

# Roles in the Database Environment

# Database Design

- The structure of the database is determined during **database design**
- It can be an extremely complex task
- Need to think of the data first and then application -> paradigm shift

# Roles in the Database Environment

- People: The fifth component in the DBMS environment
- There are 4 distinct types of people:
  - Data & Database Administrators
  - Database Designers
  - Application Developers
  - End-Users

# Data & Database Administrators

- DA (data administrator) is responsible for the management of the data resource:
  - Database planning
  - Development & maintenance of standards
  - Policies and procedures
  - Conceptual/logical database design

# Data & Database Administrators

- DBA (Database Administrator) is responsible for the physical realisation of the database:
  - Physical database design & implementation
  - Security & integrity control
  - Maintenance of operational system
  - Ensuring satisfactory performance of the applications for users

# Database Designers

- Database designers is concerned with:
  - Identifying the data
  - Identifying relationship between entities and attributes
  - Identify the relationships between the data
  - Understand the constraints on the data (business rules)

# Database Designers

- The work of the logical database designers can be split into two stages:
  - Conceptual database design
    - Independent of implementation details
    - Application programs
    - Programming languages
  - Logical database design
    - Specific data models
    - E.g.: relational, network, hierarchical or object-oriented

# Database Designers

- **Physical database designer** decides how the logical database design is to be physically realised.
- It involves:
  - Mapping the logical database design into a set of tables & integrity constraints
  - Selecting specific storage structures and access methods for the data
  - Designing any security measures



# Application Developers

- They worked from the specification produced by systems analysts
- Each program may contain statements that request the DBMS to perform some operation:
  - Retrieving data
  - Insert data
  - Delete data
  - Updating data

# End Users

- Clients of the database
- Can be classified as:
  - Naïve users
    - Typically unaware of the DBMS
  - Sophisticated users
    - Familiar with the structure of the DBMS
    - May use a high-level query language to perform required operation