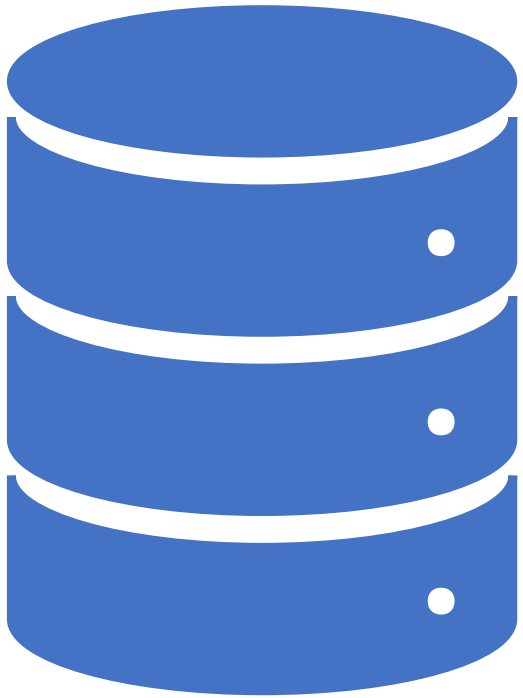


Basic Database Administration

A history of Oracle

Engineers Larry Ellison, Bob Miner, and Ed Oates found Software Development Laboratories On June 16th , 1977.

Bruce Scott is widely considered an Oracle co-founder, technically he wasn't. He was its first hired employee -- or, if you count the founders, employee No. 4. He was the co-architect of the first three versions of the Oracle database.

Types of Oracle Database Users

Database Administrators

Each database requires at least one database administrator (DBA). An Oracle Database system can be large and can have many users. Therefore, database administration is sometimes not a one-person job, but a job for a group of DBAs who share responsibility.

Security Officers

In some cases, a site assigns one or more security officers to a database. A security officer enrolls users, controls and monitors user access to the database, and maintains system security.

Network Administrators

Some sites have one or more network administrators. A network administrator, for example, administers Oracle networking products, such as Oracle Net Services.

Application Developers

Application developers design and implement database applications.

Application Administrators

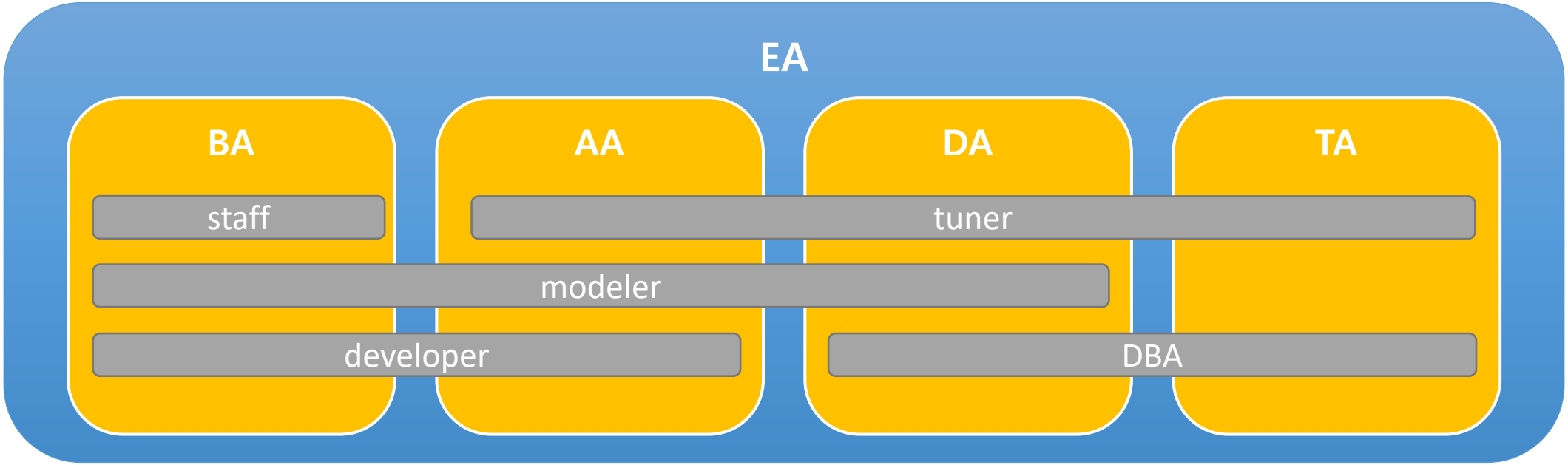
An Oracle Database site can assign one or more application administrators to administer a particular application. Each application can have its own administrator.

