Computers Are Your Future

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Lecture 1

Chapter 12

Databases and Information Systems




What You Will Learn About

- ✓ The potential uses of a database program
- ✓ The basic components of a database
- ✓ The differences between file management and relational database programs
- ✓ Advanced database programs and applications

What You Will Learn About

- ✓ The basic qualities of a good database
- ✓ Components and functions of an information system
- ✓ Functional divisions of an organization
- ✓ Major types of information systems used today
- ✓ Databases in retail organizations

Database Concepts

- **Data** is any unorganized text, graphics, sounds, or videos
- A **database** is a collection of data
- **Database programs** enable people to add, sort, group, summarize, and print data
- **Information** is data that has been processed in a meaningful and useful way




The Levels of Data in a Database

✓ The layers in a database are:

- **Bits** – The lowest layer made of 1s and 0s
- **Characters** – Letters, numbers, and symbols
- **Fields** – Areas that contain data identified by **field names** (Examples: First Name; Address; City)
- **Records** – Contain a group of fields

	Mailing List ID	First Name	Last Name	Address	City	State	Postal Code	Date Upd
▶	(AutoNumber)							

- **Data files** – Contain related records

	Mailing List ID	First Name	Last Name	Address	City	State	Postal Code	Date Upd
	1	John	Doe	1234 Main St	Anywhere	NY	00000	1/1/
	2	Sue	Smith	111 Maple St	Everywhere	FI	99999	2/1/
✎	3	Jim	Smythe	10 Park Place	Nowhere	PA	11111	04/
*	(AutoNumber)							

- **Databases** – The top layer made of one or more data files (Example: ABC Company Address Book Mailing list, Employee list, Vendor list)

Data Type

- ✓ Data usually consists of text, numbers, currency, and dates
- ✓ **Logical data –** Only "yes" or "no" answers are allowed
- ✓ **Objects –** Non-textual data
- ✓ **Binary large objects (BLOBs) –** Very large objects
- ✓ **Default value –** Pre-defined values such as today's date

Data Type

- ✓ One field in a record is identified as the **key field** or **primary key**
- ✓ The key field must be a unique entry such as a social security number or student ID

Types of Database Programs

1- File Management Programs:

2- Database Management Systems (DBMS):

File Management Programs:

- Create flat files containing one file or table
- Files can not be linked to other files
- Are easy to use and customize
- Are not as complex as database management systems




Types of Database Programs

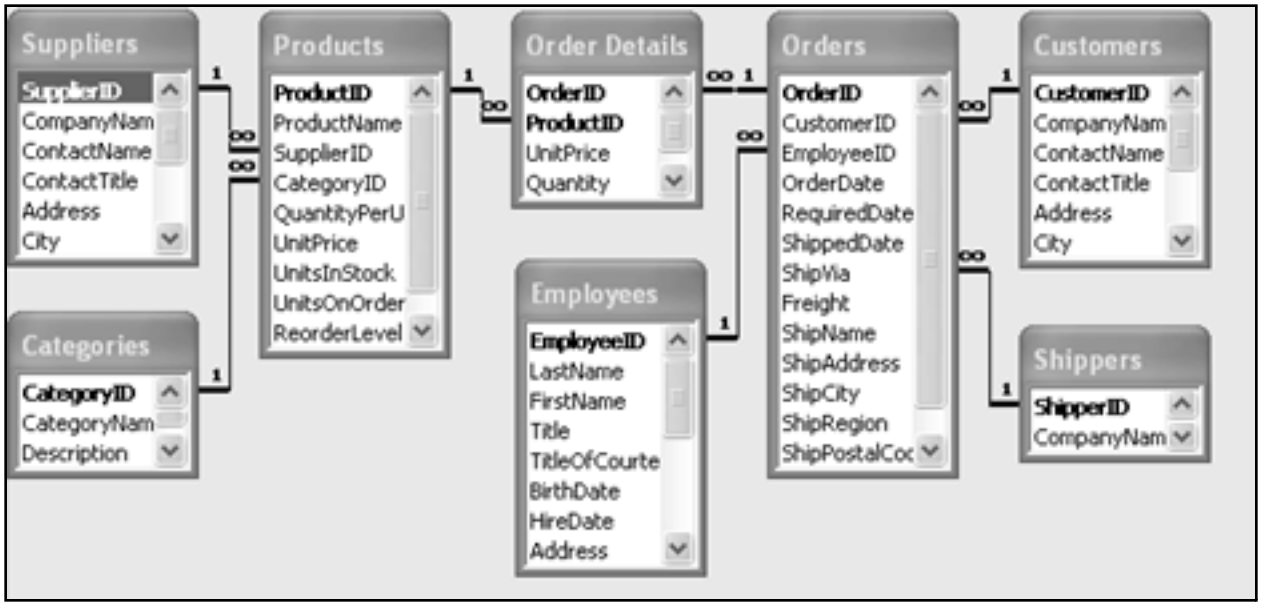
Database Management Systems (DBMS):

- Contain multiple files or tables
- Are programs that enable data to be stored, modified, and extracted from a database
- Are more difficult to learn than file management systems




Relational Database Management Systems

- ✓ **Relational database management systems** are the most widely used type of DBMS
- ✓ Data in several files are related through the use of a common key field



Relational Database Management Systems Example

student

Student_Id	Student_name	Student address	collage	level

staff

Dr_Id	Dr_name	Dr_address	Dr_collage

course

course_Id	course_name	course_collage

Relational Database Management Systems Example

Student_course

Student_Id	course_id	Dr_id