

Laborator 1

Introducere in Oracle



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Start up kit (I)

- Punctaj:
 - 10% prezenta – minim 7 prezente
 - 40% activitate – minim 50% din nota
 - 50% colocviu (ultimul laborator) – minim 50% din nota
 - 2 laboratoare de recuperare
 - ! se recupereaza numai prezentele
- **User/Pass:**
- **12c: c##stud1/student**
- **11g: stud1/student**

Start up kit (II)

- Oracle Live SQL
- <https://livesql.oracle.com/apex/f?p=590:1000>

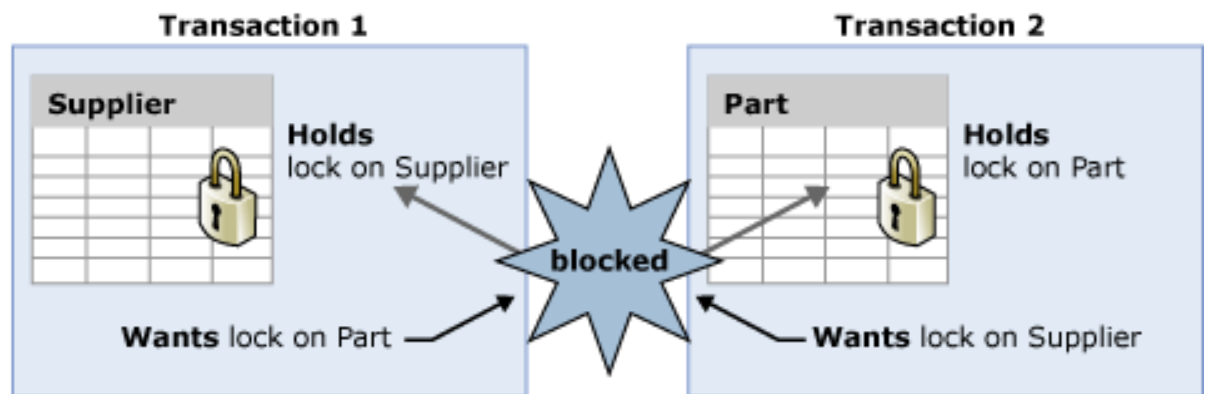
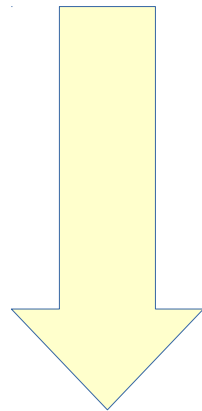
The screenshot displays the Oracle Live SQL interface. The top navigation bar is red and contains the Oracle logo, the text "Live SQL", and links for "Feedback", "Help", and a user profile "radulescuilumaria@yahoo.com". The left sidebar is dark grey and lists navigation options: "Home", "SQL Worksheet", "My Session", "Schema", "Quick SQL", "My Scripts", and "Code Library". The main content area is titled "Schema" and features a search bar for "Search Database Objects". Below the search bar, there are filters for "Schema" (set to "EMP and DEPT (SCOTT)"), "Sort By" (set to "Name"), and "Options" (with "Primary Objects" selected). A "Reset Search" button is also present. The main area displays a yellow warning banner: "You have read-only access to the SCOTT sample schema." Below this, two table cards are shown: "DEPT" and "EMP". Each card indicates "Table Status: Valid" and "Created 1 years ago".

Start up kit (III)

- **Virtual Machine download (Pre-built Virtual Machine for Oracle Enterprise Data Quality 12.2.1)**
 - <https://www.oracle.com/technetwork/middleware/oedq/downloads/edq-vm-download-2424092.html>
- **Virtual Machine Vagrant**
 - <https://github.com/oracle/vagrant-boxes/tree/master/OracleDatabase>
- **Direct Software download**
 - <https://www.oracle.com/technetwork/database/enterprise-edition/downloads/index.html>

Baze de date si SGBD

- Baza de date (relatională):
 - Ansamblu de date **structurat** care permite stocarea și prelucrarea informațiilor **concurrent de către mai mulți utilizatori în mod selectiv**



