



Center for Career Development

by LINKgroup

Prelucrarea declarativă a datelor structurate in contextul DOD (Data Oriented Design)

Radu Manea



Structuri de date

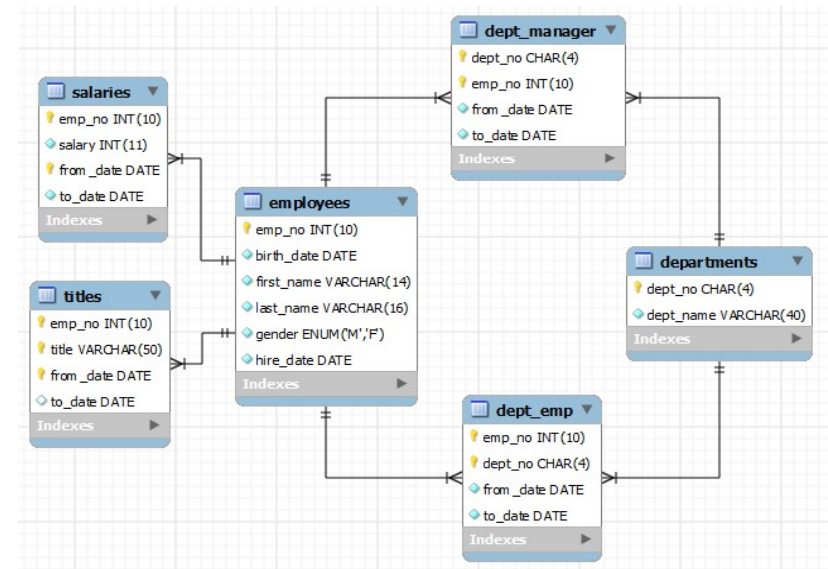
- Statice : Baze de date, Fisiere
- Dinamice Dinamice: Arbori, Liste, Cozi, etc.

Suportul fizic al datelor persistente: Hard disk(HD), Solid State Disk (SSD), DVD/CD, Cloud



Tipuri de BD

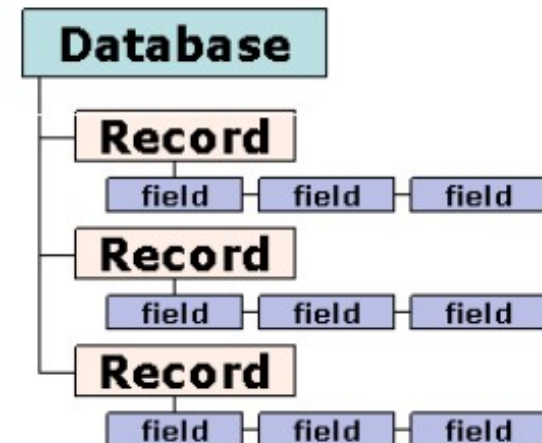
- Ierarhice
- Retea
- Relationale
- Obiect-Relationale
- NoSQL





Fisiere de date

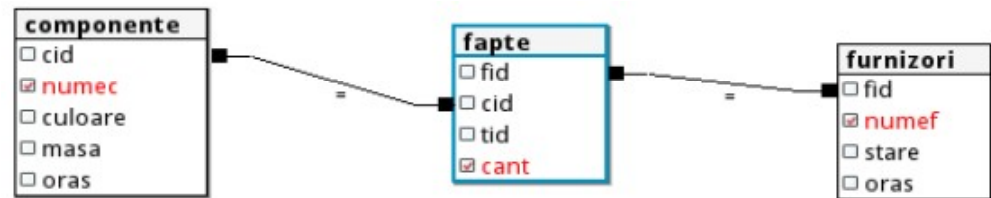
- Sunt parcurse secvential pe linii;
- Permit accesul direct la campuri in functie de tipul acestora;
- Combina avantajele fisierelor binare si a celor text.





Arhitecturi multidimensionale

- Tabela de fapte
- Tabele dimensiuni
- Schema dimensionala
 - ex. Stea, fulg de zapada



Domenii de aplicabilitate: analiza predictiva, simulare, modelare, analiza de tip "What if?"



