

Data Processing

Md. Mofazzal Hossain (Mohon)

Dept. Head of CSE & Lecturer of ICE

E-mail: mohonru@gmail.com Contact No: 01723618544

Rangpur Engineering College

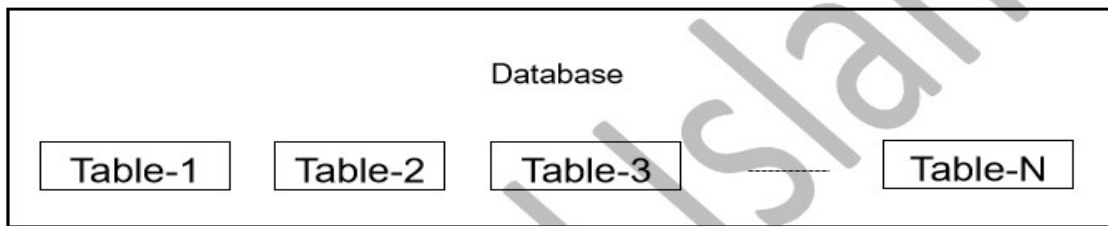
Q1: What is Data and Information? Or what are the difference between data and Information?

Data: Data is nothing but a fact or value of real world entities (objects or events). It may be concrete form such as a person or an abstract form such as an account number. It is the raw material of information. Example: “Karim”, “A-101”, 6000.

Information: Information is the processed form of data which is useful and more meaningful to the users. Example: Result_Sheet.xls.

Q2: What is database and database management system? What are the advantages of Database management system?

Database: Database is a collection of interrelated data of a particular enterprise such as a banking database. Example: Agrani_bank.mdb



Database: Agranibank.mdb			Table: Balance	
Table: Customer			Account	Balance
Name	Account	Address	101	7000
Karim	101	H-314	102	5000
Rahim	102	H-620	103	8000
Kamal	103	H-540		

Database Management System: A database management system (DBMS) is a computer software application that interacts with the user, other applications, and the **database** itself to capture and analyze data. A general-purpose DBMS is designed to allow the definition, creation, querying, update, and administration of **databases**.

Example- MS Access 2007, Oracle 10g etc.

Advantages of Database Management System:

The DBMS serves as the intermediary between the user and the database. The database structure itself is stored as a collection of files, and the only way to access the data in those files is through the DBMS. The DBMS receives all application requests and translates them into the complex operations required to fulfill those requests. The DBMS hides much of the database's internal complexity from the application programs and users.

The different advantages of DBMS are as follows.

1. **Improved data sharing:** The DBMS helps create an environment in which end users have better access to more and better-managed data.
2. **Improved data security:** The more users access the data, the greater the risks of data security breaches. A DBMS provides a framework for better enforcement of data privacy and security policies.
3. **Better data integration:** Wider access to well-managed data promotes an integrated view of the organization's operations and a clearer view of the big picture. It becomes much easier to see how actions in one segment of the company affect other segments.
4. **Minimized data inconsistency:** Data inconsistency exists when different versions of the same data appear in different places. DBMS minimized that data inconsistency.
5. **Improved data access:** The DBMS makes it possible to produce quick answers to ad hoc queries.
6. **Improved decision making:** Better-managed data and improved data access make it possible to generate better-quality information, on which better decisions are based.
7. **Increased end-user productivity:** The availability of data, combined with the tools that transform data into usable information, empowers end users to make quick, informed decisions that can make the difference between success and failure in the global economy.

Q3: Are Database and Database Management System same or different?

How?

Ans: No, Database and Database Management System are not same. They are different.

Database: Database is an organised collection of data or information so that it can be easily accessed, updated or manipulated.

On the other hand

Database Management System: Database management system (DBMS) is a software that manages database on a computer. Eg. microsoft access, MySQL, oracle etc.

Q4: What is meant by Access or Manipulation of Data in a Database.

