



Introdução ao RDBM ORACLE

AULA PL01

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2019 – 2020 Universidade do Minho



ORACLE®



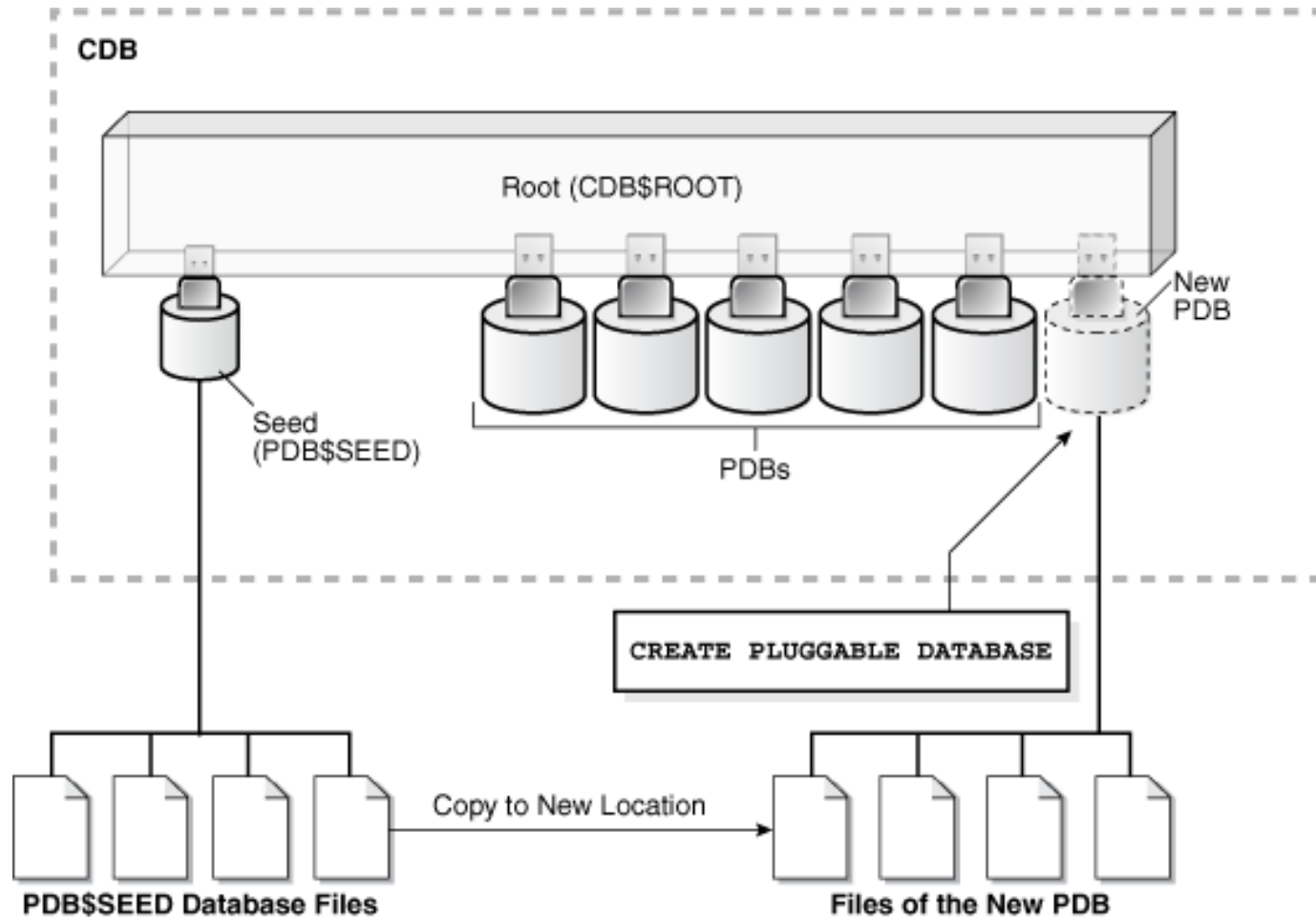
Oracle Schema

A schema is a way to logically group objects in a single collection and provide a unique namespace for objects