- **SGBD**

- Software care asigură interacțiunea cu baza de date

Oracle

Rank			DBMS	Database Model	Score		
Feb 2019	Jan 2019	Feb 2018			Feb 2019	Jan 2019	Feb 2018
1.	1.	1.	Oracle	Relational, Multi-model	1264.02	-4.82	-39.26
2.	2.	2.	MySQL	Relational, Multi-model	1167.29	+13.02	-85.18
3.	3.	3.	Microsoft SQL Server	Relational, Multi-model	1040.05	-0.21	-81.98
4.	4.	4.	PostgreSQL	Relational, Multi-model	473.56	+7.45	+85.18
5.	5.	5.	MongoDB	Document	395.09	+7.91	+58.67
6.	6.	6.	IBM Db2	Relational, Multi-model	179.42	-0.43	-10.55
7.	7.	8.	Redis	Key-value, Multi-model	149.45	+0.43	+22.43
8.	8.	9.	Elasticsearch	Search engine, Multi-model	145.25	+1.81	+19.93
9.	9.	7.	Microsoft Access	Relational	144.02	+2.41	+13.95
10.	10.	11.	SQLite	Relational	126.17	-0.63	+8.89

SQL. PL/SQL

- **SQL – limbaj de programare** pentru procesarea informatiilor dintr-o baza de date relationala
- **PL/SQL – limbaj procedural**, extensie a limbajului SQL: interogari + structuri de control (if then else) + bucle (loop, while, for)
- **DML, DDL, DCL, TCL**

Modelarea algebrei relaționale folosind Oracle Database

Entitate

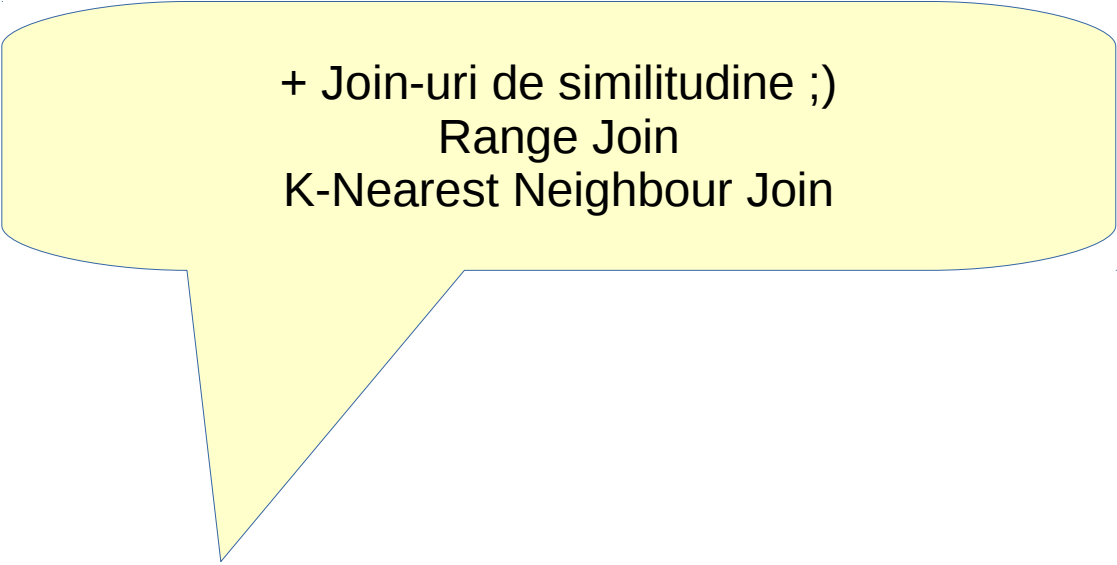
Numele atributului

EMPNO	ENAME	JOB	HIREDATE	MGR	SAL	COMM	DEPTNO
7369	SMITH	CLERK	17-DEC-80	7902	800		20
7499	ALLEN	SALESMAN	20-FEB-81	7698	1600	300	30
7521	WARD	SALESMAN	22-FEB-81	7698	1250	500	30
7566	JONES	MANAGER	02-APR-81	7839	2975		20
7654	MARTIN	SALESMAN	28-SEP-81	7698	1250	1400	30
7698	BLAKE	MANAGER	01-MAY-81	7839	2850		30
7782	CLARK	MANAGER	09-JUN-81	7839	2450		10
7788	SCOTT	ANALYST	19-APR-87	7566	3000		20
7839	KING	PRESIDENT	17-NOV-81		5000		10
7844	TURNER	SALESMAN	08-SEP-81	7698	1500	0	30
7876	ADAMS	CLERK	23-MAY-87	7788	1100		20
7900	JAMES	CLERK	03-DEC-81	7698	950		30
7902	FORD	ANALYST	03-DEC-81	7566	3000		20
7934	MILLER	CLERK	23-JAN-82	7782	1300		10

