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

1) Bank app (kaspi.kz, Halyk)

2) University web sites (wsp)

3) Social-media (Instagram, TikTok, etc.)

4) Communication apps (contacts, phone calls)

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

1) At file-processing system redundant data is present. While at DBMS there is no presence of it

2) The security process is less at file-processing system, while DBMS supports more security mechanisms.

3) The differences in accessing the data. DBMS coordinates physical and logical access of the data, whereas file-processing system coordinates just physical access of the data

4) file-processing system is less complex, it does not support complicated transactions and at the same time, while DBMS is designed to manage much data at the same time.

**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 physical schema without causing application programs to be rewritten. Such a modification include changing from unblocked to blocked record storage. Or from sequential to random access files.

**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) needed for data access within the company

### 2) security enforcement

### 3) ability for integration

### 4) needed to maintain strong relationships between data.

### 5) interaction with the file manager

### 

**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?**

Transaction isolation will prevent it. Because even if the consistency and atomicity properties are ensured for each transaction, if several transactions are executed concurrently, their operations may interleave in some undesirable way, resulting in an inconsistent state. It ensures that the data requested by a user is complete and such data maintains competency. So, the possible variant: one of the students will take a seat, it depends who pressed the button first.

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

I think that Facebook’s database system might have the tables as profile name, password, and email address at registration stage, tables for post content, and optional tables as phone number, profile info etc.