

Data Dictionaries

A data dictionary is a centralised repository of metadata that describes the structure, format, and constraints of the data stored within a database. It serves as a reference for database designers, developers, and users, ensuring consistency and accuracy in data usage.

Data dictionaries are sometimes considered to be an old-fashioned way of describing data. But once the database is implemented, and all the tables have been created, our DBMS will use an internal data dictionary to store the metadata.

Purpose of a Data Dictionary

- Defines table structures, including field names, data types, formats, and constraints.
- Enhances data integrity by documenting rules and relationships.
- Provides a common reference for database users and developers.
- Supports data security by identifying sensitive fields.

Key Components of a Data Dictionary

1. **Field Name** – The name of the attribute or column.
2. **Data Type** – Specifies the kind of data.
3. **Data Format** – The specific format of the field.
4. **Field Size** – The allocated storage space.
5. **Required (Y/N)** – Indicates if the field is mandatory.
6. **Primary Key (PK)** – Identifies the unique identifier of a table.
7. **Foreign Key (FK)** – Establishes relationships between tables.
8. **Default Values** – Specifies a predefined value if none is provided.
9. **Description** – Provides a brief explanation of the field's purpose.
10. **Example Values** – Shows a sample of expected data.

Benefits of Using a Data Dictionary

- **Consistency** – Ensures all users understand data definitions and structures.
- **Data Quality** – Helps maintain clean and accurate data.
- **Standardisation** – Reduces redundancy and enforces naming conventions.
- **Security** – Identifies sensitive fields for encryption or restricted access.
- **Ease of Maintenance** – Facilitates updates and modifications.

Table: StaffMember

Field name	Data type	Data format	Field size	Req?	Description	Example
StaffMemberID {PK}	Integer			Yes	The primary key field that uniquely identifies the StaffMember	1
TeamID {FK1}	Integer			Yes	The foreign key of the team that the StaffMember works for	1
Name						
Surname						
DateJoined						
DateLeft						
ManagerID {FK2}	Integer			Yes	The foreign key of the StaffMember that manages this StaffMember	1

Figure 57. Data Dictionary with Key Details