

Databases and Database Management Systems

DBs and DBMSes – CSc 460 v1.1 (McCann) – p. 1/10

Definitions of ‘Database’

- “A shared collection of logically related data and its description, designed to meet the information needs of an organization.” (Connolly/Begg, 6/e)
- “... a collection of persistent data that is used by the application systems of some given enterprise” (Date, 7/e)
- “A collection of related data” (Elmasri/Navathe, 5/e)
- “[A] collection of records kept for a common purpose” (O’Neil², 2/e)
- “A collection of data, typically describing the activities of one or more related organizations” (Ramakrishnan/Gehrke, 3/e)
- “A collection of related records stored with a minimum of redundancy that many users can share simultaneously” (Shepherd)
- “[A] collection of [interrelated] data ... contain[ing] information relevant to an enterprise” (Silberschatz/Korth/Sudarshan, 4/e)

Common Definition Themes

Three very popular ideas in the definitions:

- **Collection**
- **(Inter) Related**
- **Data / Records**

Other ideas of note:

- Enterprise / Organization / Common Purpose
- Sharing
- Minimized Redundancy
- Persistence

Questions:

DBs and DBMSes – CSc 460 v1.1 (McCann) – p. 3/10

Definitions of ‘Database Management System’

- “A software system that enables users to define, create, maintain, and control access to the database.” (Connolly/Begg, 6/e, p. 16)
- “A computerized record-keeping system” (Date, 7/e, p. 2)
- “A collection of programs that enables users to create and maintain a database” (Elmasri/Navathe, 5/e, p. 5)
- “A program product for keeping computerized records about an enterprise” (O’Neil/O’Neil, 2/e, p. 1)
- “Software designed to assist in maintaining and utilizing large collections of data” (Ramakrishnan/Gehrke, 3/e, p. 4)
- “Cost-effective methods for storing, organizing, retrieving, and managing data” (Shepherd)
- “A collection of interrelated data and a set of programs to access those data” (Silberschatz/Korth/Sudarshan, 4/e, p. 1)

DBs and DBMSes – CSc 460 v1.1 (McCann) – p. 4/10

DBMS Components

1. The Database

2.

3.

4.

DBs and DBMSes – CSc 460 v1.1 (McCann) – p. 5/10

Why use a DBMS? (1 / 3)

DBs and DBMSes – CSc 460 v1.1 (McCann) – p. 6/10

Why use a DBMS? (2 / 3)

DBs and DBMSes – CSc 460 v1.1 (McCann) – p. 7/10

Why use a DBMS? (3 / 3)

DBs and DBMSes – CSc 460 v1.1 (McCann) – p. 8/10

Disadvantages of DBMSes

DBs and DBMSes – CSc 460 v1.1 (McCann) – p. 9/10

Data Languages

Four types of manipulation, four languages, all within SQL: