

# **Roles in the Database Environment**

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# Roles in the Database Environment

We can identify four distinct types of people that participate in the DBMS environment:

- ❑ Data and database administrators
- ❑ Database designers
- ❑ Application developers
- ❑ End-users.

# Data and Database Administrators

These are the roles generally associated with the management and control of a DBMS and its data.

## The Data Administrator:

- The Data Administrator (DA) is responsible for the management of the data resource including:
  - Database planning,
  - Development and maintenance of standards, policies and procedures,
  - Conceptual/logical database design.
- The DA consults with and advises senior managers, ensuring that the direction of database development will ultimately support corporate objectives.

# Database Administrators

The Database Administrator (DBA) is responsible for the physical realization of the database, including

- Physical database design and implementation,
- Security and integrity control,
- Maintenance of the operational system,
- Ensuring satisfactory performance of the applications for users.

The role of the DBA is more technically oriented than the role of the DA, requiring detailed knowledge of the target DBMS and the system environment. In some organizations there is no distinction between these two roles.

# Database Designers

We can identify two types of database designers:

- Logical database designers
- Physical database designers.

1) **Logical database designer** is concerned with

- Identifying the data (that is, the entities and attributes),
- The relationships between the data,
- And the constraints on the data that is to be stored in the database.
- **Conceptual database design**, which is independent of implementation details such as the target DBMS, application programs, programming languages, or any other physical considerations;
- **Logical database design**, which targets a specific data model, such as relational, network, hierarchical, or object-oriented.

# Database Designers

**2) Physical Database Designer** decides how the logical database design is to be physically realized. (implemented by DBMS).

**This involves:**

- ☐ Mapping the logical database design into a set of tables and integrity constraints;
- ☐ Selecting specific storage structures and access methods for the data to achieve good performance;
- ☐ Designing any security measures required on the data.



# A design process suggestion for Microsoft Access

1. Determine the purpose of the database.
2. Find and organize the information required.
3. Divide the information into tables.
4. Turn information items into columns.
5. Specify primary keys.
6. Set up the table relationships.
7. Refine the design.
8. Apply the normalization rules.

# Application Developers

- Once the database has been implemented, the application programs that provide the required functionality for the end-users must be implemented.
- This is the responsibility of the application developers.
- Typically, the application developers work from a **specification** produced by systems analysts.
- Each program contains statements that request the DBMS to perform some operation on the database.
- This includes retrieving data, inserting, updating, and deleting data.
- The programs may be written in a third-generation programming language or a fourth-generation language.



# End-Users

- The end-users are the 'clients' for the database, which has been designed and implemented, and is being maintained to serve their information needs.
- End-users can be classified according to the way they use the system:
  - Naïve users
  - Sophisticated users

# Naïve users

- ❑ Naïve users are typically unaware of the DBMS.
- ❑ They access the database through specially written application programs that attempt to make the operations as simple as possible.
- ❑ They invoke database operations by entering simple commands or choosing options from a menu without any knowledge about database.
- ❑ For example, the checkout assistant at the local supermarket uses a bar code reader to find out the price of the item.
- ❑ However, there is an application program present that reads the bar code, looks up the price of the item in the database, reduces the database field containing the number of such items in stock, and displays the price on the bill.

# Sophisticated users

- At the other end of the spectrum, the sophisticated end-user is familiar with the structure of the database and the facilities offered by the DBMS.
- Sophisticated end-users may use a high-level query language such as SQL to perform the required operations.
- Some sophisticated end-users may even write application programs for their own use.

# Thank You!