DB_hw 1

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1. **List 4 significant differences between a file-processing system and DBMS**

    1. Storing data in a DBMS can reduce the redundancy and inconsistency. We just save data in one place (the database) instead of multiple places for different programs to read.
    2. We can access data we need more easily by using DBMS. Because all programs can access the data via DBMS. While file-processing system may need specific program to access the data.
    3. We can avoid the integrity problems and atomicity problem by DBMS.
    4. DBMS support concurrent query, which means it can support multiple programs to access the data at the same time.

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

    1. Concepts: Physical data independence means the physical schema of a database can be changed without affecting the application programs.
    2. Importance: we can rewritte the physical schema without rewritting the logical schema and view schema. So we can update our application more easily.

3. **List 5 responsibilities of a database-management system. For each responsibility explain the problems that would arise if the responsibility were not discharged.**

    1. It must support `concurrency`. If not, the performance of the system would be awful.
    2. It need to do `authentication`. If not, one may access anothers' peronal information, which does great harm to one's privacy.
    3. It must `avoid data redundancy and intensistency`. Otherwise it may waste much disk storage and data saved may no longer agree with each other.
    4. It need to ensure `atomicity`. Otherwise it's possible that when one save his salary to his bank account, the balance in his may not change.
    5. It should `avoid data isolation`. Thus we can retrieve the data easily.

4. **Describe at least 3 tables that might be used to store information in a social-networking system such as Facebook**

- table1(userInfo), which contains the `user_id`, `user's First name` and `Second name`, `location`, `phone number`, `email` address.
- table2 (posts), which contains each `post` the user send to the internet, `likes` of it and `comments` of the post.
- table3 (followings), which contains followers' `uid`, `date` each one begin to follow.