Suleyman Demirel University

Subject: **“Database Management Systems 1”**

Prerequisite: Programming languages

Number of credits: 3 (2/1/0)
Term: Spring 2018
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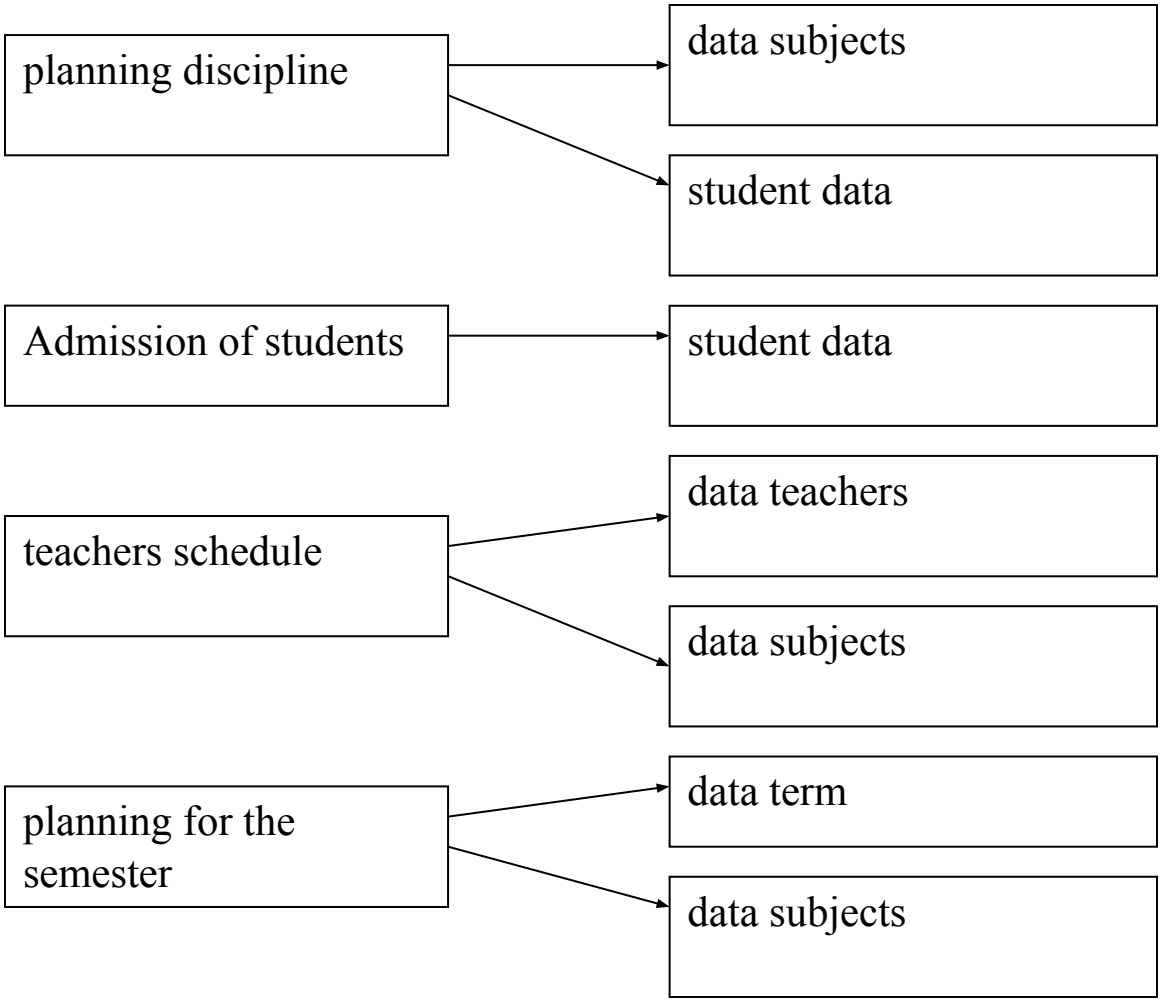
Lecture 1

- Data Administrator
- Database Administrator
- Database designer
  - Database Design Process
- The architecture of a database management systems

Why necessary to use a database management system?