Caracteristici

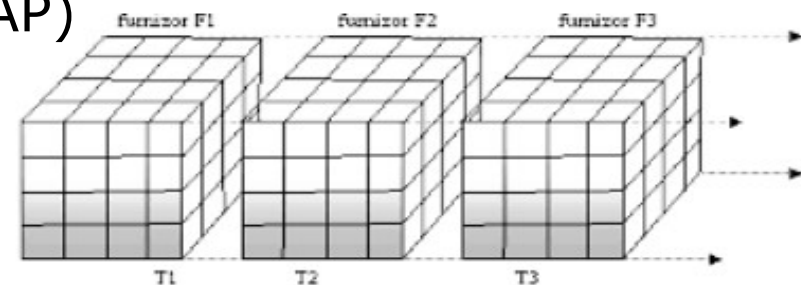
- Coloanele tind sa fie utilizate in combinatii;
- Cheile cuprind o componenta temporala;
- Accent pus pe eficienta stocarii si performanta;
- Partitionarea – pe orizontala/verticala – pe domenii;
- Redundanta controlata;
- Granulatia datelor.



Online Analytical Processing (OLAP)

Agregarea datelor → tablou multidimensional

- Exemple de instrumente:
 - ROLAP (relational OLAP)
 - MOLAP (multidimensional OLAP)
 - DOLAP (desktop OLAP)
 - HOLAP (OLAP hibride)

