Mohamed KHIDER BISKRA University
Faculty of Exact Sciences
Department of computer science
Level: 2 LMD
Module: Database

Directed Work 1

Duration : 2 sessions

Exercise1

We want to store records of newspaper articles in a file. To do this, we will propose a file-based solution (FMS), where each record will occupy one entry in the file.

A record (or entry) contains the following information (or fields):

- *The name and address of the newspaper's publisher,*
- *The name of the newspaper and the name of its editor-in-chief,*
- *The issue number of the newspaper in which the article was published,*
- *The name and address of the article's author,*
- *The title of the article.*

Examples of records:

The name of the newspaper's publisher	**address of the newspaper's publisher**	**name of the newspaper**	**name of its editor-in-chief**	**number**	**name of the article's author**	**address of the article's author**	**title of the article**
EdipresseSA	Lausanne	Le temps stratégique	C.Monnier	10	G.Moeckli	Carouge	L'ordinateur va-t'il imposer sa manière de penser ?
J.de GE SA	Genève	Le Journal de Genève	I.Jeannerat	20	P.Coeytaux	Genève	Compaq s'offre Digital pour concurrencer IBM.
J.de GE SA	Genève	Le Journal de Genève	I.Jeannerat	276	S.Rossel	Genève	Une zéolithe dans votre moteur.
LNQ Erl SA	Lausanne	Le nouveau quotidien	A.Campiotti	1704	A.Crisinel	Genève	Le ballon de Bertrand Piccard erre au milieu d'un intense ballet diplomatique
EdipresseSA	Lausanne	Le matin	D.Moginier	109	J.Develey	Morges	Papiers grecs
Uni GE	Genève	Campus	T.Boysan	40	K.Bosko	Genève	L'Héritage de Gandhi.

- We want to **insert** the following record into the file:

EdipresseSA	Lausanne	Le nouveau quotidien	A.Campiotti	1705	S.Herzog	…….

- What happens?
- We want to **delete** the only article from *Le Matin* in the file:

EdipresseSA	Lausanne	Le matin	D.Moginier	109	J.Develey	Morges	Papiers grecs

What happens?

Can we, for example, **modify** the name of a newspaper's editor-in-chief in a single record? What are the limitations of the file system approach?"

Exercise 2

- Define a database and explain its purpose.
- Define a Database Management System (DBMS) and its role.
- Provide examples of popular DBMS."

Exercise 3

Among the following characteristics, identify which ones are specific to File Management Systems (FMS) and which ones are specific to Database Management Systems (DBMS):

a) Easy, fast, and secure access to data.
b) Deferred data control.
c) Data and program independence.
d) Immediate validation control of data.
e) Reduced cost of storage, updating, and data entry.
f) High data redundancy.
g) Data sharing across multiple processes.
h) Programmers must have detailed knowledge of the physical aspects of data (storage mode, access mode, etc.) whenever writing new applications

Exercise 4

What are the three levels of database description in a DBMS, and how do they differ?

Additional exercises

Exercice 5

Explain the role of different database users.

Exercice 6

Here is the file containing information about movies:

videoId	dateAcquired	title	genre	length	rating
101	1/25/98	The Third-Nine Steps	mystery	120	R
90987	2/5/97	Elisabeth	drama	105	PG13
145	12/31/95	Lady and the Tramp	comics	93	PG
8034	4/5/98	Lady and the Tramp	comics	93	PG
90988	4/5/98	Elisabeth	drama	105	PG13
90989	3/25/86	Elisabeth	drama	105	PG13
543	5/12/95	The Third-Nine Steps	mystery	120	R
123	4/29/91	Annie Hall	comedy	120	R

- Quels sont les problèmes(anomalies) rencontrés dans ce fichier ?
- Que se passe-t-il si la longueur(length) du film 90987 est mise à jour et passe de 105 à 107 ?
- Que se passe -t-il avec l'insertion de n-uplet :

$$\langle 102, 1/1/99, Elisabeth, drama, 110, PG13 \rangle$$

- "What happens when video number 123 is deleted?"