The traditional approach to data processing has the following drawbacks:

- Duplication of data
- The inconsistency of data.

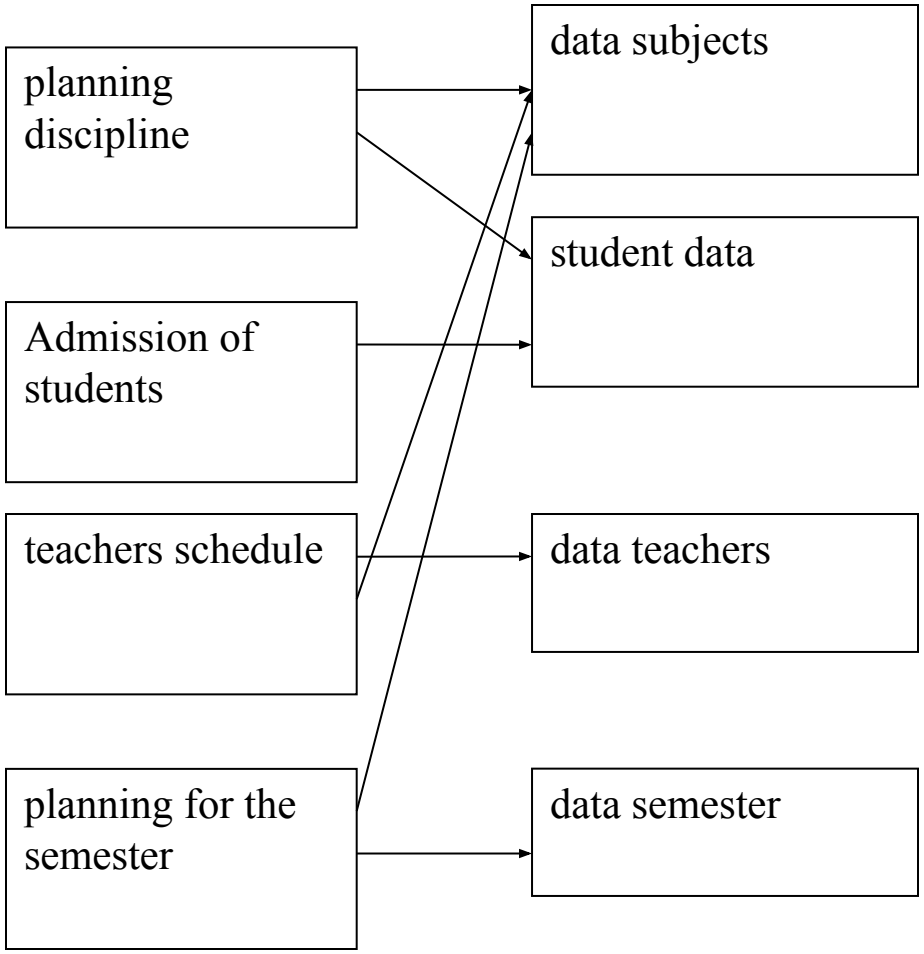


Link between the application and data files.

Approach using a database management system

- Advantages of the approach **using a database management system:**

  • it reduces redundancy;
  • eliminates the inconsistency;
  • sharing of data;
  • comply with the standards;
  • introduce security measures;
  • supports data integrity.



