1.1 Summary of Findings

SQL is vital for managing the data of dynamic websites, including online stores. It provides the ability to store, retrieve, and manipulate data related to product details, user accounts, and order information. Web applications, with the help of SQL, can handle masses of data and give users a seamless experience.

1.2. SQL in Web Applications

SQL is applicable to web applications using it to communicate with the database. It helps in allowing the running of the SELECT, INSERT, UPDATE, and DELETE queries. Such allows the management of the data lifecycle, from user registrations to product catalogues and order processing to inventory management.

1.3. Benefits of Using SQL within Web Applications

Efficiency: SQL allows very efficient manipulation and retrieval of data. It can process huge data sets effectively.

Data Organization: SQL organizes data in a clear structure using tables and relationships, which helps a lot in managing data.

Data retrieval capabilities: SQL gives the ability to perform powerful queries to meet the complex needs of data retrieval and analysis.

1.4. Explanation of Benefits

Efficiency: SQL is optimized for processing large masses of data with little delay, delivering quick results on intent to the user.

Data Organization: SQL organizes data into tables with defined relationships, which makes it flexible to navigate and manageable.

Data Accessing Capability: SQL has advanced querying capabilities that help in extracting specific data sets to complete detailed reports and insights.

1.5. Database Management Systems

MySQL

PostgreSQL

SQL Server

Part 2: Database Fundamentals

2.1. Tables

A database table is analogous to a spreadsheet with data sorted in rows and columns. A row is a record, and a column is a field.

2.2. Columns

Columns specify the type of data to be stored in each of the fields of a table. To be more specific, for instance, a column named "price" could contain numbers indicating the price of products. Columns look after data consistency as they enforce data types.

2.3 Data Types

Data types are essential ingredients in databases because they see that the stored data is well-kept and correct. Some common data types include:

Text: Stores alphanumeric characters, used for names and descriptions.

Number: Contains numerical values for amounts and prices.

Date - Stores dates and times, used for timestamps and scheduling.

Part 3: Expense Tracker Database Design

3.1. Planning For an Expense Tracker application, we'd want to track these data points:

Expense amount Date if expense Category of expense Description of the expense Payment method

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Column Name** | **Data Type** | **Description** |  |  |  |
|  |  |  |  |  |  |
| expense\_id | INT | Unique identifier for each expense |  |  |  |
| amount | DECIMAL | Amount of the expense |  |  |  |
| date | DATE | Date when the expense was made |  |  |  |
| category | TEXT | Category of the expense (e.g., food) |  |  |  |
| description | TEXT | Description of the expense |  |  |  |
| payment\_method | TEXT | Payment method used |  |  |  |