chapeter 1

Knowledge derived from data, and data are recorded facts or figures (wts info)

Graphical user interface, application

Description automatically generated

A picture containing diagram

Description automatically generated

**DB**

Shared, integrated computer structure that stores a collection of:

End-user data - Raw facts of interest to end user

Metadata: Data about data, which the end-user data are integrated and managed

Describe data characteristics and relationships

**Database management system (DBMS)**

Collection of programs

Manages the database structure

Controls access to data stored in the database

**Role of DBMS**

Intermediary between the user and the database

Enables data to be shared

Presents the end user with an integrated view of the data

Receives and translates application requests into operations required to fulfill the requests

Hides database’s internal complexity from the application programs and users

**ad of DBMS:**

Better data integration and less data inconsistency

Data inconsistency: Different versions of the same data appear in different places

Increased end-user productivity

Improved:

Data sharing

Data security

Data access

Decision making

Data quality: Promoting accuracy, validity, and timeliness of data

Type of DBMS

Single-user database: Supports one user at a time

Desktop database: Runs on PC

Multiuser database: Supports multiple users at the same time

Workgroup databases: Supports a small number of users or a specific department

Enterprise database: Supports many users across many departments

Table

Description automatically generatedmultiuser db



type of db

Centralized database: Data is located at a single site

Distributed database: Data is distributed across different sites

Cloud database: Created and maintained using cloud data services that provide defined performance measures for the database

Operational (transactional) database: Designed to support a company’s day-to-day operations

Analytical database: Stores historical data and business metrics used exclusively for tactical or strategic decision making

Data warehouse: Stores data in a format optimized for decision support

Online analytical processing (OLAP):Enable retrieving, processing, and modeling data from the data warehouse

Business intelligence: Captures and processes business data to generate information that support decision making

**Type of Data**

Unstructured data: It exists in their original state

Structured data: It results from formatting unstructured data to facilitate storage, use, and the generation of information.

Structure is applied based on type of processing to be performed

Semistructured data: Processed to some extent

Extensible Markup Language (XML)

A special language used to represent and manipulate data elements in textual format

**Structure and data dependency**

Structural dependence: Access to a file is dependent on its own structure

All file system programs are modified to conform to a new file structure

Structural independence: File structure is changed without affecting the application’s ability to access the data

Data dependence: Data access changes when data storage characteristics change

Data independence: Data storage characteristics is changed without affecting the program’s ability to access the data

Practical significance of data dependence is difference between logical (how the human being views the data) and physical format (how the computer must work with the data)

**Types of Data Anomaly**

Update Anomalies

Insertion Anomalies

Deletion Anomalies

**Data design**

Focuses on the design of the database structure that will be used to store and manage end-user data

