1.6 List four applications you have used that most likely employed a database system to store persistent data

Egov.kz, kaspi.kz, wsp, Instagram

1.7 List four significant differences between a file-processing system and a DBMS.

|  |  |
| --- | --- |
| A File-processing system | DBMS |
| 1. A file management system allows access to single file at a time. File systems accommodate flat files that have no relation to other files | 1. The Database Management System allows access to tables at a time. |
| 2. A file processing system only coordinates physical access to the data. | 2. A database coordinates the physical and logical access to the data. |
| 3. Files often have redundant or duplicate data items. | 3. A DBMS reduces the amount of data duplication. |
| 4. A file processing system only allows predetermined access to data | 4. A DBMS is designed to allow flexibility using queries that gives access to the data |

1.8 Explain the concept of physical data independence and its importance in database systems.

Physical Data Independence is defined as the ability to make changes in the structure of the lowest level of the Database Management System (DBMS) without affecting the higher-level schemas. Hence, modification in the Physical level should not result in any changes in the Logical or View levels. Data independence helps you to keep data separated from all programs that make use of it. You can use this stored data for computing and presentation. In many systems, data independence is an essential function for components of the system.

1.9 List five responsibilities of a database-management system. For each responsibility, explain the problems that would arise if the responsibility were not discharged.

1. Defining a database: involves specifying the data types, structures, and constraints of the data to be stored in the database. If a DBMS doesn’t support defining a database, a user might invariably define non-sense as there will be no pre-defined syntax/rule.

2. Constructing the database is the process of storing the data on some storage medium that is controlled by the DBMS. Constructing the database is the process of storing the data on some storage medium that is controlled by the DBMS.

3. Sharing a database allows multiple users and programs to access the database simultaneously. If the DBMS doesn’t hold the responsibility for sharing a database; it will be hard to user to manipulate database sharing within user.

4. Protection includes system protection against hardware or software malfunction (or crashes) and security protection against unauthorized or malicious access.If the DBMS doesn’t hold the responsibility for Protection, there is very much likely that the database will be exposed to various security threats.

5. Manipulating a database includes functions such as querying the database to retrieve specific data, updating the data-base to reflect changes in the miniworld, and generating reports from the data.If the DBMS doesn’t hold the responsibility for manipulating the database, there will be problem arising with user trying to manipulate the database which might be querying the database or searching for information.

1.11 Assume that two students are trying to register for a course in which there is only one open seat. What component of a database system prevents both students from being given that last seat?

The component of the database that prevents both students from getting the last seat is: transaction isolation. Data that enters the database are expected to maintain accuracy and also be consistent with the database structure.

The following is not a possibility:

1. Both students get the seat.

2. None of the students gets the seat.

The transaction isolation ensures that the data requested by a user is complete and such data maintains competency.So, when a student gets the last seat, the next student would not get the same seat (or any other seat), because a transaction has already been completed.

1.15 Describe at least three tables that might be used to store information in a social networking system such as Facebook.

1) A content table containing user provided content, such as text and images, associated with the user who uploaded the content.

2) A friends table recording for each user which other users are connected to that user.

3) A permissions table, recording which category of friends are allowed,to view which content uploaded by a user. For example, a user may share some photos with family but not with all friends.