



Modelo Físico DBMS Oralce

# AULA PL02

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2019 – 2020 Universidade do Minho



# Conteúdo da UC

<https://hpeixoto.me/class/nosql>



- Relational Database
- Oracle
- Tablespaces | Datafiles
- Manage Database Size
- Objects
- Create Table
- SQL: create table | insert and select statements

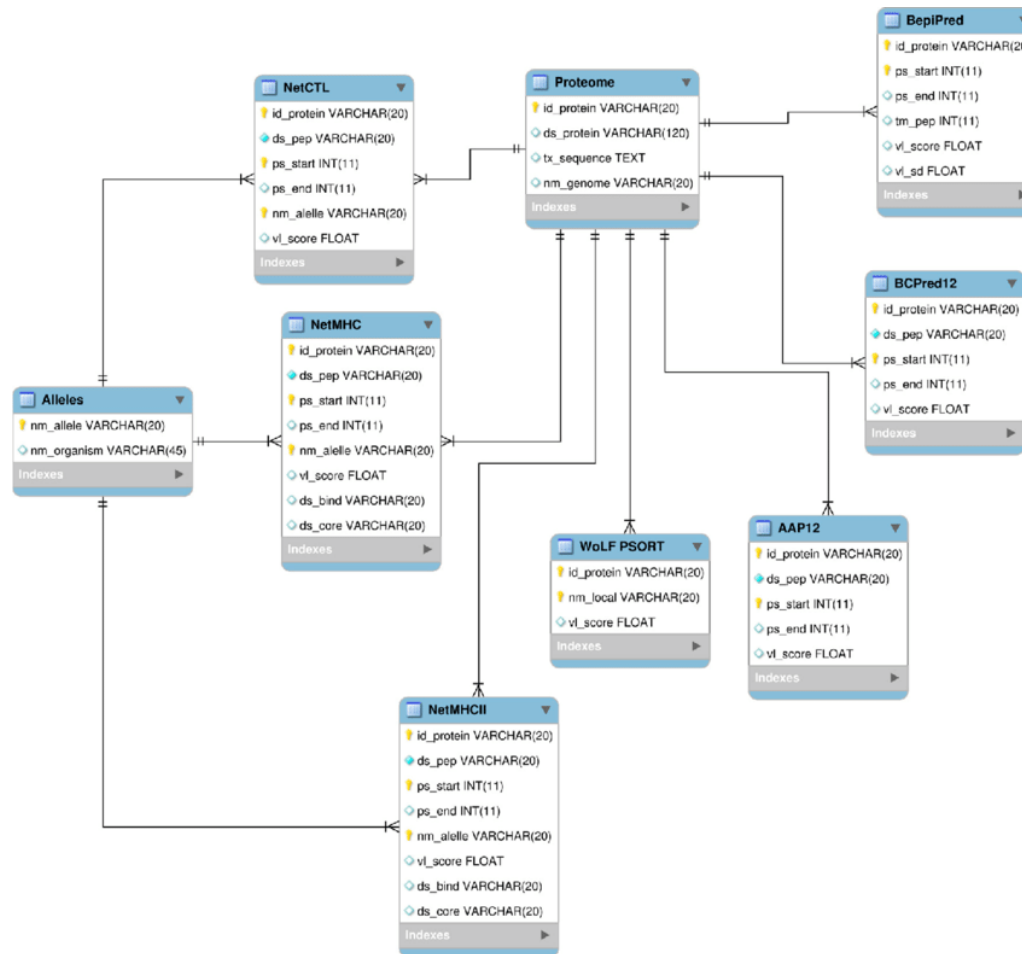


# Relational Database

- A database that conforms to the relational model. The relational model has the following major aspects:
  - Structures
    - Well-defined objects store or access the data of a database.
  - Operations
    - Clearly defined actions enable applications to manipulate the data and structures of a database.
  - Integrity rules
    - Integrity rules govern operations on the data and structures of a database.