User account + collection of all objects therein

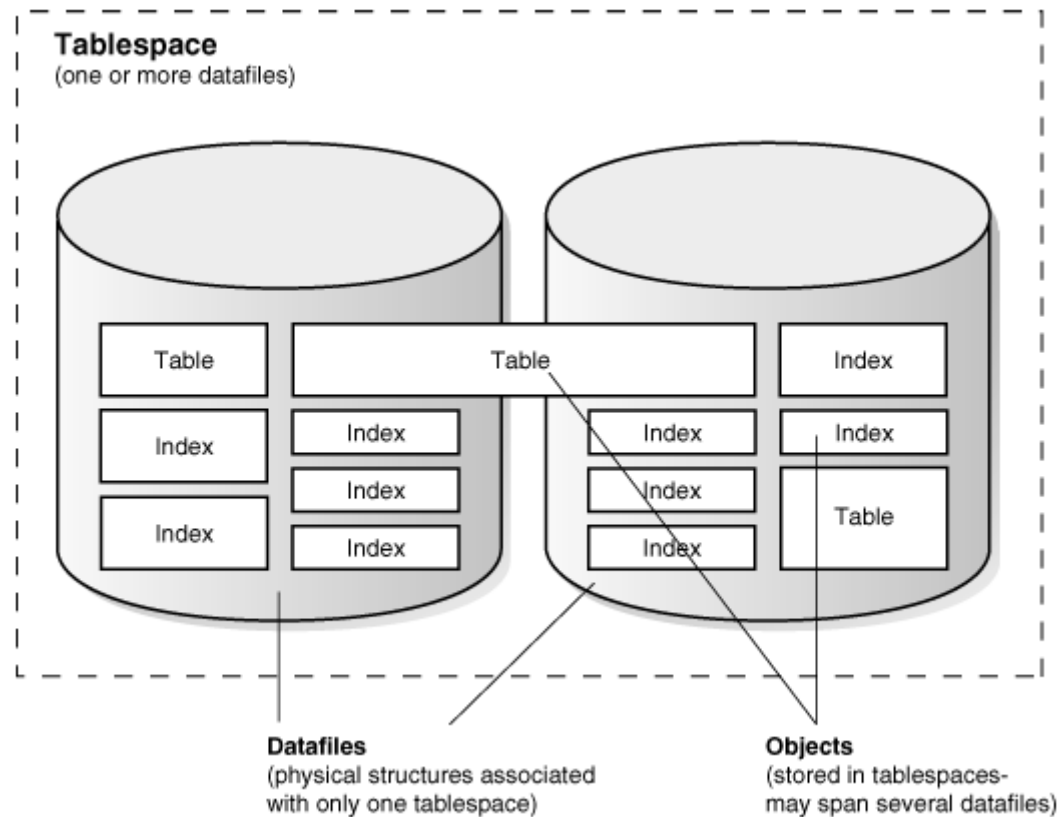


Pluggable Databases





Tablespaces | Datafiles | Objects





Datafile + Tablespaces

- Databases, tablespaces, and datafiles are closely related, but they have important differences:
- An Oracle database consists of one or more logical storage units called tablespaces, which collectively store all of the database's data
- Each tablespace in an Oracle database consists of one or more files called datafiles, which are physical structures that conform to the operating system in which Oracle is running
- A database's data is collectively stored in the datafiles that constitute each tablespace of the database. For example, the simplest Oracle database would have one tablespace and one datafile. Another database can have three tablespaces, each consisting of two datafiles (for a total of six datafiles).