1. Discuss the several major function of data administrator and database administrator.

Data Administration:

A high-level function that is responsible for

- the overall management of data resources in an organization, including maintaining corporate-wide definitions and standards

Database Administration:

A technical function that is responsible for

- logical and physical database design and for dealing with technical issues such as security enforcement, database performance, and backup and recovery

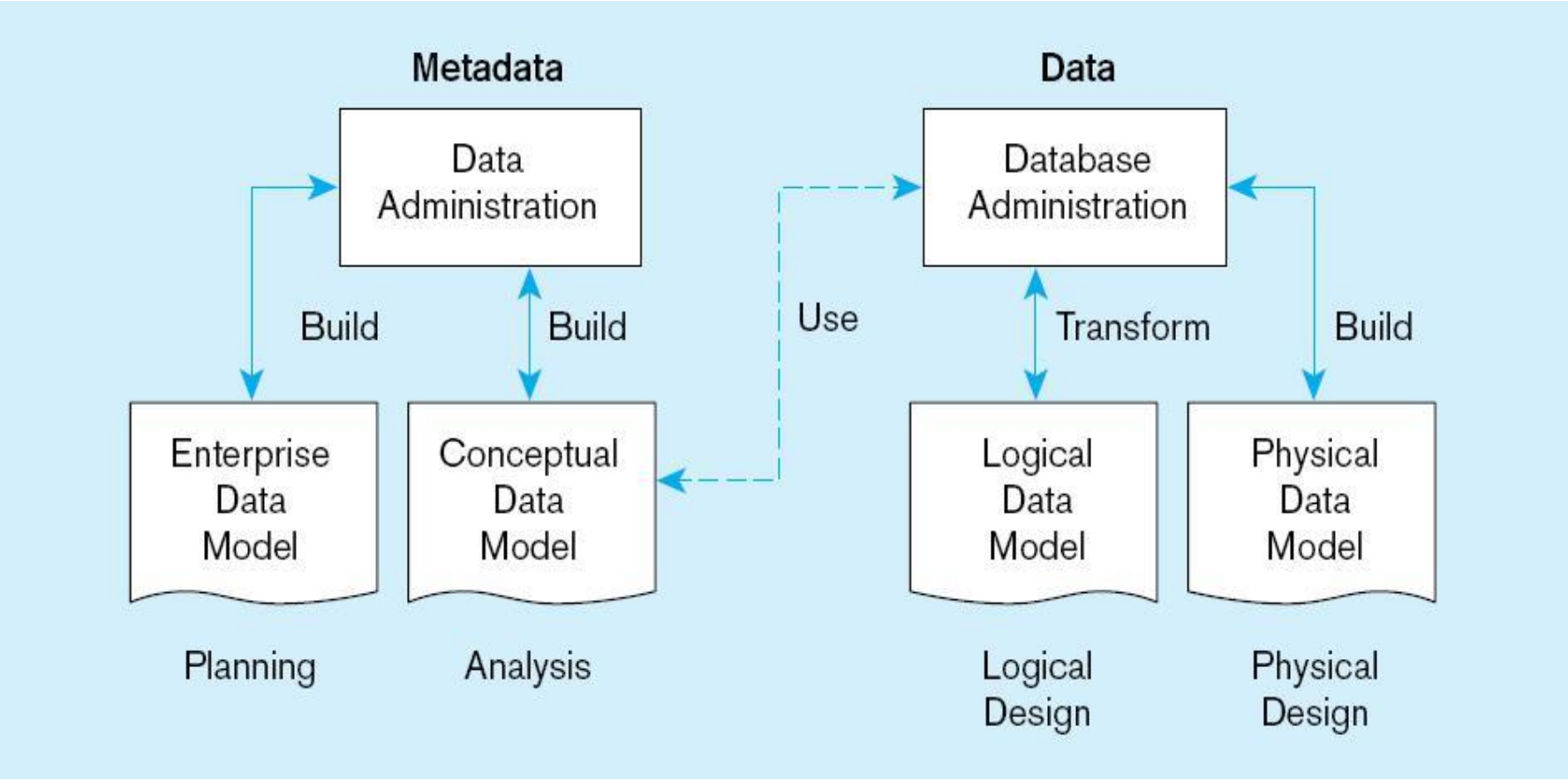
Data Administrator is responsible for :

- Specification of organization data.
- The design and maintenance of data management application.
- Validating the data and files.
- Security of files or databases.

Database Administrator is responsible for :

- reviewing the contents in the database
- designing, implementing the database
- to backed up data regularly
- prevent from unauthorized access.

