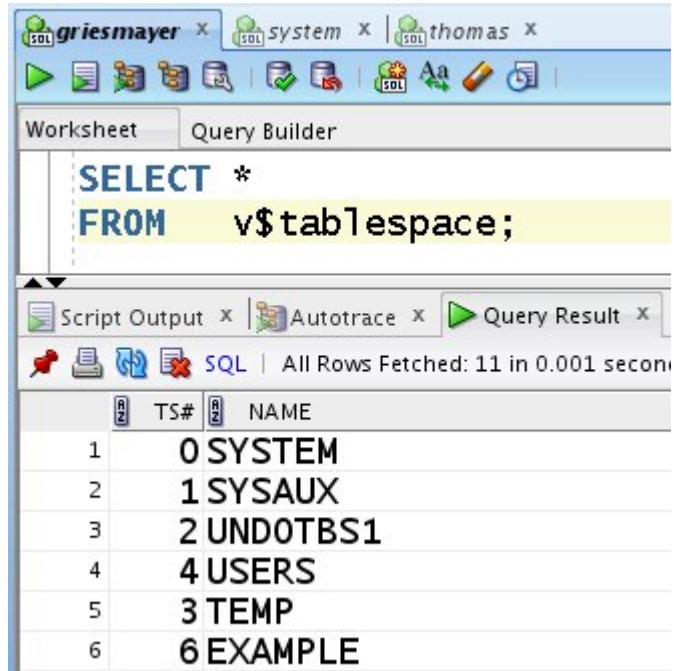
The query result is displayed in a table below:

| | OWNER | TABLE_NAME | TABLESPACE_NAME |
|---|------------|-------------------|-----------------|
| 1 | GRIESMAYER | BANKACCOUNT | USERS |
| 2 | THOMAS | BANK_ACCOUNT | USERS |
| 3 | THOMAS | BANK_TRANSACTIONS | USERS |



V\$

- V\$ tables reflect the internal state of the DBMS and are mainly useful to DBAs for performance audit and optimization.



The screenshot shows the Oracle SQL Developer interface. The Query Builder window displays the following SQL query:

```
SELECT *  
FROM v$tablespace;
```

The Query Result window shows the following output:

| TS# | NAME |
|-----|----------|
| 0 | SYSTEM |
| 1 | SYSAUX |
| 2 | UNDOTBS1 |
| 4 | USERS |
| 3 | TEMP |
| 6 | EXAMPLE |

Important VIEWS

| USER_cat | ALL_cat | DBA_cat | V\$ |
|-----------------|----------------|----------------|----------------|
| USER_OBJECTS | ALL_OBJECTS | DBA_OBJECTS | V\$TABLESPACE |
| USER_TABLES | ALL_TABLES | DBA_TABLES | V\$INSTANCE |
| USER_TAB_COLS | ALL_TAB_COLS | DBA_TAB_COLS | V\$CONTROLFILE |
| USER_VIEWS | ALL_VIEWS | DBA_VIEWS | V\$DBFILE |
| USER_SEQUENCES | ALL_SEQUENCES | DBA_SEQUENCES | V\$PROCESS |
| USER_TAB_PRIVS | ALL_TAB_PRIVS | DBA_TAB_PRIVS | |
| USER_COL_PRIVS | ALL_COL_PRIVS | DBA_COL_PRIVS | |
| USER_SYS_PRIVS | | DBA_SYS_PRIVS | |
| USER_FREE_SPACE | | DBA_FREE_SPACE | |