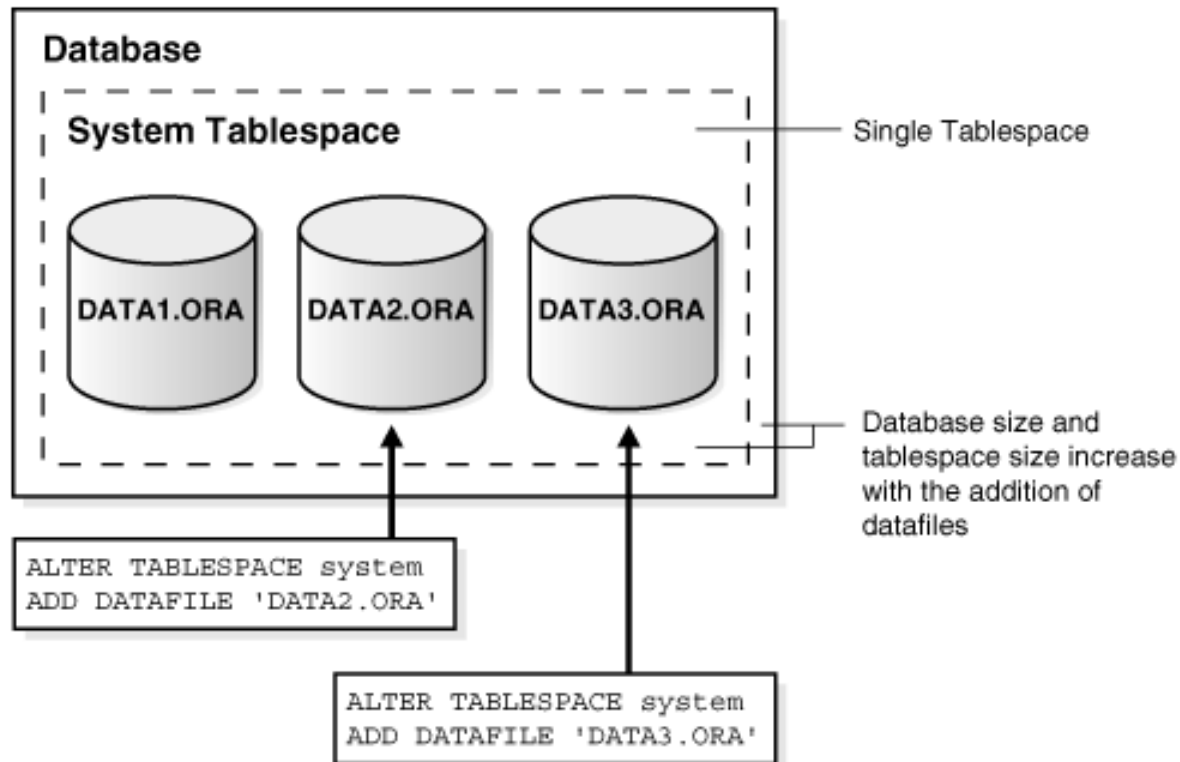


More Space for a Database! How?!

- You can enlarge a database in three ways:
 - 1) Add a datafile to a tablespace
 - 2) Add a new tablespace
 - 3) Increase the size of a datafile