Data modeling responsibilities



2. What is the difference between database administrator and database designer?

The designer will learn from the applications designers

- the data types,
- quantities,
- relationships,
- and desired operations (searches, sorts, updates, etc.)
- work with the developers to design a structure/schema

Database designer considering matters such as

- unique keys, primary and foreign keys,
- data types, counters, naming, table relationships, search and sort elements,
- database normalization, search and sort efficiency, and data integrity.

Design and development of database

- Development and implementation of a database in the organization must be performed in sequence.
  - **Preliminary design**
  - **Analysis of feasibility**
  - **Determine requirements**
  - **Conceptual design**
  - **Implementation**

    -select DBMS and get it,

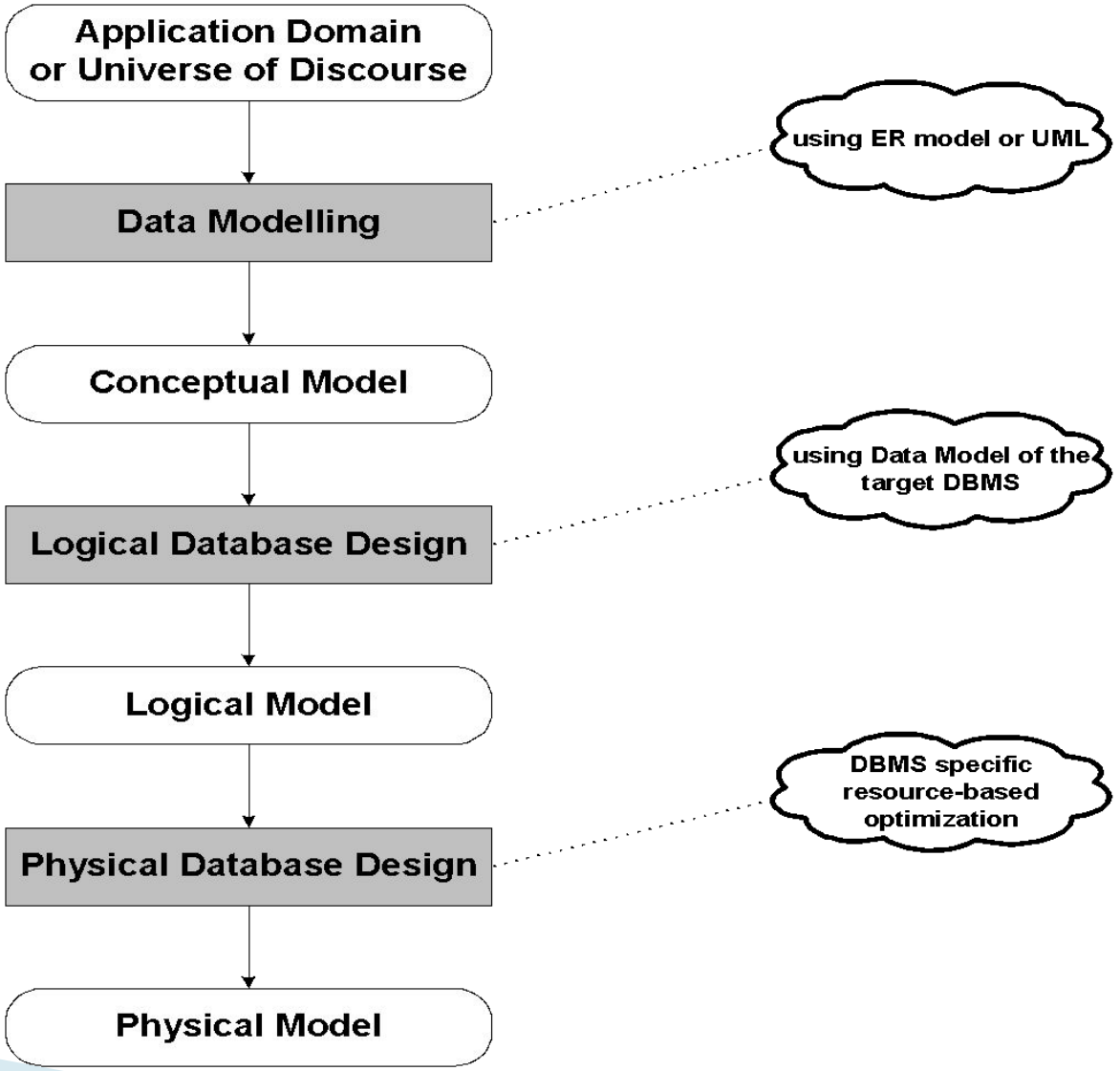
    - convert the detailed conceptual model in a real model DBMS