Valoarea atributului

Operatorii algebrei relationale

- Proiectia
- Selectia
- Produsul
- Reuniunea
- Intersectia
- Diferenta
- Join
- Compunere naturala
- Semi-compunere
- Teta-compunere
- Compunere externa



+ Join-uri de similitudine ;)
Range Join
K-Nearest Neighbour Join

Proiectia

Marca	Nume	Job	Departament
76001	Popa Diana	Contabil	10
76002	Manea Simona	Contabil	10
76003	Banica Ioana	Tehnolog	20

Marca	Job
76001	Contabil
76002	Contabil
76003	Tehnolog

Selectia

Marca	Nume	Job	Departament
76001	Popa Diana	Contabil	10
76002	Manea Simona	Contabil	10
76003	Banica Ioana	Tehnolog	20

Marca	Nume	Job	Departament
76001	Popa Diana	Contabil	10
76003	Banica Ioana	Tehnolog	20

Produsul

Marca	Nume	Job	Departament
76001	Popa Diana	Contabil	10
76003	Banica Ioana	Tehnolog	20

Departament	Nume dept	Locatie
10	Financiar	Bucuresti
20	Operatiuni	Craiova

Marca	Nume	Departament	Nume dept
76001	Popa Diana	10	Financiar
76003	Banica Ioana	20	Operatiuni
76001	Popa Diana	20	Operatiuni
76003	Banica Ioana	10	Financiar

Compunere naturala

Marca	Nume	Job	Departament
76001	Popa Diana	Contabil	10
76003	Banica Ioana	Tehnolog	20

Departament	Nume dept	Locatie
10	Financiar	Bucuresti
20	Operatiuni	Craiova

Marca	Nume	Departament	Nume dept
76001	Popa Diana	10	Financiar
76003	Banica Ioana	20	Operatiuni

Semi-compunere

Marca	Nume	Job	Departament
76001	Popa Diana	Contabil	10
76003	Banica Ioana	Tehnolog	20

Departament	Nume dept	Locatie
10	Financiar	Bucuresti
20	Operatiuni	Craiova
30	HR	Bucuresti

Marca	Nume	Departament	Nume dept
76001	Popa Diana	10	Financiar
76003	Banica Ioana	20	Operatiuni
NULL	NULL	30	HR

Teta-compunere

Marca	Nume	Job	Departament
76001	Popa Diana	Contabil	10
76003	Banica Ioana	Tehnolog	20

Departament	Nume dept	Locatie
10	Financiar	Bucuresti
20	Operatiuni	Craiova
30	HR	Bucuresti

Marca	Nume	Departament	Locatie
76003	Banica Ioana	20	Bucuresti
76003	Banica Ioana	30	Bucuresti

Combina liniile din doua relatii **nu neaparat corelate care pot indeplini orice conditie:**

Liniile din T1 si T2 care pentru care coloanele T1.Nume si T2.Locatie sa **inceapa cu litera B**

Reuniune

Marca	Nume	Job	Departament
76001	Popa Diana	Contabil	10
76003	Banica Ioana	Tehnolog	20

Marca Parinte	Nume Copil	Job parinte	Varsta copil
76001	Popa Felix	Contabil	5
76003	Banica Loredana	Tehnolog	6

76001	Popa Diana	Contabil	10
76003	Banica Ioana	Tehnolog	20
76001	Popa Felix	Contabil	5
76003	Banica Loredana	Tehnolog	6

Pot combina coloane cu semnificatii diferite daca ele au acelasi tip de date!