# Relational Database





# ORACLE®



# Oracle Database

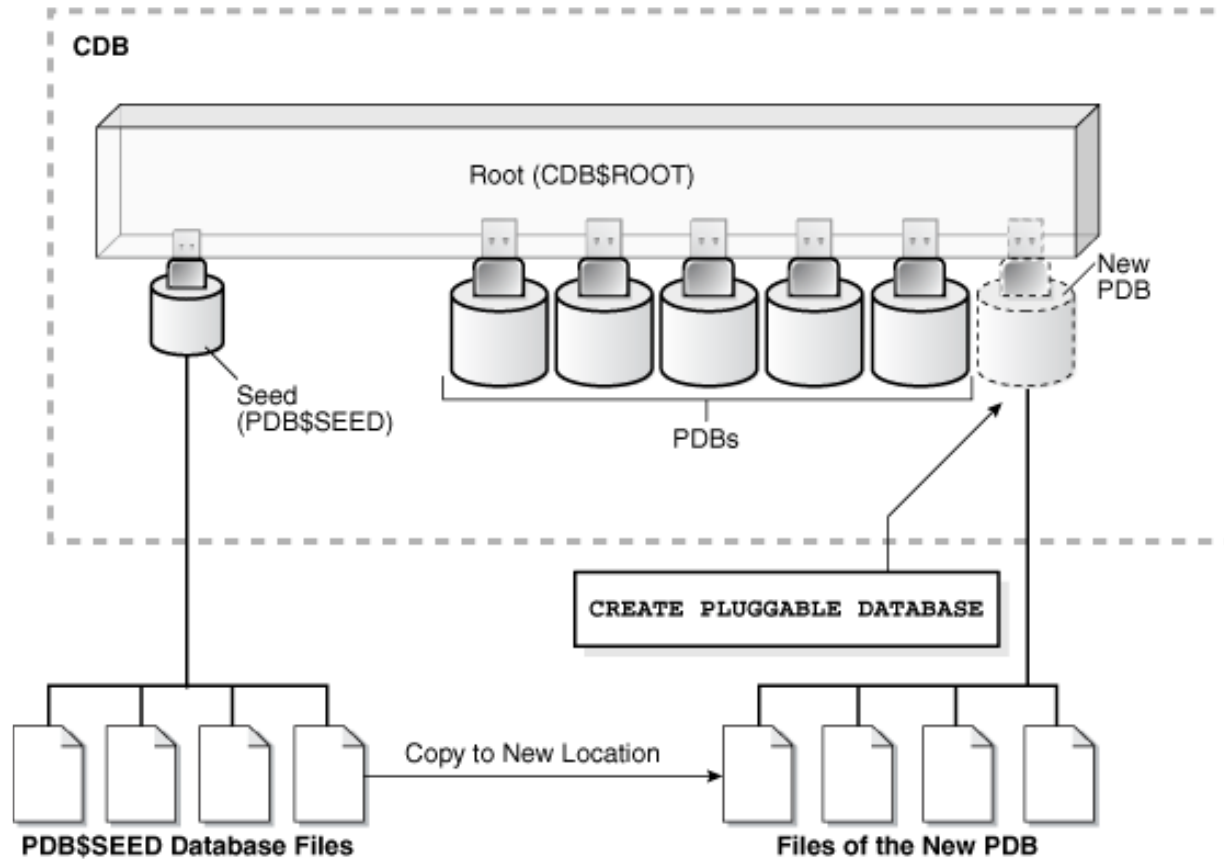
## Schema Objects:

