Documentation of CRUD Operations in MongoDB

CRUD operations—Create, Read, Update, Delete—are essential for managing data in databases like MongoDB. These operations allow users to manage data efficiently and respond to changes in business requirements dynamically. Below is a detailed account of the CRUD operations performed on a MongoDB database for a sales dataset.

1. Create (Insert) Operation

- **Purpose**: To add new sales records to the database.

- **Operation**:

    - Inserted a new record for a sale in the Czech Republic with specific details such as item type, sales channel, units sold, and financial details (revenue, cost, profit).

    - Command used: insert_many() to insert one new record into the sales collection.

    - Data Example:

    - {

    - "Region": "Europe",

    - "Country": "Czech Republic",

    - "Item Type": "computer",

    - "Sales Channel": "Offline",

    - "Order Priority": "C",

    - "Order Date": "09/12/2024",

    - "Order ID": 478051030,

    - "Ship Date": "9/29/2024",

    - "Units Sold": 4778,

    - "Unit Price": 47.45,

    - "Unit Cost": 31.79,

    - "Total Revenue": 226716.1,

    - "Total Cost": 151892.62,

    - "Total Profit": 74823.48

    - }

2. Read (Query) Operation

- **Purpose**: To fetch data based on specific criteria to view or further process.

- **Operation**:
  - Queried the database to find records by a specific location (Berlin) which was used to check the inserted or updated data.
  - Command used: find() to retrieve documents from the sales collection.
  - Example Query: {"store_location": "Berlin"}

3. Update Operation

- **Purpose**: To modify existing data in response to changes in business logic or corrections.
- **Operation**:
  - Updated the sales amount for the 'Beverages' item type by setting a new unit price.
  - Command used: update_one() to update the first document that matches the criteria.
  - Update Details: Updated "Unit Price" to 120 for records where "Item Type" is "Beverages".
  - Example Update Command:
  - {"Item Type": "Beverages"},
  - {"$set": {"Unit Price": 120}}

4. Delete Operation

- **Purpose**: To remove outdated or irrelevant records from the database.
- **Operation**:
  - Deleted all records for sales in 'Albania' which might be due to strategic business withdrawal or data cleanup.
  - Command used: delete_many() to remove all documents that match the deletion criteria.
  - Example Delete Command: {"Country": "Albania"}

Importance of CRUD Operations

- **Flexibility and Responsiveness**: CRUD operations provide the flexibility to respond to changes in business requirements, such as adding new data, updating existing information, or deleting obsolete data.
- **Data Integrity and Relevance**: Regular updates and deletions help maintain data integrity and relevance, which is crucial for making informed business decisions.

- **Efficiency in Data Management**: Efficient data management practices like CRUD ensure that the database is not only up-to-date but also optimized in performance by removing unnecessary data storage.