    - create a data dictionary,

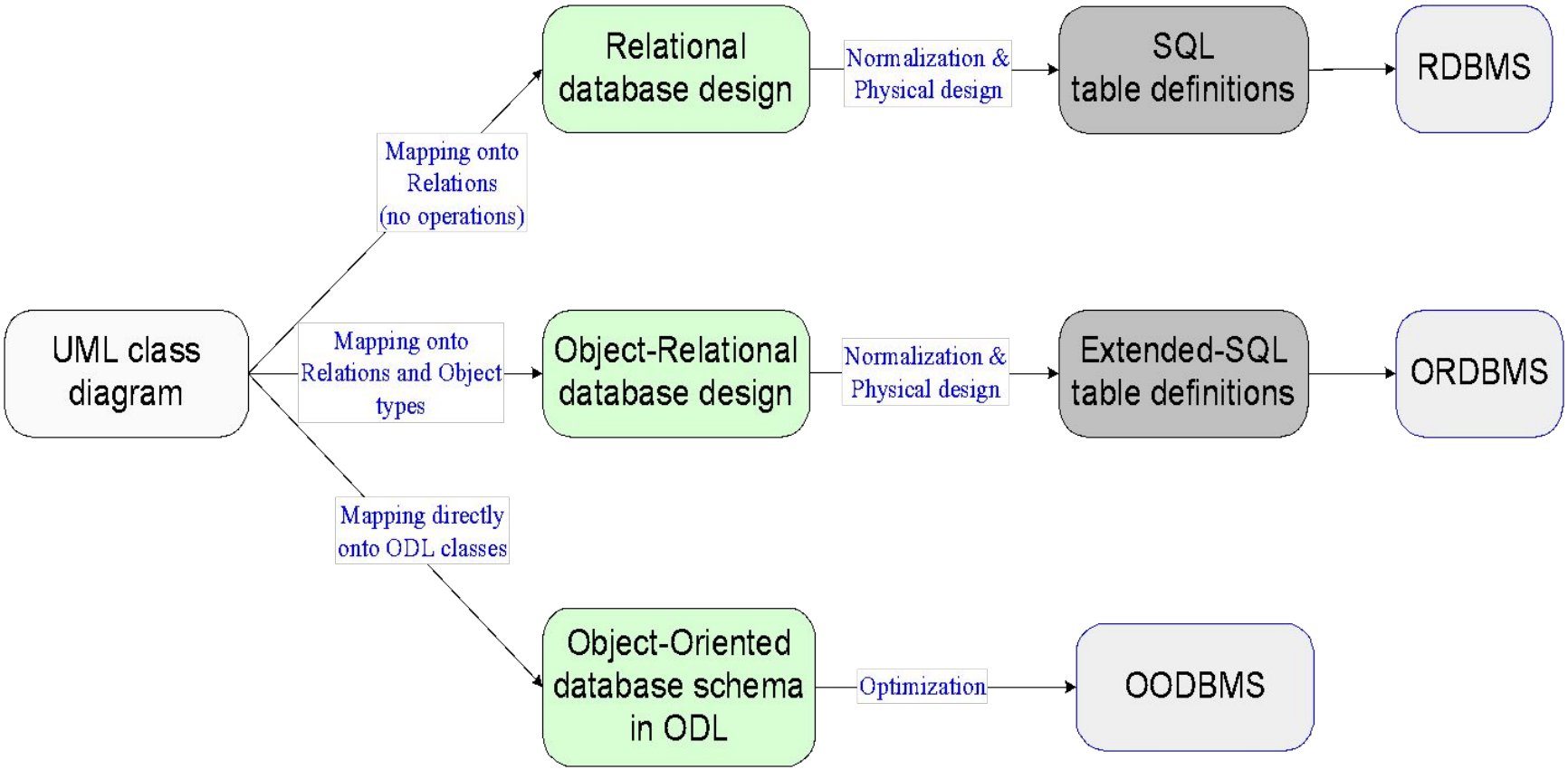
    - populate the database,

    - develop application programs and to train users.
  - **Testing and maintenance of the database.**

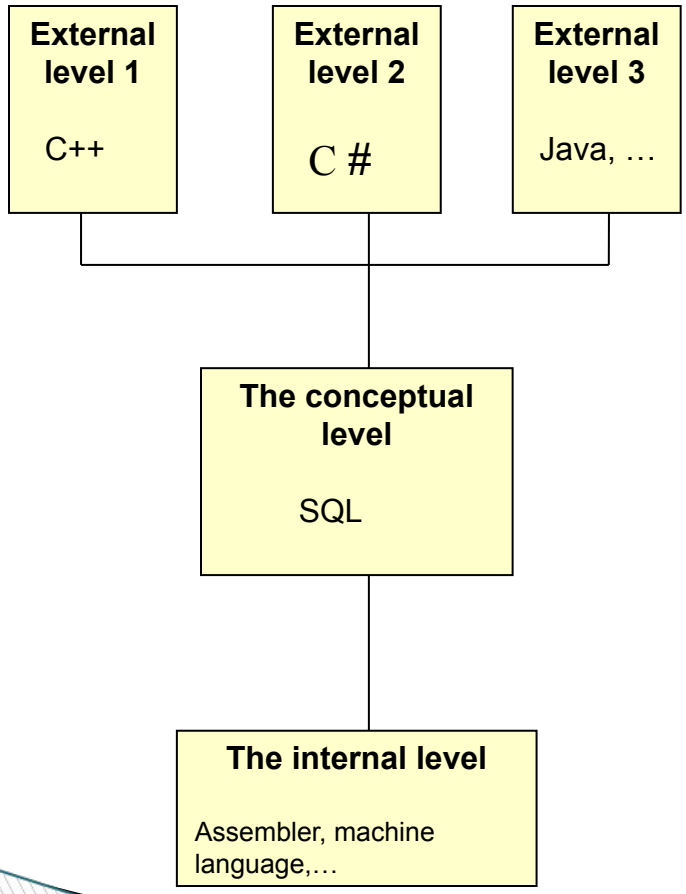
Database Design Process



Logical/Physical database design



Architecture of a database management system



The architecture of a database management system can be divided into three levels:

- The external level: This presentation describes only part of actually existing database.
- The conceptual level: conceptual level represents the entire database as a whole, and is used by the database administrator.
- The internal level: at this level there is a physical data storage, and it is the lowest level in the architecture.

Examples of levels of database architecture

The external level:

cout << “Emp#”<< EMPLOYEE_CODE;
cout << “Dept#”<<DEPARTMENT_CODE;
cout<< “Salary”<< SALARY;

The conceptual level:

EMPLOYEE
EMPLOYEE_CODE CHARACTER 6
DEPARATMENT_CODE CHARACTER 4
SALARY NUMERIC 5

The internal level:

STORED EMPLOYEE LENGTH=18
PREFIX TYPE=BYTE(6), OFFSET=0
EMP# TYPE=BYTE(4), OFFSET=6, INDEX EMPX
DEPT# TYPE =BYTE (4), OFFSET=12
SALARY=BYTE (4), OFFSET=16

review

- Why need to use a database management system?
- The major function of data administrator and database administrator.
- What is the difference between database administrator and database designer?
- Database Design Process
- The architecture of a database management system