Database Users

Database users interact with the database through applications or utilities.

Source: https://docs.oracle.com/en/database/oracle/oracle-database/18/admin/getting-started-with-database-administration.html#GUID-C7B90809-E930-44BF-B836-F760B0989BB0

데이터와 직종과 직무



직종	역할
EA(Enterprise Architect)	전사 아키텍처를 설계
BA(Business Architect)	업무 아키텍처를 설계
AA(Application Architect)	애플리케이션 아키텍처를 설계
TA(Technical Architect)	하드웨어 아키텍처와 네트워크 아키텍처를 설계
DA(Data Architect)	데이터 아키텍처를 설계

Source: 불친절한 SQL 프로그래밍, 디비안

1) Database Administrators

Each database requires at least one database administrator (DBA). An Oracle Database system can be large and can have many users. Therefore, database administration is sometimes not a one-person job, but a job for a group of DBAs who share responsibility.

- Installing and upgrading the Oracle Database server and application tools (업그레이드 & 패치)
- Allocating system storage and planning future storage requirements for the database system
- Creating primary database storage structures (tablespaces) after application developers have designed an application
- Creating primary objects (tables, views, indexes) once application developers have designed an application
- Modifying the database structure, as necessary, from information given by application developers
- Enrolling users and maintaining system security
- Ensuring compliance with Oracle license agreements
- Controlling and monitoring user access to the database
- Monitoring and optimizing the performance of the database (DB 튜닝)
- Planning for backup and recovery of database information
- Maintaining archived data on tape
- Backing up and restoring the database
- Contacting Oracle for technical support

Source: https://docs.oracle.com/en/database/oracle/oracle-database/18/admin/getting-started-with-database-administration.html#GUID-C7B90809-E930-44BF-B836-F760B0989BB0

2) Application Developers

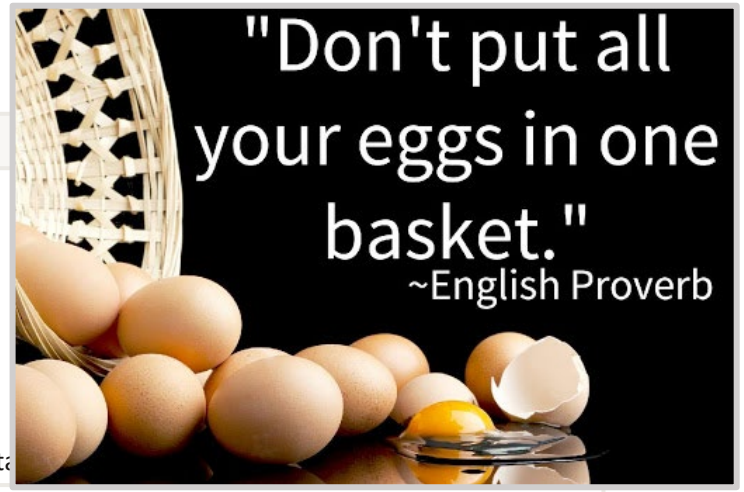
Application developers can perform some of these tasks in collaboration with DBAs.

- Designing and developing the database application
- Designing the database structure for an application
- Estimating storage requirements for an application
- Specifying modifications of the database structure for an application
- Relaying this information to a database administrator
- Tuning the application during development
- Establishing security measures for an application during development

Source: https://docs.oracle.com/en/database/oracle/oracle-database/18/admin/getting-started-with-database-administration.html#GUID-C7B90809-E930-44BF-B836-F760B0989BB0