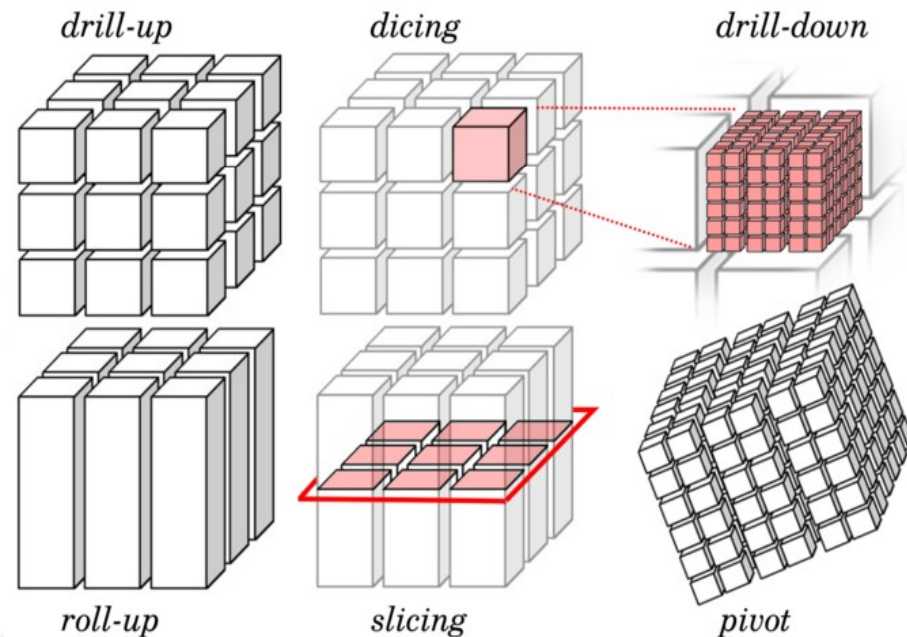




Operatiile modelului multidimensional

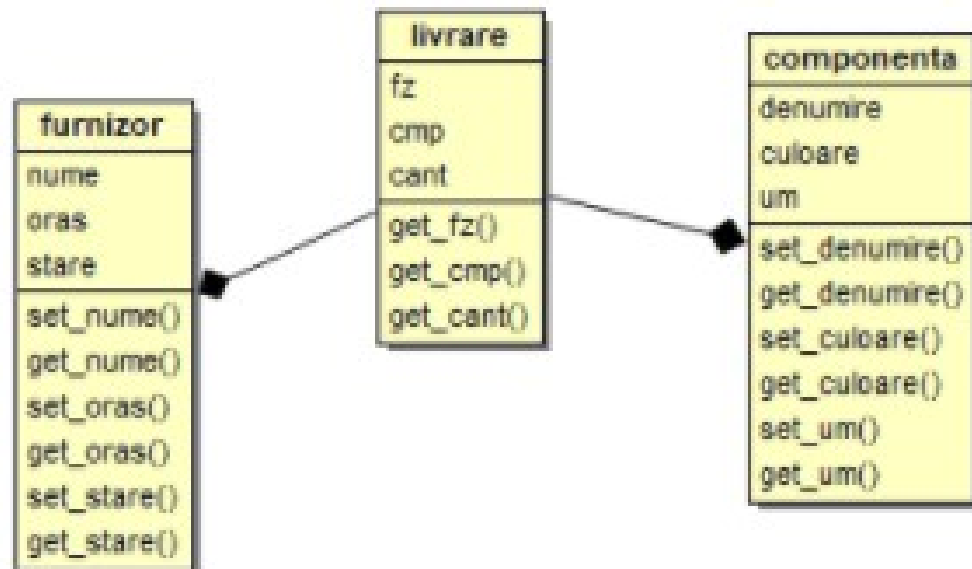
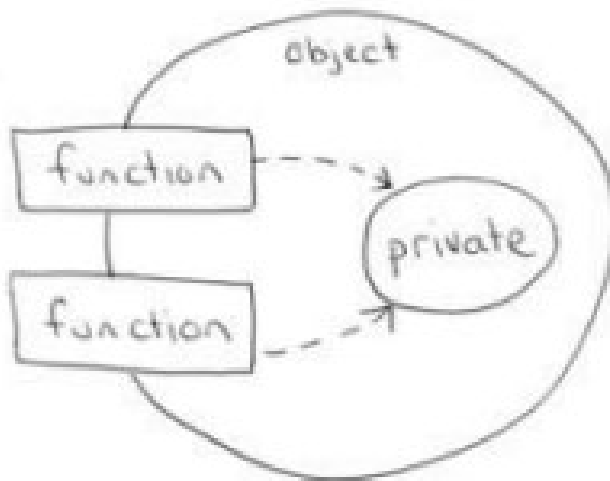
Exemple:

1. Dicing – $a[1,2,3]$
2. Slicing – $a[X,Y,1]$
3. Drill – $a[1,2,Z]$



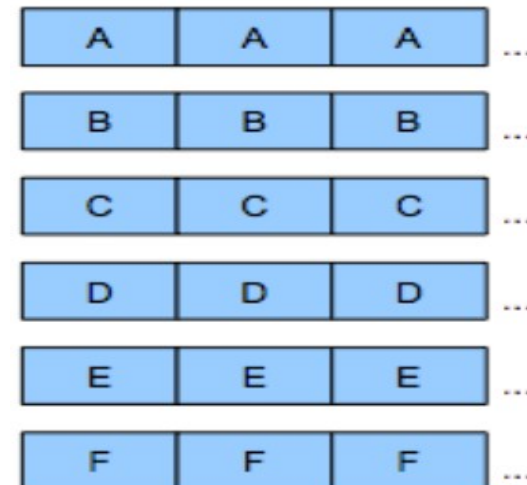
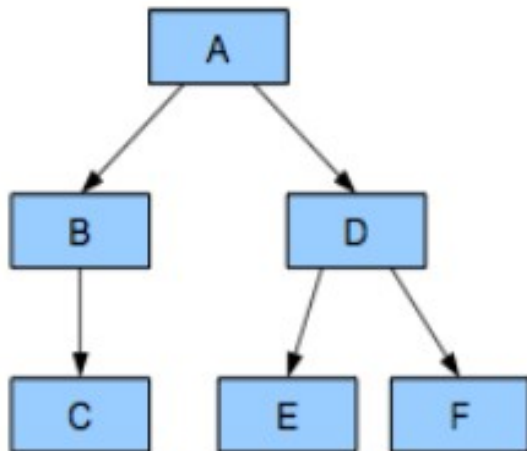


Object Oriented Design (OOD)





OOD vs Data Oriented Design (DOD)





Implementare DOD

1. class Livrare {
2. private Vector<Furnizor> fz;
3. private Vector<Componenta> cmp;
4. private Vector<Integer> cant;
5. }



Avantaje DOD

- Simplu și modular;
- O mai bună utilizare cache-ul și performanță superioară;
- Paralelism mai bun;
- Se citesc numai intrările necesare;
- Scrierea se poate realiza în matrice liniară;
- Analiza se realizează în buclă peste toate datele ;
- Algoritmul initial rămâne neschimbat.



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Multumesc!

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