Ans: By Access or Manipulation we mean four basic operations of data in a database:

1. Insertion: To insert new data in a table.
2. Query: To Search data in a table.
3. Update: To update or upgrade data in a table.
4. Deletion: To delete existing data from a table.

Q5: Define Entity, Table, Record, Field and File. Or explain different field types of a database table with example.

Ans: **Entity:** An entity is any object in the system that we want to model and store information about. Entities are usually recognizable concepts, either concrete or abstract, such as **person**, places, things, or events which have relevance to the database. Some specific examples of entities are Employee, Student, Lecturer.

Table: A table is a grouping of related data organized in columns and rows. Many tables can be stored in a single database.

Field: A field is a column in a table and it defines the data type of values in a table.

Example- an Account table can have fields: Account_Name, Account_Number, Balance. similarly, a Student table can have fields: Student_Name, Roll_Number, Marks.

Record: A record is a row in a table and it defines a set of values. Each record contains the data for one person as specified by the intersecting fields. Example- an Account table can have a record: Karim, A-101, 5000. similarly, a Student table can have a record: Rahim, Raj-486, 780.

File: Afile is a collection of records. For example, a telephone book is analogous to a **file**.

Q6: Defien DDL and DML

DDL: DDL stands for Data Definition Language. Data Definition Language (**DDL**) is a standard for commands that define the different structures in a database. **DDL** statements create, modify, and remove database objects such as tables, indexes, and users. Common **DDL** statements are CREATE, ALTER, and DROP.

DML: DML stands for Data Manipulation Language. It is used to retrieve, store, modify, delete, insert and update data in database. Examples: SELECT, UPDATE, INSERT statements.

DDL is abbreviation of Data Definition Language. It is used to create and modify the structure of database objects in database.

Q7: How Computer Process Data?

Ans: Before data is processed by a computer, it has to be fed into the computer using a keyboard, mouse or another input device. The central processing unit (CPU) analyzes the raw data and processes it into sensible information. The CPU receives instructions from the user and issues prompts accordingly.

Q8: Difference between flat file database and relational database.

Ans: The difference between flat file database and relational database are shown in below

1. A **relational database** is one that contains multiple tables of data that relate to each other through special key fields. On the other hand **flat file** database is a like a single table where one store all the data.
2. With **RDBMS (Relational database management system)** one can relate multiple tables, create parent child relationships, enforce constraints, index the data of a particular table etc. On the other hand **Flat file** does not give one any structure or at least relations if one are planning to build a database with multiple flat files.
3. A **flat file** will be a linear search operation where all records in the file need to be scanned to get to the record of interest. On the other hand, **RDBMS** has index structures which allow fast access to a particular record (row) in a given table.
4. Relational database is more flexible than flat file database system.

Q9: Discuss different types of Database system.

1. **Relational Database:** This is the most common of all the different types of databases. In this, the data in a relational database is stored in various data tables. Each table has a key field which is used to connect it to other tables. Hence all the tables are related to each other through several key fields. These databases are extensively used in various industries and will be the one you are most likely to come across when working in IT. Ex: Oracle, Microsoft SQL Server.
2. **Operational Database:** In its day to day operation, an organisation generates a huge amount of data. Think of things such as inventory management, purchases, transactions and financials. All this data is collected in a database which is often known by several names such as operational/ production database, subject-area database (SADB) or transaction databases.
3. **Data Warehouse:** Organisations are required to keep all relevant data for several years. In the UK it can be as long as 6 years. This data is also an important source of information for analysing and comparing the current year data with that of the past years

which also makes it easier to determine key trends taking place. All this data from previous years are stored in a database warehouse.

4. **Distributed Database:** Many organisations have several office locations, manufacturing plants, regional offices, branch offices and a head office at different geographic locations. Each of these work groups may have their own database which together will form the main database of the company. This is known as a distributed database.
5. **End-User Database:** There is a variety of data available at the workstation of all the end users of any organisation. Each workstation is like a small database in itself which includes data in spreadsheets, presentations, word files, note pads and downloaded files. All such small databases form a different type of database called the end-user database.