Exercise 1

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1 Exercise 1

1.1 What is a Database?

A Database manages a large amount of related data which represents some aspects of the real world like:

1. collecting taxes

2. Bank and account management

3. Book keeping Airline reservations

4. Employee organization

and it should be logically coherent.

1.2 What is a database management system? What do you use it for? Give 5 examples.

A database management system is a collection of programs to maintain a database. It can be used for:

1. Definition of Data and Structure

2. Physical Construction Manipulation

3. Manipulation

4. Sharing/Protecting

5. Persistence/Recovery

2 Exercise 2

2.1 What kind of interface is a:

- Database

- File system

The difference between File System and Database, is that the File system is a physical interface and the Datebase is a logical interface.

2.2 Are the following features provided by a FS, a DB or both?

- Simple and fast data access (FS)

- Controlled redundancy (DB)

- Sophisticated enforcement of standards d. Backup and recovery (DB)

- Backup and recovery (DB)

3 Exercise 3

3.1 What is redundancy?

Same data used by different applications/tasks is only stored once and can be accessed via a single interface provided by a DBMS. Redundancy is only purposefully used to speed up the data access.

3.2 What are the two main disadvantages of redundancy?

1. Difficulties in consistently updating data

2. Waste of storage space

3.3 What is the possible advantage of redundancy?

If there a hardware-crash or the database is gone, there is a backupsystem which can be easily accessed to restore the lost data.

4 Exercise 4

4.1 Which users groups interact with a running DBMS?

Persons which are directly involved with a DB are:

- Database Administrators

- Database Designers

- Application Programmers

- DBMS Designer and Implementers

- Tool developers

- Operators and Maintance Personnel

But also the End Users, which can be seperated in:

- Naive Users

- Sophisticated Users

- Casual Users

5 Exercise 5

Briefly define the following terms and briefly discuss what their benefits are:

5.1 Declarative Querying

It is not necessary to know where the data is stored, you just have to specify what you want. This is very fast in a huge Database, since you only have to type a keyword and get the search results from it.

5.2 View

You can access the database and decide on a special view to get more efficient view of the information, like splitting up information. The actual Database does not change, only the information you need are grouped together.

5.3 Data Model

A data model is an abstract model that describes how data is represented and accessed. Information of a kind are grouped together and can be accessed. A data model needs three parts:

- A structural part

- A integrity part

- A manipulaton part

Data models are instanced by schemas like

- A conceptual schema

- A logical schema

- A physical schema