
SW N°4: QUERY OPTIMIZATION

RULE-BASED OPTIMIZATION

Exorcise 1: Sales management

Let the schema of the relational database Sales be like:

Client (NoClient, Nom, NoTel, Adresse)

Article (NoArticle, Description, PrixUnitaire, QteEnStock)

Commande (NoCommande, DateCommande, NoClient)

LigneCommande (NoCommande, NoArticle, Quantité)

Livraison (NoLivraison, DateLiv)

DétailLivraison (NoLivraison, NoCommande, NoArticle, QtéLivrée)

Optimize the following queries using rule-based approach (RBA):

1. The NoCommande, DateCommande of “*Commande*” (Orders) which have been placed by the *Client* number 10 and which have the NoCommande greater than 5.
2. The NoArticles and Descriptions of the articles which have the unit price (PrixUnitaire) between 10 and 20.
3. The noClient, number of Telephone of Client and noCommande for “*Commande*” (Orders) made on 4/06/2000.
4. noArticles ordered at least once by Client number 10 after 06/01/2000.
5. The noLivraisons corresponding to Orders made by Customer number 10.
6. noCommandes for “*Commande*” (Orders) that were placed on the same date as “*Commande*” 2.
7. The noClients and name of Clients who did not place an Order in March 2000.

Exercice 02 :

Let the schema of a relational database be like:

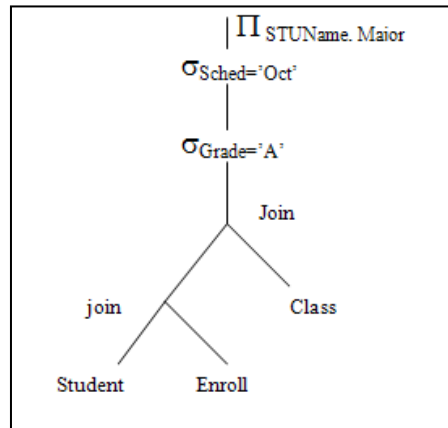
Student(STUID , STUDName, Major)

Faculty(FACID, FACname, Dept, Rank)

Class(Course#, Facno, Sched, Room)

Enroll(Coursno, STUno, Grade)

1) Use rule-based optimization to find optimal trees. Give the resulting algebraic expressions



2) Optimize the following queries using RBA :

Q1: $\Pi_{\text{FACName, Dept}} \sigma_{\text{Room} = \text{« IFMI »}} \text{Class} \bowtie_{\text{FACID} = \text{FACno}} \text{Faculty}$

Q2:

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SELECT FACName, Sched, Course#
FROM Faculty, Class, Enroll, Student
WHERE STUName = 'Dupont'
AND Classe.Course# = Enroll.Courseno
AND Faculty.FACID = Class.FACno
AND Student.STUID = Enroll.STUno
  
```