

# Database Languages and Interfaces

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## 1 Database Languages and Interfaces

- Two main types of DMLs
- BMS Interfaces

## 2 Three-Schema Architecture

- Internal level
- Conceptual level
- External or view level

# Database Languages and Interfaces

- ➊ **Data definition language ( DDL )**, is used by the DBA and by database designers to define conceptual and internal schemas schemas.
- ➋ **Storage definition language ( SDL )**, is used to specify the internal schema.
- ➌ **View definition language ( VDL )** to specify user views and their mappings to conceptual schema
- ➍ **Data Manipulation Language(DML)** is used for retrieval, insertion, deletion, and modification of the data

# Two main types of DMLs

- 1 **High-level or nonprocedural DML** can be used on its own to specify complex database operations concisely.
- 2 **Low-level or procedural DML** must be embedded in a general-purpose programming language. This type of DML typically retrieves individual records or objects from the database and processes each separately. Therefore, it needs to use programming language constructs, such as looping, to retrieve and process each record from a set of records. Low-level DMLs are also called record-at-a-time DMLs

# DBMS Interfaces

User-friendly interfaces provided by a DBMS may include the following:

- 1 Menu-Based Interfaces for Web Clients or Browsing.
- 2 Forms-Based Interfaces.
- 3 Graphical User Interfaces (GUI)
- 4 Natural Language Interfaces
- 5 Speech Input and Output
- 6 Interfaces for Parametric Users.