3) Administrative User Accounts

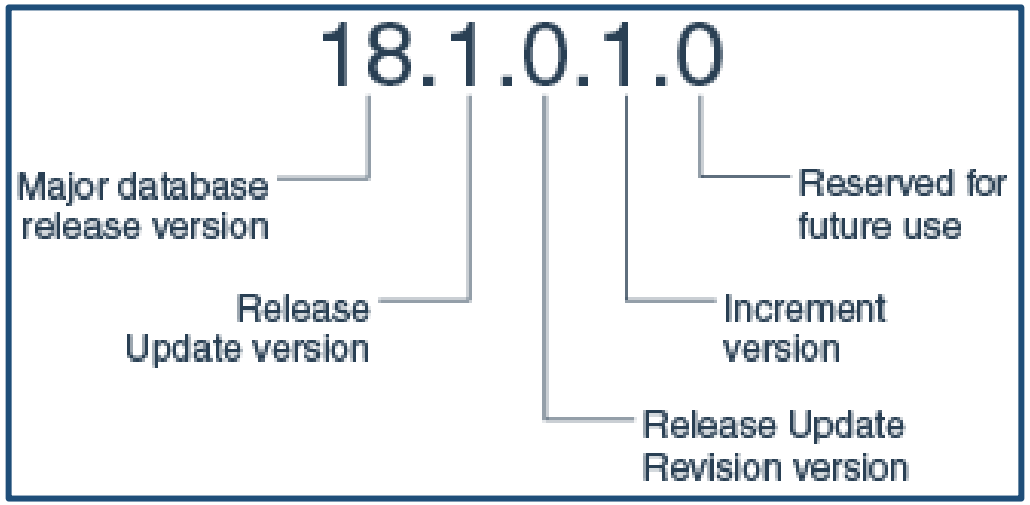
- **SYS, SYSTEM, SYSBACKUP, SYSDG, SYSKM, SYSRAC**



Administrative Privilege	Operations Authorized
SYSDBA	•Perform STARTUP and SHUTDOWN operations •ALTER DATABASE: open, mount, back up, or change character set •CREATE DATABASE •DROP DATABASE •CREATE SPFILE •ALTER DATABASE ARCHIVELOG •ALTER DATABASE RECOVER •Includes the RESTRICTED SESSION privilege This administrative privilege allows most operations, including the ability to view user data
SYSOPER	•Perform STARTUP and SHUTDOWN operations •CREATE SPFILE •ALTER DATABASE: open, mount, or back up •ALTER DATABASE ARCHIVELOG •ALTER DATABASE RECOVER (Complete recovery only. Any form of incomplete recovery, such as UNTIL TIME|CHANGE|CANCEL|CONTROLFILE requires connecting as SYSDBA.) •Includes the RESTRICTED SESSION privilege This privilege allows a user to perform basic operational tasks, but without the ability to view user data.
SYSBACKUP	This privilege allows a user to perform backup and recovery operations either from Oracle Recovery Manager (RMAN) or SQL*Plus. See *Oracle Database Security Guide* for the full list of operations allowed by this administrative privilege.
SYSDG	This privilege allows a user to perform Data Guard operations. You can use this privilege with either Data Guard Broker or the DGMGRL command-line interface. See *Oracle Database Security Guide* for the full list of operations allowed by this administrative privilege.
SYSKM	This privilege allows a user to perform Transparent Data Encryption keystore operations. See *Oracle Database Security Guide* for the full list of operations allowed by this administrative privilege.
SYSRAC	This privilege allows the Oracle agent of Oracle Clusterware to perform Oracle Real Application Clusters (Oracle RAC) operations. See *Oracle Database Security Guide* for the full list of operations allowed by this administrative privilege.

Source: https://docs.oracle.com/en/database/oracle/oracle-database/18/admin/getting-started-with-database-administration.html#GUID-10287280-C2E4-4FB1-ABF9-993327419603

Oracle Database Release Number



- First numeral: This numeral indicates the major release version. It also denotes the last two digits of the year in which the Oracle Database version was released for the first time.
- Second numeral: This numeral indicates the release update version (Update).
- Third numeral: This numeral indicates the release update revision version (Revision).
- Fourth numeral: This numeral indicates the increment version. This nomenclature can apply to updates in future releases.
- Fifth numeral: This numeral is reserved for future use.