Intersectie

Marca	Nume	Job	Departament
76001	Popa Diana	Contabil	10
76003	Banica Ioana	Tehnolog	20

Marca	Nume	Job	Departament
76001	Popa Diana	Contabil	10
76007	Cocea Laura	Programator	50

76001	Popa Diana	Contabil	10
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Minus

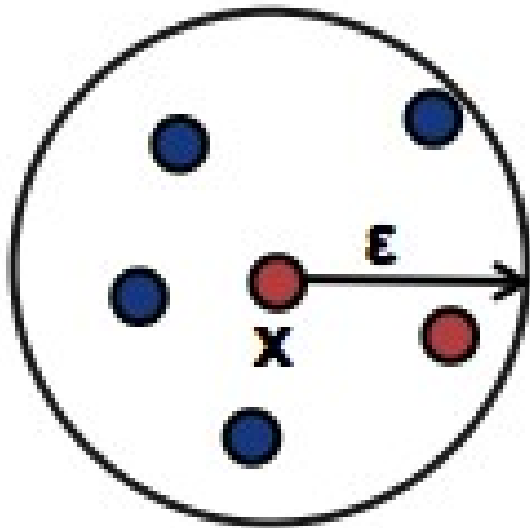
Marca	Nume	Job	Departament
76001	Popa Diana	Contabil	10
76003	Banica Ioana	Tehnolog	20

Marca	Nume	Job	Departament
76001	Popa Diana	Contabil	10
76007	Cocea Laura	Programator	50

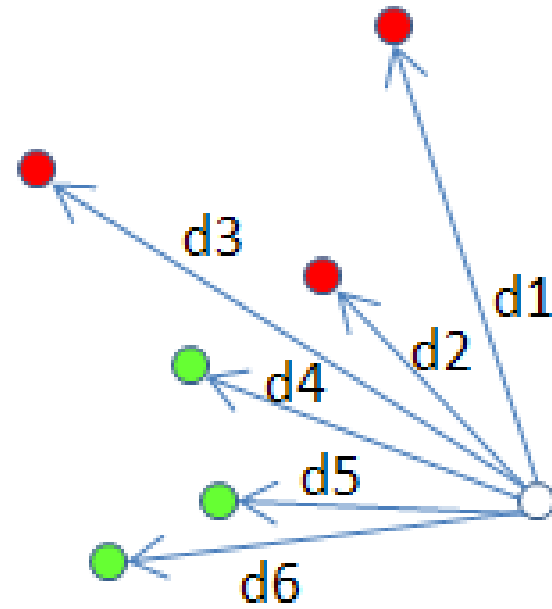
76003	Banica Ioana	Tehnolog	20
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Similarity Join