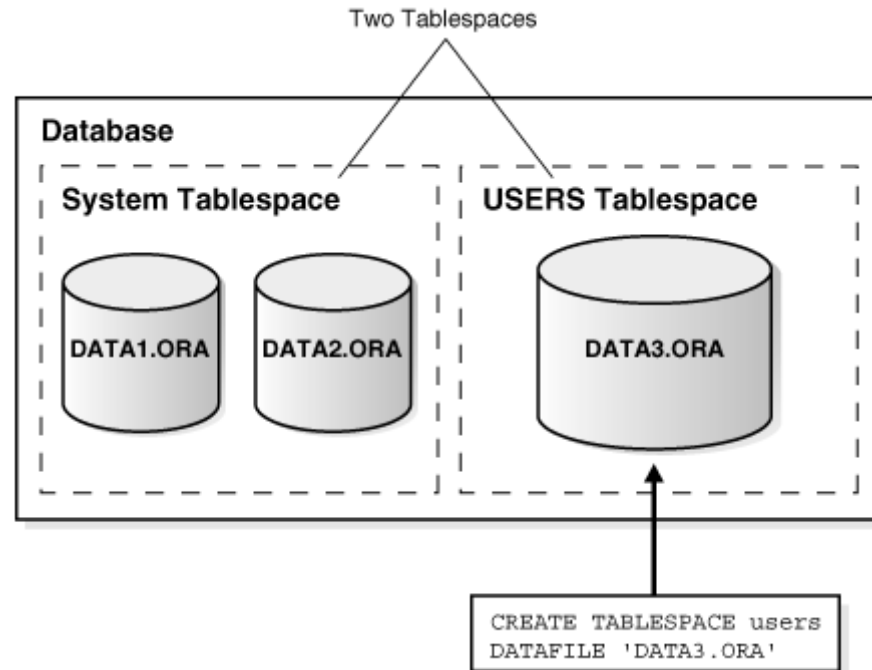


1) Add datafile to Tablespace



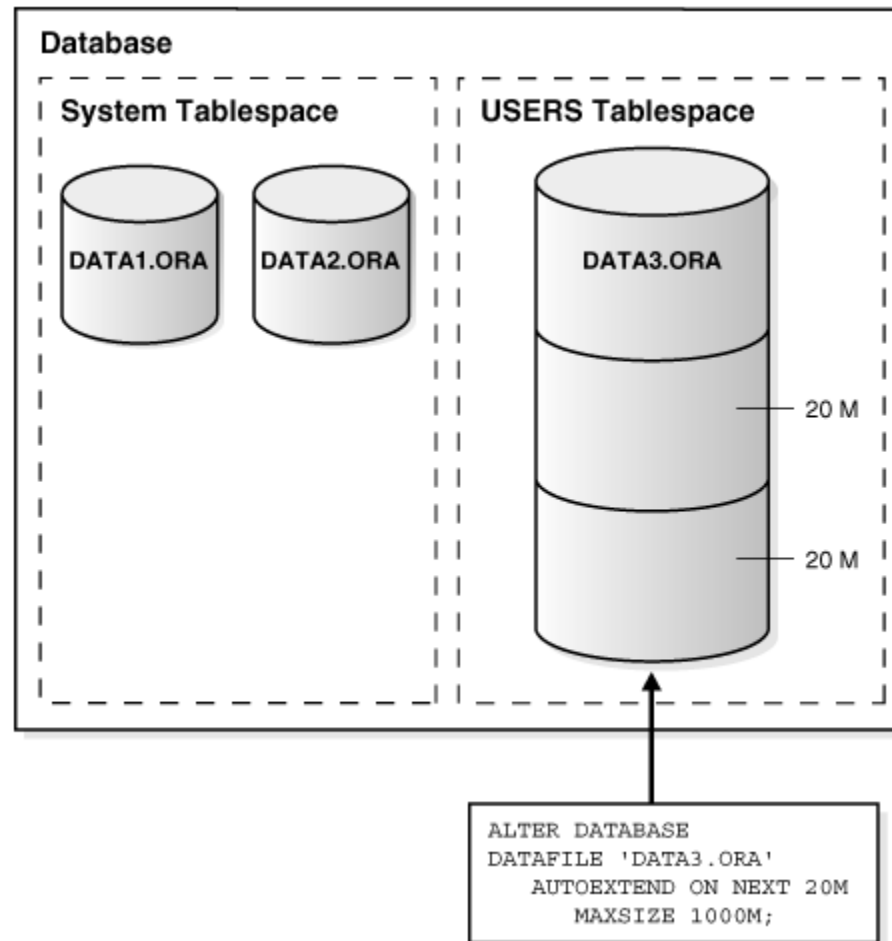


2) New Tablespace





3) Increase Datafile size



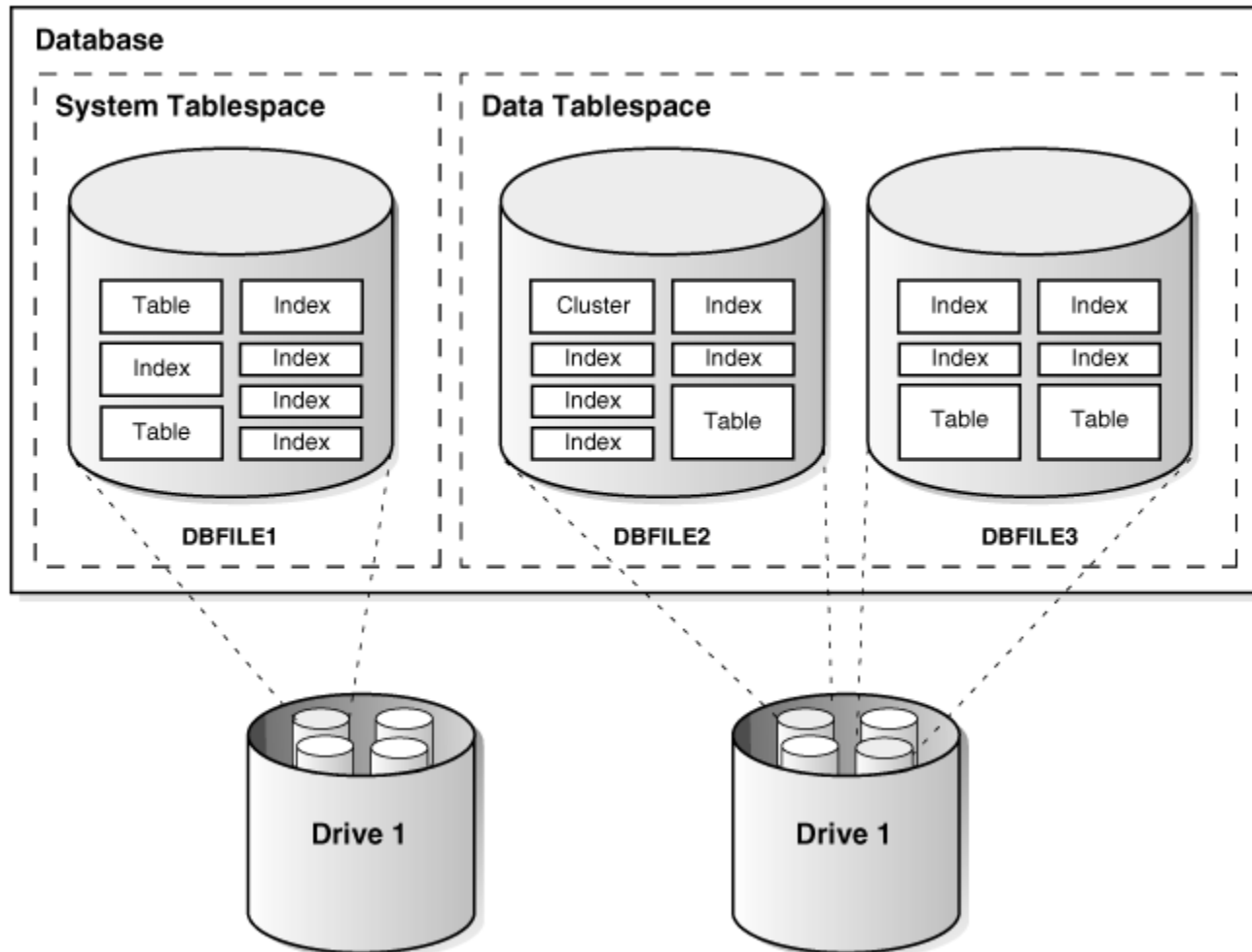


Schema Objects

- Tables;
- Views;
- Materialized Views;
- Dimensions;
- Sequences;
- Synonyms;
- Indexes;
- Databaselinks;
- Stored Procedures;
- ...



Schema Objects





Tables

Diagram illustrating a table structure with annotations:

	Column names
Columns	ENAME JOB MGR HIREDATE SAL COMM DEPTNO
Rows	7329 SMITH CLERK 7902 17-DEC-88 800.00 300.00 20 7499 ALLEN SALESMAN 7698 20-FEB-88 1600.00 300.00 30 7521 WARD SALESMAN 7698 22-FEB-88 1250.00 500.00 30 7566 JONES MANAGER 7839 02-APR-88 2975.00 null 20

Annotations:

- Column not allowing nulls: Points to the ENAME column.
- Column allowing nulls: Points to the COMM column.



Views

Base Table

employees						
employee_id	last_name	job_id	manager_id	hire_date	salary	department_id
203	marvis	hr_rep	101	07-Jun-94	6500	40
204	baer	pr_rep	101	07-Jun-94	10000	70
205	higgins	ac_rep	101	07-Jun-94	12000	110
206	gietz	ac_account	205	07-Jun-94	8300	110

View

staff				
employee_id	last_name	job_id	manager_id	department_id
203	marvis	hr_rep	101	40
204	baer	pr_rep	101	70
205	higgins	ac_rep	101	110
206	gietz	ac_account	205	110



Sequences

- Sequence numbers are Oracle integers of up to 38 digits defined in the database. A sequence definition indicates general information, such as the following:
 - The name of the sequence
 - Whether the sequence ascends or descends
 - The interval between numbers
 - Whether Oracle should cache sets of generated sequence numbers in memory



Synonyms

- A synonym is an alias for any table, view, materialized view, sequence, procedure, function, package, type, Java class schema object, user-defined object type, or another synonym.
- Synonyms are often used for security and convenience. For example, they can do the following:
 - Mask the name and owner of an object
 - Provide location transparency for remote objects of a distributed database
 - Simplify SQL statements for database users
 - Enable restricted access similar to specialized views when exercising fine-grained access control



Indexes

- Indexes are optional structures associated with tables.
- You can create indexes on one or more columns of a table to speed SQL statement execution on that table.