Source: http://www.aistudy.co.kr/psychology/schema.htm

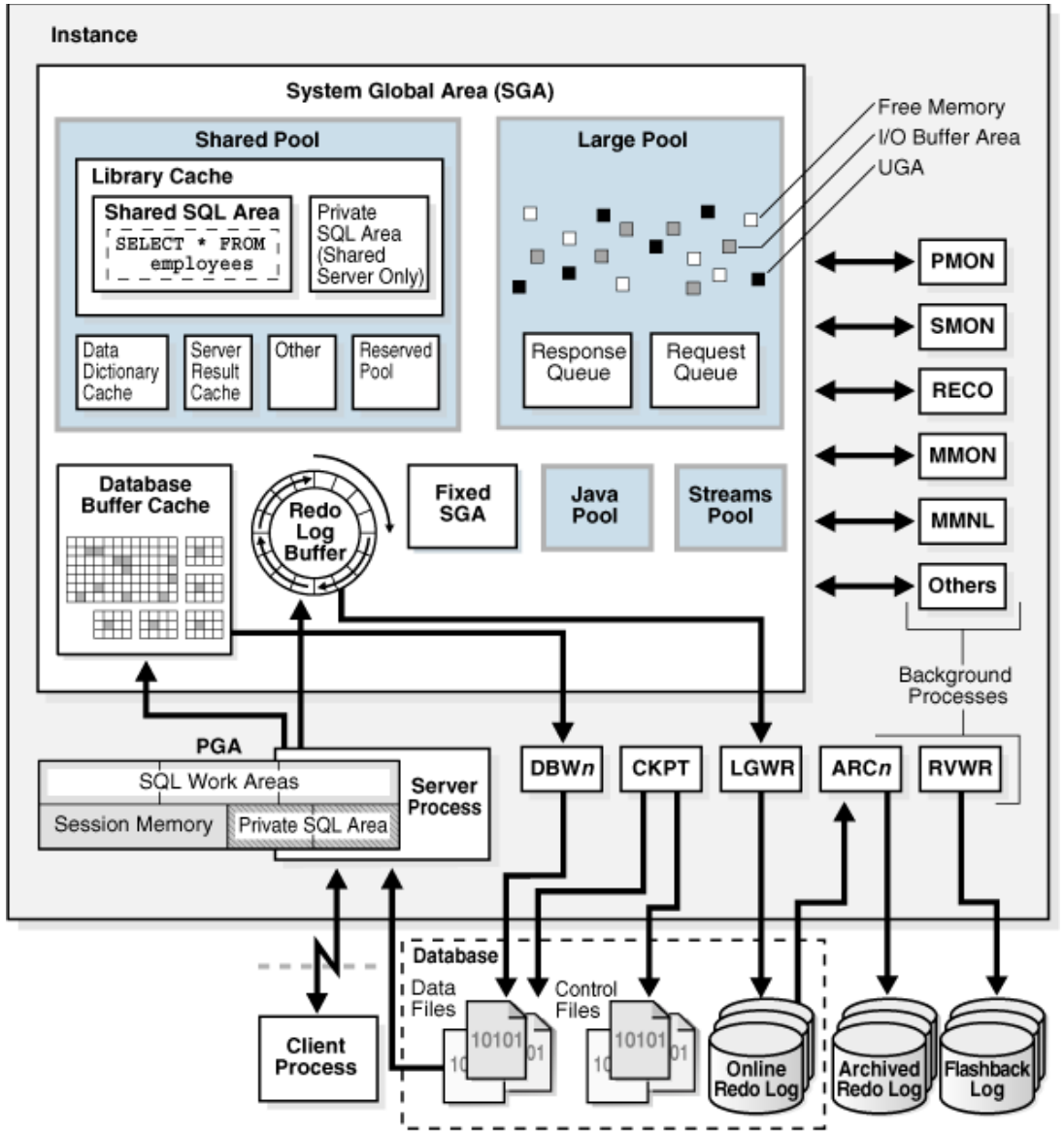
현재 Release Number 확인

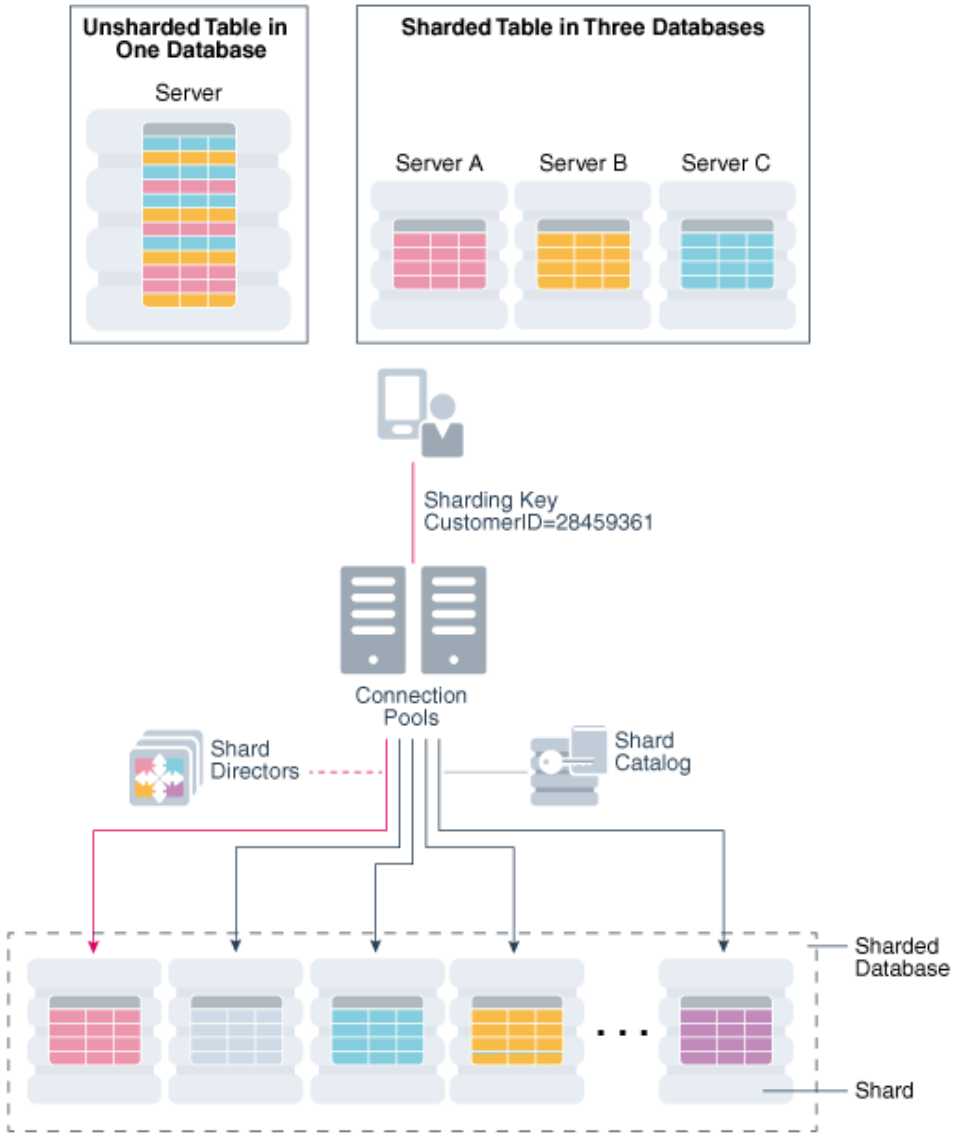
```
COL PRODUCT FORMAT A38
COL VERSION FORMAT A10
COL VERSION_FULL FORMAT A12
COL STATUS FORMAT A12
SELECT * FROM PRODUCT_COMPONENT_VERSION;
```

```
PRODUCT                                  VERSION    VERSION_FULL STATUS
---------------------------------------- ---------- ------------ ------------
Oracle Database 18c Express Edition      18.0.0.0.0 18.4.0.0.0   Production
```

Source: https://docs.oracle.com/en/database/oracle/oracle-database/18/admin/getting-started-with-database-administration.html#GUID-C7B90809-E930-44BF-B836-F760B0989BB0

