Database management systems (DBMS)

This lesson introduces DBMS and its functionality.

WE'LL COVER THE FOLLOWING

If an organization wants to adopt the database approach, then it needs a collection of programs that enable the users of the organization to create and maintain databases and control all access to them. This is achieved using a **database management system** (DBMS). The primary goal of a DBMS is to provide an environment that is both convenient and efficient for users to retrieve and store information.

Facilities provided by a DBMS

The DBMS is instrumental in facilitating the processes:

1. **Defining** a database involves defining the data types, structures, and constraints of the data to be stored in the database.
2. **Constructing** the database is the process of storing the data on a storage device that is controlled by the DBMS.
3. **Manipulating** a database involves querying the database to retrieve specific data, updating the database, etc.
4. **Sharing** a database allows multiple users and programs to access the database simultaneously.

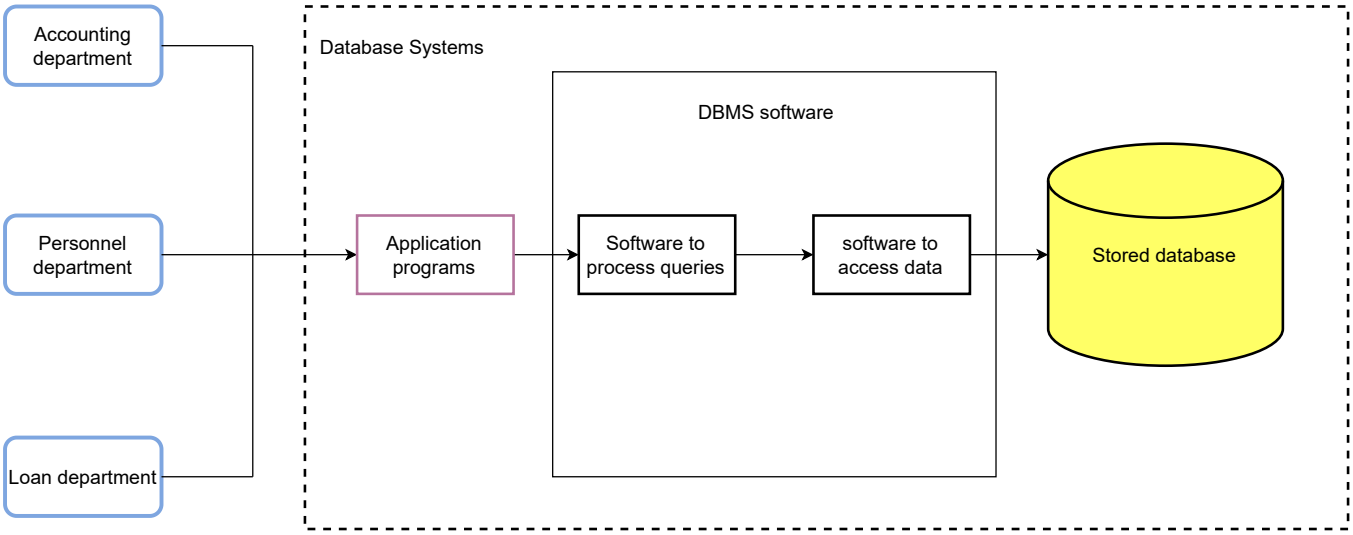
Other important terms

Furthermore, in order to access the database, we use **application programs** which send queries (requests) for data to the DBMS. A **query** causes some data to be retrieved.

To wrap up our discussion on basic terms, we call the database together with DBMS software a **database system**.

Example

With the database approach, we can have the traditional banking system as shown in the diagram below:



Database management system used by different departments in a bank

The individuals in the different departments use application programs to request the DBMS to retrieve the particular data that each individual is interested in. Only the application programs are visible to the end-user and they allow them to communicate with the DBMS. Then the DBMS, consisting of different software, fetches/stores the data from the database.

For example, an accountant in the accounting department wants information regarding the number of outstanding accounts. So he/she will send a request to the DBMS through the application software. After the DBMS retrieves the information from the database, the results will be displayed through the application program.

In the next lesson, we will take a look at an example of a database: the university database.