

DBMS Components

- Interfaces for Users, Database Administrators, and Related Systems
 - Related information systems
 - A DBMS can support several related information systems that provide input to, and require specific data from, the DBMS
 - No human intervention is required for two-way communication

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DBMS Components

- Data Manipulation Language
 - A data manipulation language (DML) controls database operations, including storing, retrieving, updating, and deleting data
- Schema
 - The complete definition of a database, including descriptions of all fields, tables, and relationships, is called a schema
 - You also can define one or more subschemas

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DBMS Components

- Physical Data Repository
 - The data dictionary is transformed into a physical data repository, which also contains the schema and subschemas
 - The physical repository might be centralized, or distributed at several locations
 - ODBC – open database connectivity
 - JDBC – Java database connectivity
 - jdbc:uCanAccess connection in Swing

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Web-Based Database Design

- Characteristics of Web-Based Design

Web-Based Database Design Characteristics

CHARACTERISTIC	EXPLANATION
Global access	The Internet enables worldwide access, using existing infrastructure and standard telecommunications protocols.
Ease of use	Web browsers provide a familiar interface that is user-friendly and easily learned.
Multiple platforms	Web-based design is not dependent on a specific combination of hardware or software. All that is required is a browser and an Internet connection.
Cost effectiveness	Initial investment is relatively low because the Internet serves as the communication network. Users require only a browser, and Web-based systems do not require powerful workstations. Flexibility is high because numerous outsourcing options exist for development, hosting, maintenance, and system support.
Security issues	Security is a universal issue, but Internet connectivity raises special concerns. These can be addressed with a combination of good design, software that can protect the system and detect intrusion, stringent rules for passwords and user identification, and vigilant users and managers.
Adaptability issues	The Internet offers many advantages in terms of access, connectivity, and flexibility. Migrating a traditional database design to the Web, however, can require design modification, additional software, and some added expense.

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Web-Based Database Design

- Internet Terminology
 - Web browser
 - Web page
 - HTML (Hypertext Markup Language)
 - Tags
 - Web server
 - Web site

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Web-Based Database Design

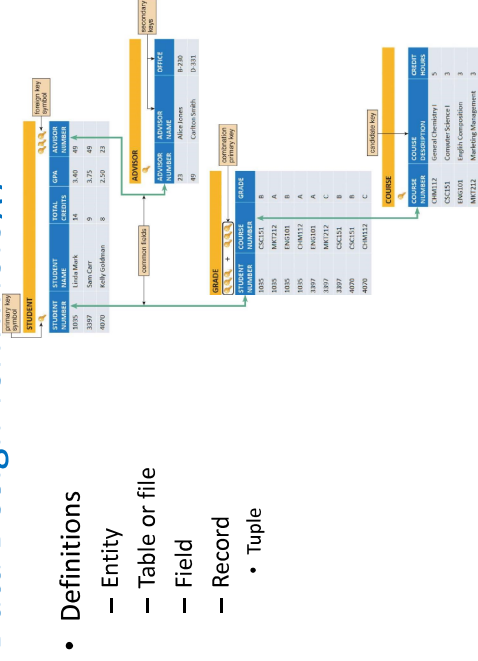
- Internet Terminology
 - Intranet
 - Extranet
 - Protocols
 - Web-centric
 - Clients
 - Servers

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Web-Based Database Design

- **Connecting a Database to the Web**
 - Database must be connected to the Internet or intranet
 - **Middleware**
 - Adobe ColdFusion
 - PHP and MySQL commands
- **Data Security**
 - Well-designed systems provide security at three levels: the database itself, the Web server, and the telecommunication links that connect the components of the system

Data Design Terminology



Data Design Terminology

- Key Fields
 - Primary key
 - Composite key
 - Candidate key
 - Foreign key

Data Design Terminology

- **Referential Integrity**
 - Validity checks can help avoid data input errors
 - In a relational database, referential integrity means that a foreign key value cannot be entered in one table unless it matches an existing primary key in another table
 - Deletes Cascade
 - Deletes Restricted