Create Tablespace

```
create tablespace aebd_tables  
    datafile  
    '\u01\app\oracle\oradata\orcl12\orcl\aebd_tables_01.dbf'  
    size 100M;
```

```
create temporary tablespace aebd_temp  
    tempfile  
    '\u01\app\oracle\oradata\orcl12\orcl\aebd_temp_02.dbf'  
    size 50M;
```



Create Tablespace

```
SELECT *  
FROM dba_tablespaces  
WHERE TABLESPACE_NAME = 'aebd_tables';
```

```
SELECT *  
FROM dba_tablespaces  
WHERE TABLESPACE_NAME = 'aebd_temp';
```



Create User

```
CREATE  
USER grey  
IDENTIFIED BY grey110  
DEFAULT TABLESPACE aebd_tables  
TEMPORARY TABLESPACE aebd_temp  
QUOTA 10M on aebd_tables;
```

```
GRANT CONNECT TO grey;
```

```
GRANT RESOURE TO grey;
```



ALTER USER command

```
ALTER USER Scott  
IDENTIFIED by New_Pa$$w0rd  
DEFAULT TABLESPACE Data01  
TEMPORARY TABLESPACE Temp  
QUOTA 100M ON Data01  
QUOTA 0 ON Inventory_TBS;
```



DROP USER command

```
DROP USER User105;  
DROP USER Scott CASCADE;
```

Dropping a user causes the user and the user schema to be immediately deleted from the database.

If the user has created objects within their schema, it is necessary to use the CASCADE option in order to drop a user.

If you fail to specify CASCADE when user objects exist, an error message is generated and the user is not dropped.

In order for a DBA to drop a user, the DBA must have the DROP USER system privilege.



Data Dictionary Tables for User Accounts

The only data dictionary table used by a DBA for user account information is DBA_USERS.

```
SELECT username, account_status, default_tablespace  
FROM dba_users;
```

USERNAME	ACCOUNT_STATUS	DEFAULT_TABLESPACE
-----	-----	-----
OUTLN	OPEN	SYSTEM
USER350	OPEN	USERS
DBOCK	OPEN	DATA01
SYS	OPEN	SYSTEM
SYSTEM	OPEN	SYSTEM
USER349	EXPIRED	SYSTEM
SCOTT	EXPIRED	USERS
TSMSYS	EXPIRED & LOCKED	SYSTEM
DIP	EXPIRED & LOCKED	SYSTEM
DBSNMP	EXPIRED & LOCKED	SYSAUX
ORACLE_OCM	EXPIRED & LOCKED	SYSTEM



Exercício Prático

1] Criação de schema oracle:

- a) criação de tablespaces (permanente e temporário);
- b) criação de utilizador;
- c) garantir quota de utilização nos tablespaces;
- d) dar privilégios ao utilizador;



Exercício Prático

2] Considerando:

AUTOR {ID_AUTOR, NOME}

EDITORIA {ID_EDITORIA, NOME}

GENERO {ID_GENERO, NOME}

SUPORTE {ID_SUPORTE, NOME}

TITULO (ID_TITULO, TITULO, PRECO, DTA_COMPRA, ID_EDITORIA,
ID_SUPORTE, ID_GENERO, ID_AUTOR)

MUSICA {ID_MUSICA, NOME, ID_AUTOR, ID_TITULO}

REVIEW { ID_REVIEW, ID_TITULO, DTA_REVIEW, CONTEUDO}



Exercício Prático

..... 2]

- a) criar as tabelas recorrendo à sql worksheet do sqldeveloper;
- b) Popular as tabelas recorrendo aos scripts fornecidos;
- c) verificar o preenchimento das tabelas recorrendo a scripts SQL.



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