1. Introduction

**1.1**

DB:

* Managing **vast amount** of data
* A collection of **related data**

- represents the **real world**

- logically **coherent**

- is provided for an intended group of **users** and **applications**

* **logical** interfaces

- retrieval of data using **data semantics**

Database industry - a branch of cs:

* more than **$8 billion revenue**/yr

DBMS:

* databases are maintained by database management system
* DBMS replaced previously dominant file-based systems in **banking**

- **simultaneous** and quick access is necessary

- failures and loss of data **cannot** be tolerated

- data always has to remain in a **consistent** state

- frequent queries and modifications

File Systems:

* not a database
* **physical** interfaces
* **Advantages**

- fast and easy

* **Disadvantages**

- uncontrolled redundancy

- manual maintenance of consistency

- limited data sharing and access rights

- poor enforcement of standards

- excessive data and access paths maintenance

**1.2 Characteristics of DBs**

* DBs **control redundancy**

- same data used by different apps or tasks is **stored only once**

- access via a **single interface** provided by DBMS

- redundancy only speed up data access

* Problems of **uncontrolled redundancy**
* **well-structured** (e.g. ER model)