Well-designed database

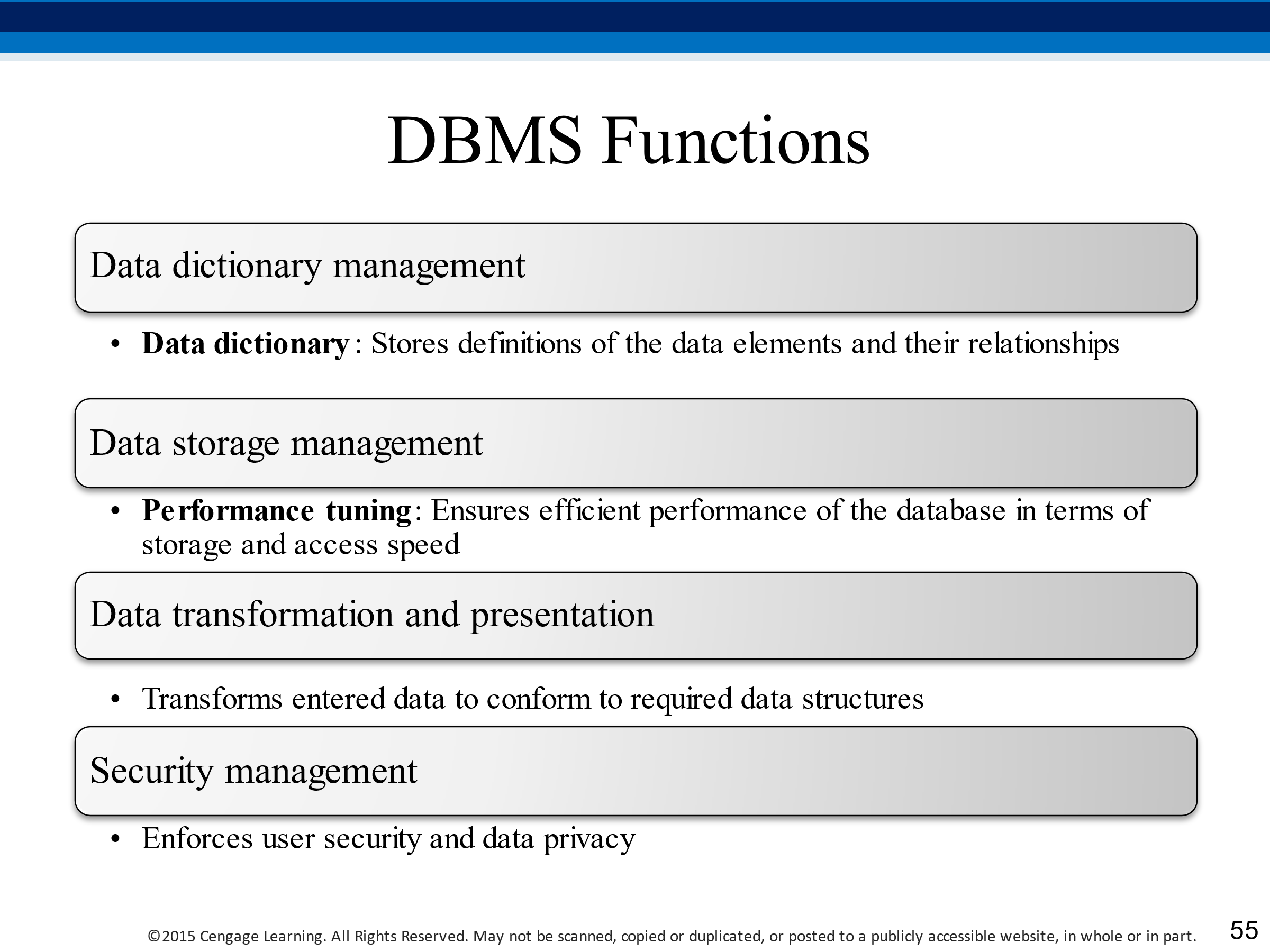
Facilitates data management

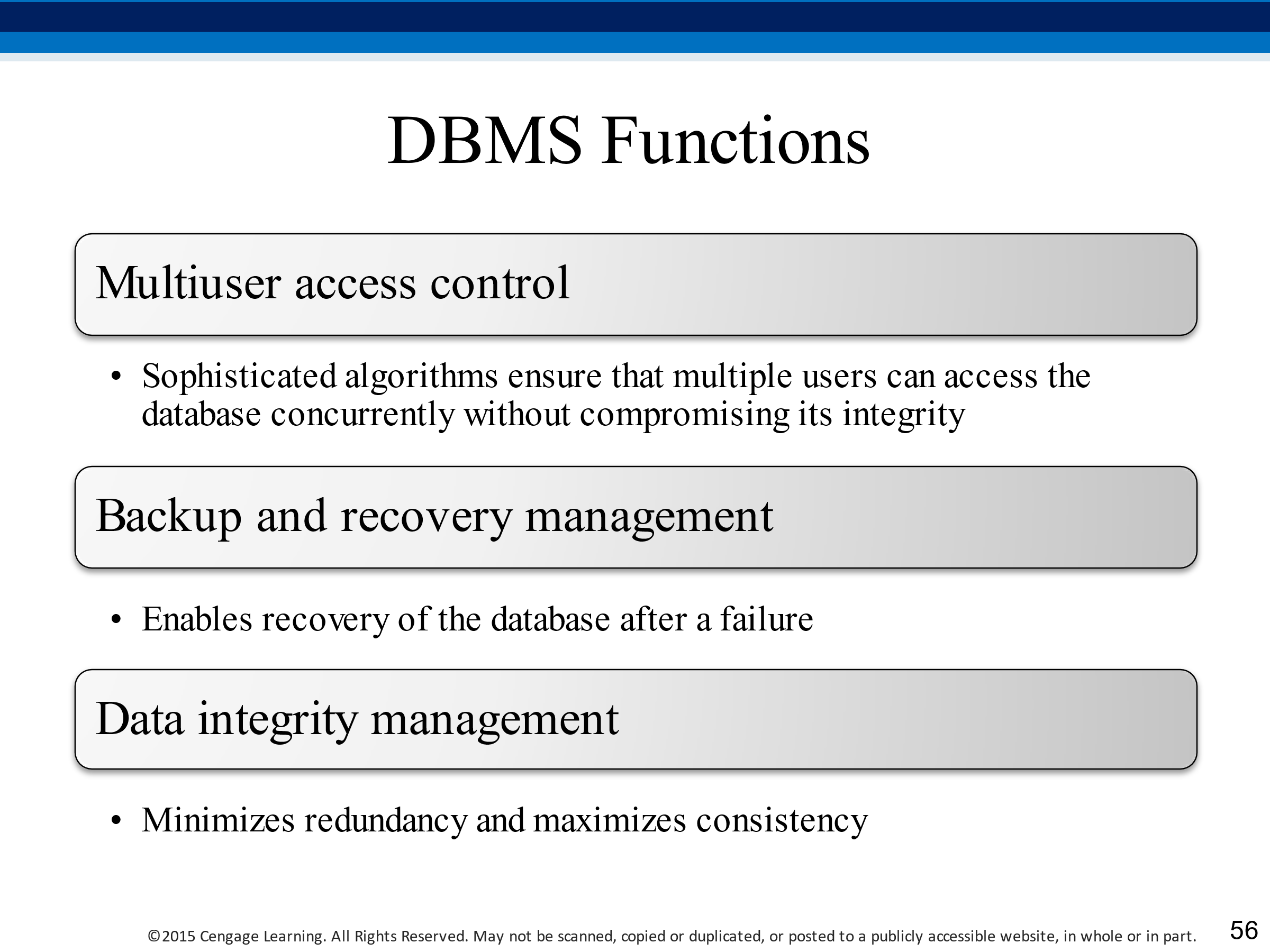
Generates accurate and valuable information

Avoids redundant data

Poorly designed database causes difficult-to-trace errors 🡪 leads to bad decisions 🡪 can lead to failure of organization

DMFS Function





Text

Description automatically generated with low confidence

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