Range Join



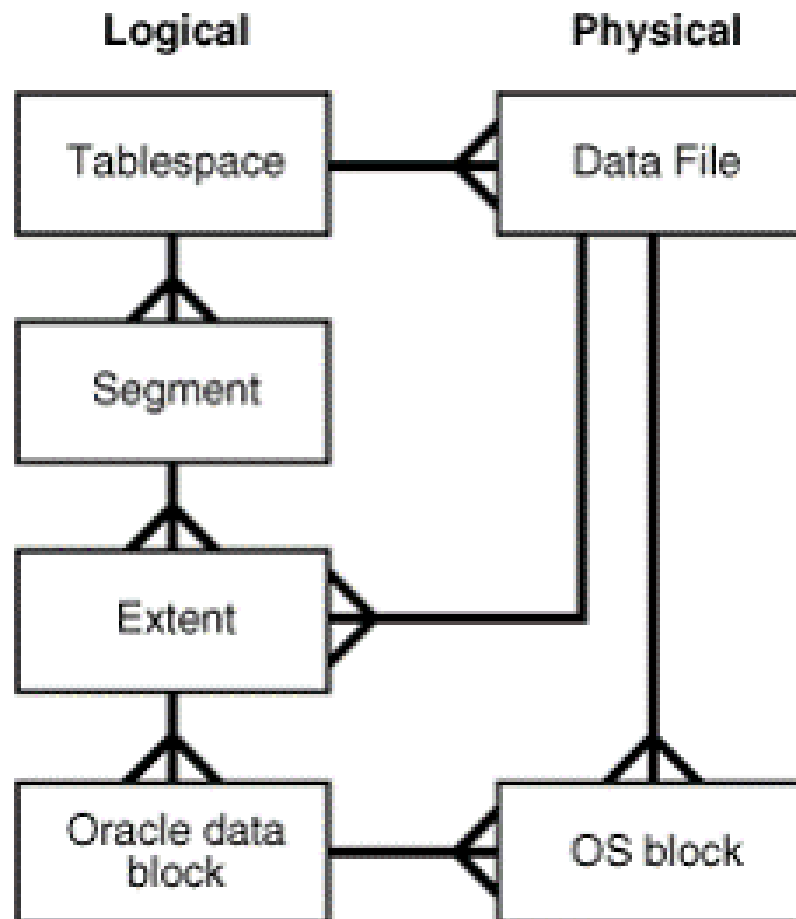
KNN Join



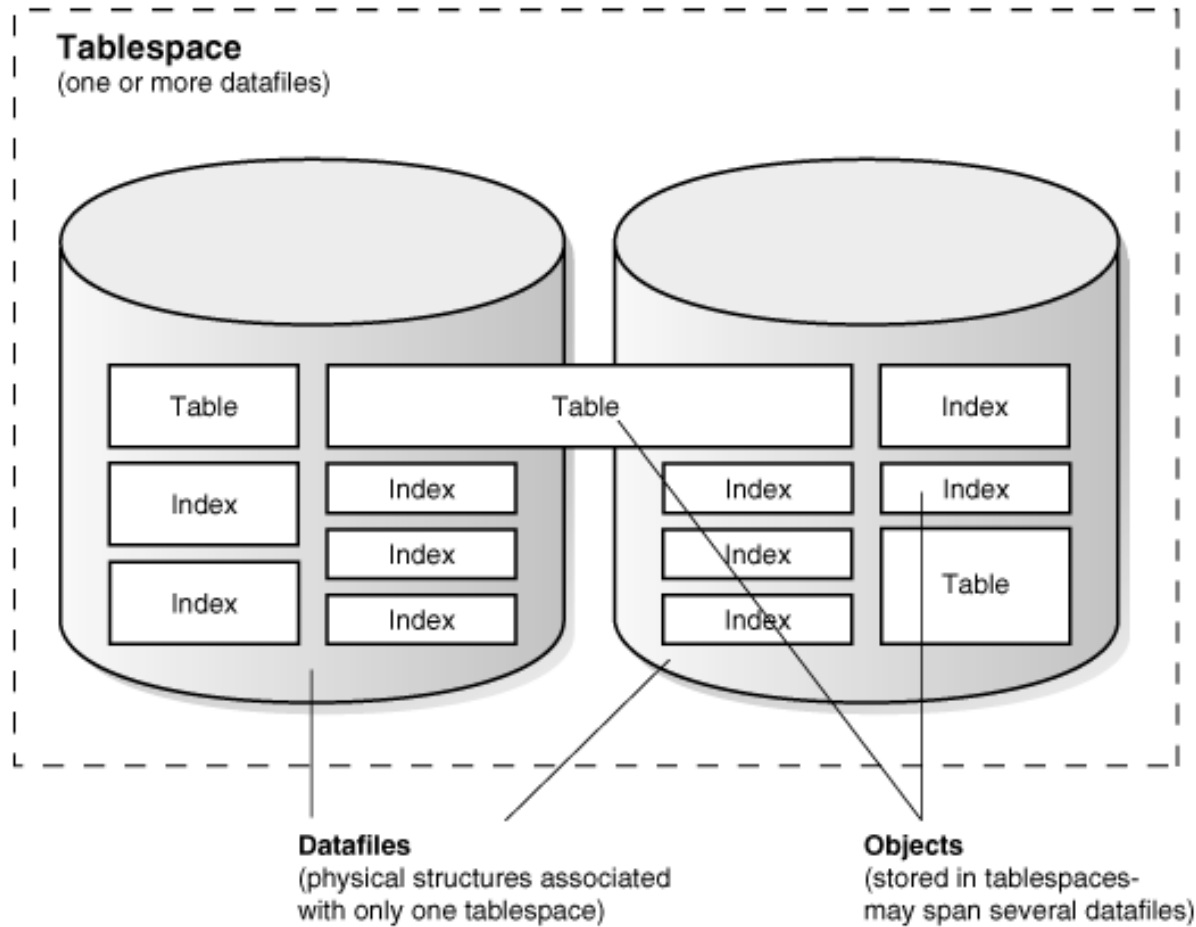
Structura unui tabel

- Best practices:
 - Fara linii/coloane duplicate
 - Tipul coloanelor – definit in concordanta cu tipurile de date
 - Relatiile intre tabele se fac pe coloane de acelasi tip
 - **Evitarea cheilor surogat**

Arhitectura Oracle (I)



Arhitectura Oracle (II)



Arhitectura Oracle (III)

