Exercise 2

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1. Definitions:

   (a) Data: Bulk sum of all details. E.g., the customer table in totality is data.

   (b) Information: Data which has been filtered or queried in a way to answer a particular question. E.g., the sum of new customers since the 2017 marketing campaign.

   (c) Information Management: The process of collecting information, editing records, and retrieving actionable information from its means of storage.

   (d) Database: The total collection of all organized tables.

   (e) Database System: Server software which makes accessible the database files which it stores.

   (f) Database Management System: The suite of software built to interact with the core system.

   (g) Database Administrator: A professional whose job pertains to the planning, installation, configuration, design, security, backup and data recovery involved in a DBMS. Likely to be more involved in the hardware and software aspects of running a DBMS than in interacting with the data itself.

   (h) Database Analyst: A professional whose job involves mainly the retrieval and synthesis of data and information to be useable. Likely to be more involved in interacting with the data, its needs and design rather than the support of making it operational.

   (i) Decision Support System: The structured support for the management decisions for an organization. Software will take the form of a front end to an important array of information for that user.

   (j) System Effectiveness: A metric of how well the DB model is handling the needs of that data and its users. Its reliability and applicability. Doing the right thing.

   (k) System Efficiency: A metric of how much waste of time and effort is sunk into retrieving and using data. Or rather, an inverse proportion: something is efficient if it has low waste. Doing something the right way, and quickly.

   (l) User View: The virtual representation of the data being queried. Likely to be a client-side, temporary and volatile model. It is decoupled from the normalized, structured handling of information in the database itself.

(m) Logical Schema: The properly normalized design of the data representation. Defines the categories and relationships in play at the center of the system.

(n) Physical Schema: The literal physical implementation of the Logical Schema. The exact datatypes which are used by the database system, as well as its files, logs, etc.

2. Data is and databases are an important organizational resource for several reasons. The ability to quickly and reliably find information relevant to daily operations increases productivity tremendously, rather than wasting time searching for information. Keeping data in a consistent, secure way helps to prevent loss or confusion of service to clients and end users.

3. The main goal of a database system is to securely dispense data or information sought by its authorized users. A database system would not be effective if it allowed unauthorized users to access data they shouldn't, nor would it be effective if it failed to reliably return authorized queries.

4. The three levels of the ANSI/SPARC architecture are the Physical/Internal, Conceptual, and External schema. The External Schema correspond to end user views of the data they need. The Conceptual Schema describes the information needs, and its design and structure. The Physical Schema is the storage of that information by the computer, which spans from the datatype implementation to the files and logs it keeps.