Revision sheet

Q1) Define the terms: Data, Database, DBMS?

- Data
  - It is known facts that can be recorded and that have implicit meaning.
- Database
  - It is a collection of related data.

Q2) What is the meaning of DBMS?

- Database management system (DBMS)
  - It is a collection of programs enables users to create and maintain a database

Q3) Mention without details are the DBMS's Functionalities?

- It is a *general-purpose software system* that facilitates the processes of
  1. ***Defining* databases**.
  2. ***Constructing* databases**.
  3. ***Manipulating* databases**:
     - **Querying the database to retrieve specific data,**
     - **Updating the database to reflect changes in the miniworld, and**
     - **Generating reports from the data.**
  4. ***Sharing* databases:**
  5. ***Protecting* the databases.**
  6. ***system protection***
  7. ***Maintain the database.***

Q4) What are the main characteristics of the database approach versus the file-processing approach?

The main characteristics of the database approach versus the file-processing approach

- Self-describing nature of a database system.
- Insulation between programs and data, and data abstraction.
- Support of multiple views of the data.
- Sharing of data and multiuser transaction processing.

Chapter 2

Q6) Define with example the following concepts: Entity, Attribute, and Relationship?

- **Entities**: An entity represents a real-world object or concept, such as an employee or a project from the miniworld that is described in the database
- **Attributes**: An attribute represents some property of interest that further describes an entity, such as the employee's name or salary.
- **Relationships:** A relationship among two or more entities represents an association among the entities, for example, a works-on relationship between an employee and a project.

Q7) Define Database Schema?

Database Schema is a description of a database which is specified during database design and is not expected to change frequently.

Q8) Define data abstraction and data model?

- Data abstraction
  - suppression of details of data organization and storage, and the highlighting of the essential features for an improved understanding of data.
- Data model
  - It is a collection of concepts that can be used to describe the structure of a database.

Discuss Conceptual, physical, and implementation data model?

- Conceptual (high-level, semantic) data models:
  - Provide concepts that are close to the way many users perceive data.
    - (Also called entity-based or object-based data models.)
- Physical (low-level, internal) data models:
  - Provide concepts that describe details of how data is stored in the computer. (out of scope)
- Implementation (representational) data models:
  - Provide concepts that fall between the above two, used by many commercial DBMS implementations (e.g. relational data models).