- 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



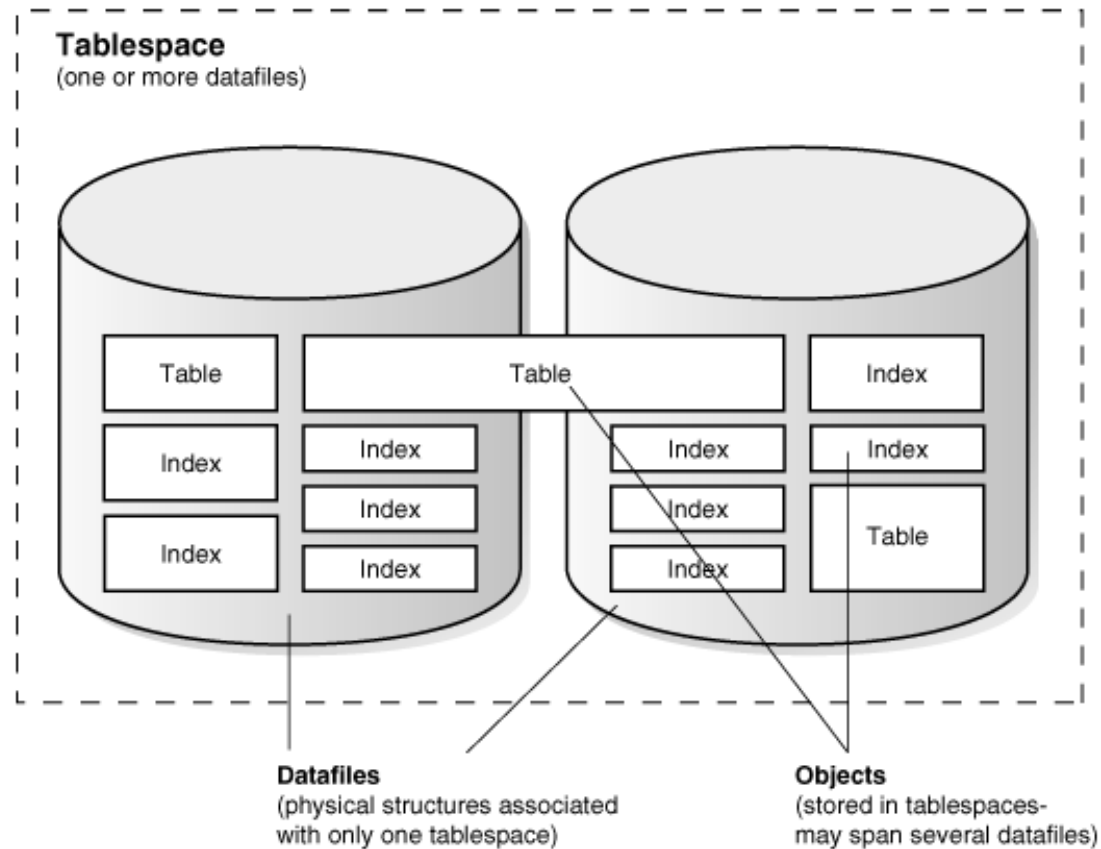
# Oracle Database 12c







# Tablespaces | Datafiles | Objects





# TableSpaces | DataFiles

**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).



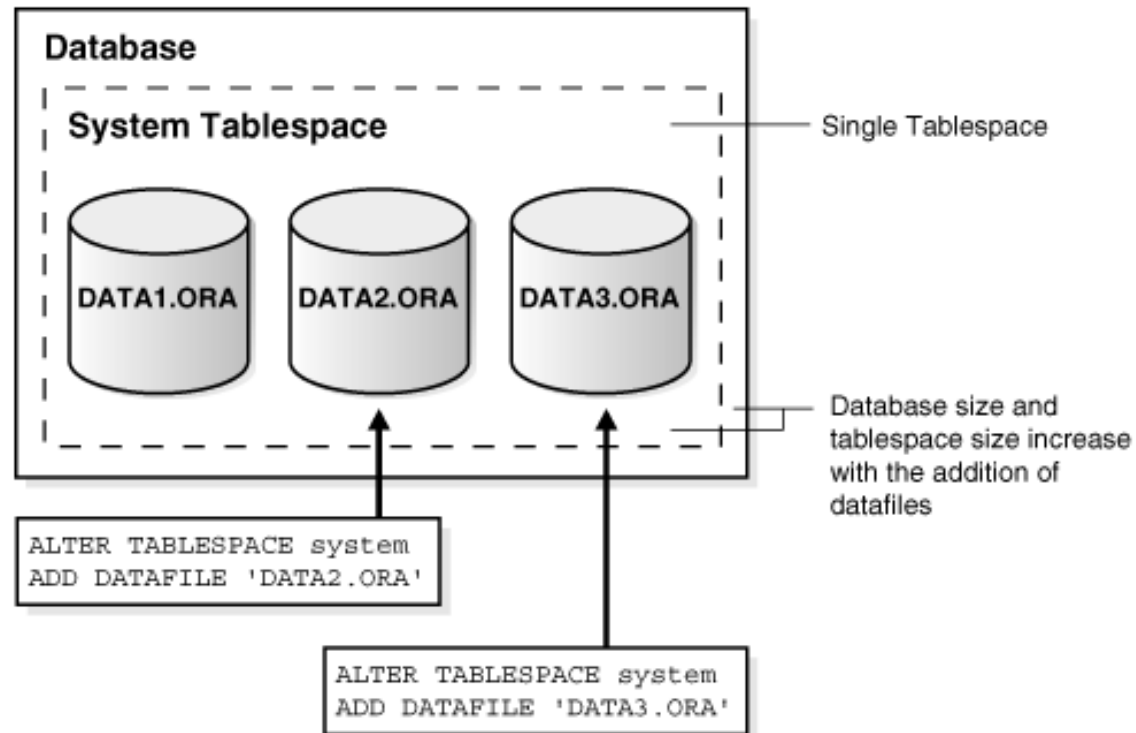
# Database Size

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

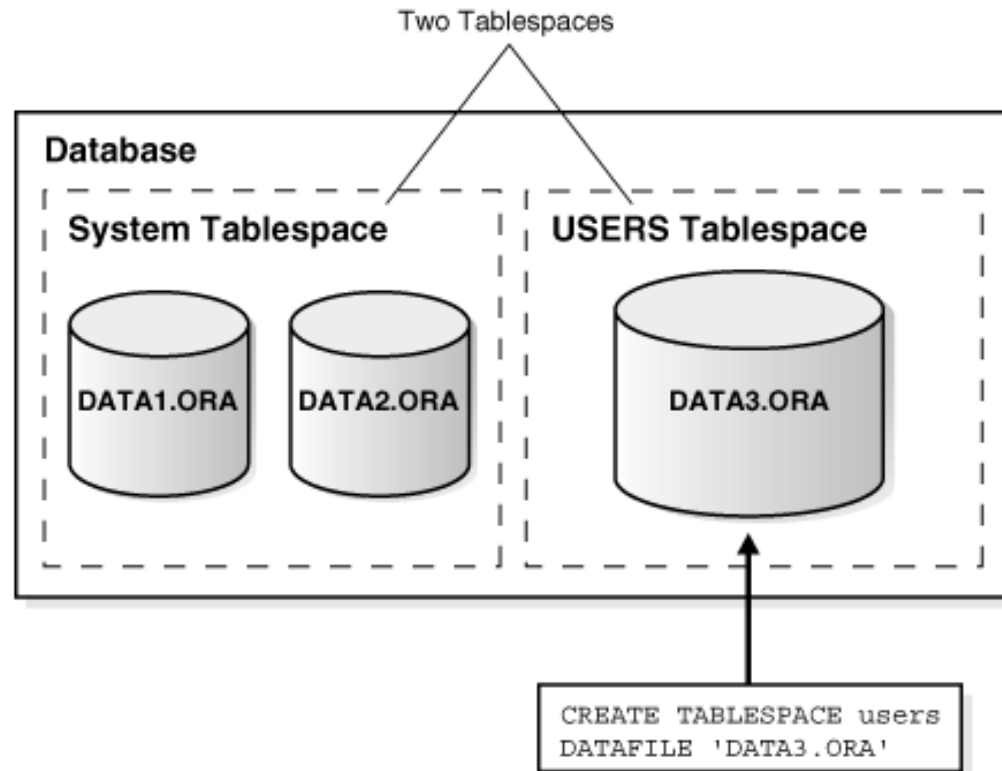


# Database Size : Add datafile



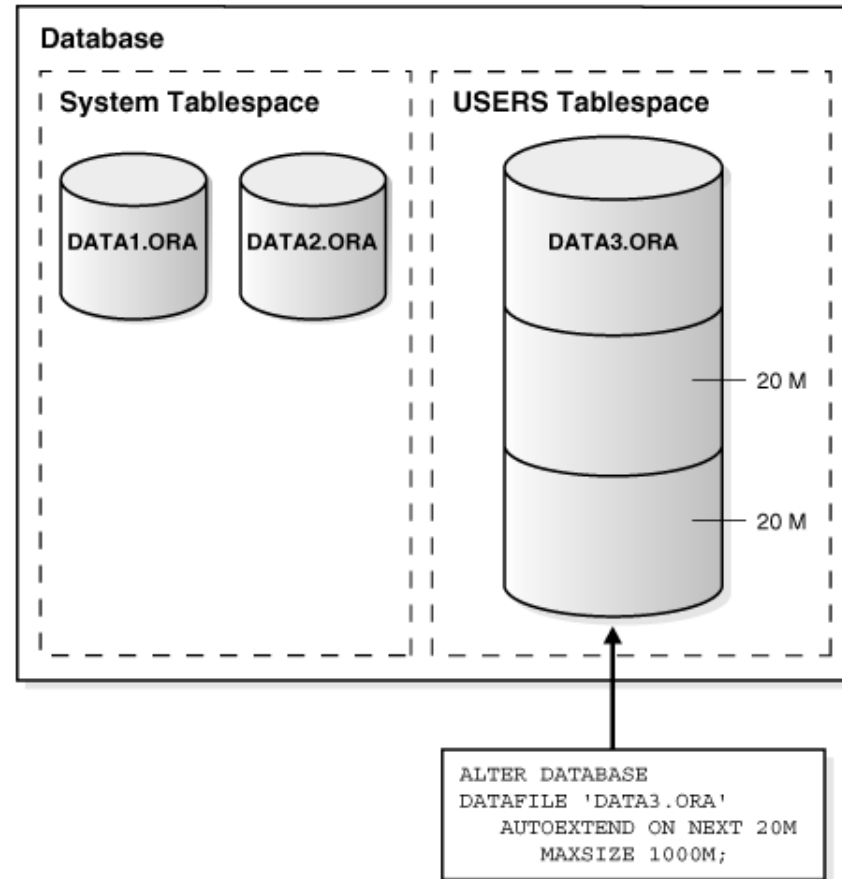


# Database Size : New Tablespace





# Database Size : Datafile size





# Objects

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



# Objects: Tables

Diagram illustrating a table structure with annotations:

- Rows:** Indicated by a bracket on the left side of the table.
- Columns:** Indicated by a bracket above the column headers.
- Column names:** Indicated by a bracket on the right side of the table.
- Column not allowing nulls:** Indicated by a bracket pointing to the **DEPTNO** column.
- Column allowing nulls:** Indicated by a bracket pointing to the **COMM** column.

	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
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		20





# Objects: 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



# Objects: 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



# Objects: 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



# Objects: 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.



# SQL: Create Table

Example:

```
CREATE TABLE EDITORA (  
    "ID_EDITORA" NUMBER(3,0) NOT NULL ENABLE,  
    "NOME" VARCHAR2(200 BYTE) NOT NULL ENABLE,  
    CONSTRAINT "EDITORA_PK" PRIMARY KEY ("ID_EDITORA")  
);
```



# SQL: Insert statment

Example:

```
> insert into review values (7,7, to_date('19-12-2017', 'dd-mm-yyyy'), 'MAU');
```



# SQL: Select statment

Example:

```
> select count(*) from review;
```



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