Oracle Instance and Database

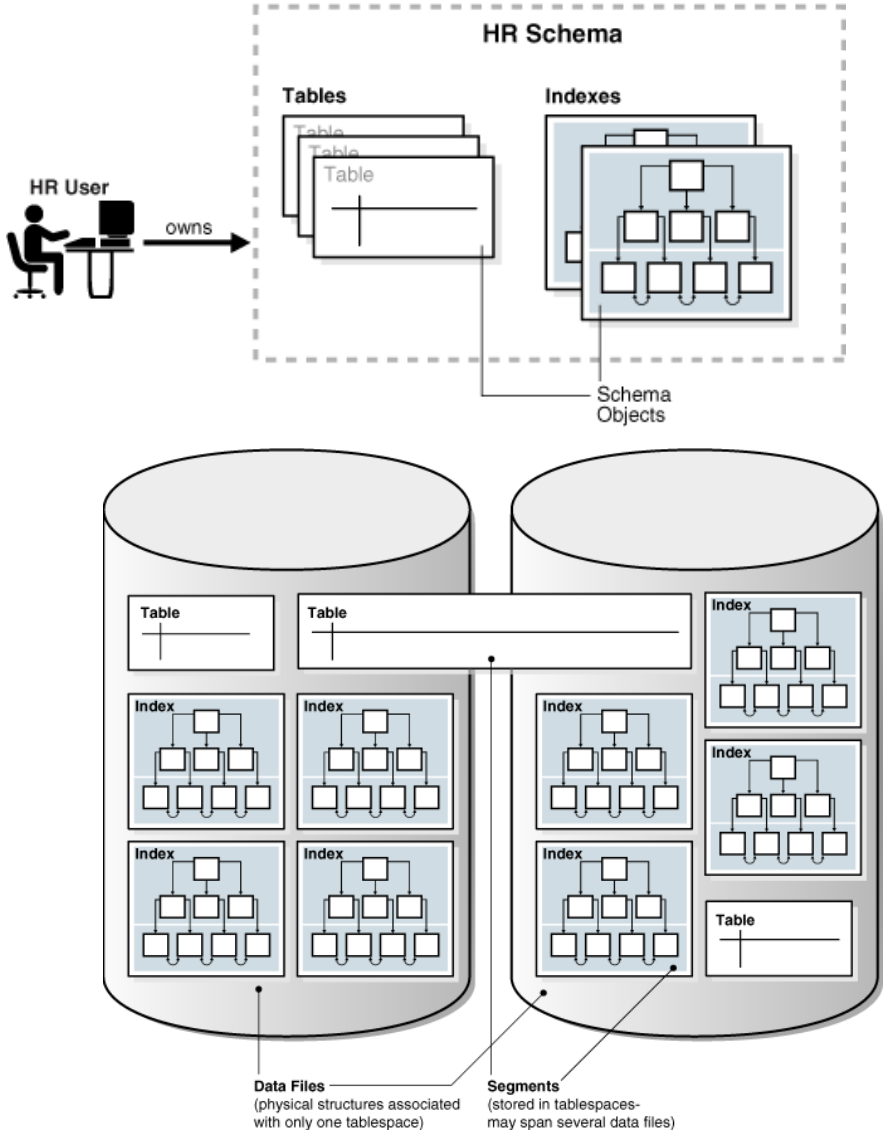




Oracle Database Schema란?

A database schema is a logical container for data structures, called schema objects. Examples of schema objects are tables and indexes. You create and manipulate schema objects with SQL.

Object	Description
Table	A table stores data in rows. Tables are the most important schema objects in a relational database.
Indexes	Indexes are schema objects that contain an entry for each indexed row of the table or table cluster and provide direct, fast access to rows. Oracle Database supports several types of index. An index-organized table is a table in which the data is stored in an index structure.
Partitions	Partitions are pieces of large tables and indexes. Each partition has its own name and may optionally have its own storage characteristics.
Views	Views are customized presentations of data in one or more tables or other views. You can think of them as stored queries. Views do not actually contain data.
Sequences	A sequence is a user-created object that can be shared by multiple users to generate integers. Typically, you use sequences to generate primary key values.
Dimensions	A dimension defines a parent-child relationship between pairs of column sets, where all the columns of a column set must come from the same table. Dimensions are commonly used to categorize data such as customers, products, and time.
Synonyms	A synonym is an alias for another schema object. Because a synonym is simply an alias, it requires no storage other than its definition in the data dictionary.
PL/SQL subprograms and packages	PL/SQL is the Oracle procedural extension of SQL. A PL/SQL subprogram is a named PL/SQL block that can be invoked with a set of parameters. A PL/SQL package groups logically related PL/SQL types, variables, and subprograms.



Source: https://docs.oracle.com/en/database/oracle/oracle-database/18/cncpt/tables-and-table-clusters.html#GUID-7567BE77-AFC0-446C-832A-FCC1337DEED8