Computer Basics: Database

Connect with me: Youtube | LinkedIn | WhatsApp Channel | Web | Facebook | Twitter

- Download PDF
- To access the updated handouts, please click on the following link: https://yasirbhutta.github.io/computer-basics/docs/database.html
- Computer Basics: Database
    - Database Basics
    - Database Design
    - Database Management Systems (DBMS)
    - SQL
    - Microsoft Access
    - True/False (Mark T for True and F for False)
    - Multiple Choice (Select the best answer)
    - Exercises
    - Review Questions
    - References and Bibliography

Database Basics

What is a database?

- A database is an organized collection of data, or information, that is stored electronically on a computer system.
- Databases are used to store a wide variety of data, such as customer information, product information, financial data, and scientific data.

Why use a database?

- Databases offer a number of advantages over traditional methods of data storage, such as paper files and spreadsheets.
- Databases are `more efficient` to store and manage large amounts of data.
- Databases allow for `easy searching and retrieval of data`.
- Databases can be used to `share data` with other users.

Types of databases:

- There are many different types of databases, but the most common are `relational databases` and `non-relational databases`.
    - **Relational databases** store data in tables, where each table is made up of rows and columns.
    - **Non-relational databases** store data in a variety of formats, such as XML or JSON.

Database Design

- Database design is the process of creating a database that is efficient and meets the needs of the users.

- There are a number of steps involved in database design, such as:
  - Identifying the data that needs to be stored
  - Determining the relationships between the data
  - Normalizing the data
  - Creating a database schema

Database Management Systems (DBMS)

- A database management system (DBMS) is a software program that is used to `create`, `manage`, and `access databases`.
- Some popular DBMSs include `Oracle`, `MySQL`, and `Microsoft SQL Server`.

SQL

- SQL is a structured query language that is used to `communicate with databases`.
- SQL can be used to create, read, update, and delete data in a database.

See Also:

- Khan Academy Database Course: https://www.khanacademy.org/computing/computer-programming/sql
- W3Schools SQL Tutorial: https://www.w3schools.com/sql/

Microsoft Access

Microsoft Access is a **database management system (DBMS)** developed by Microsoft. It combines the **relational Access Database Engine (ACE)** with a **graphical user interface (GUI)** and software-development tools. Here's what you can do with Microsoft Access:

1. **Create Databases**: You can build databases quickly using templates, even if you're not a developer.
2. **Data Management**: Easily find, report on, and manipulate data stored in Access.
3. **Forms**: Create rich data entry forms.
4. **Data Import/Export**: Import, transform, and export data from various sources[1][2].

See also:

- Video: What is Access? - Microsoft Support
- Microsoft Access - Wikipedia
- What is Microsoft Access? - Database.Guide
- Access video training - Microsoft Support
- What is Microsoft Access? Database Management Simplified - Simplilearn

True/False (Mark T for True and F for False)

- A database is an organized collection of data stored electronically on a computer system. **True/False**
- Databases are only used to store customer information. **True/False**
- Relational databases store data in tables. **True/False**
- SQL is a programming language used to create websites. **True/False**
- SQL is a language used to communicate with and manipulate data within a database. **True/False**

Multiple Choice (Select the best answer)

> Which of the following is NOT a type of database?

1. ☐ Relational
2. ☐ Non-relational
3. ☐ Spreadsheet

> What is the purpose of database design?

1. ☐ To make the database look pretty
2. ☐ To create a database that is efficient and meets the needs of the users
3. ☐ To store as much data as possible
4. ☐ None of the above

> Which of the following is NOT a characteristic of a database?

1. ☐ Organized collection of data
2. ☐ Stored electronically on a computer system
3. ☐ Duplicates information across different files
4. ☐ Allows easy searching and retrieval of data

> Which type of database stores data in tables with rows and columns?

1. ☐ Relational
2. ☐ Non-relational
3. ☐ Hierarchical
4. ☐ Graph

> What is the process of identifying data relationships, normalizing data, and creating a database schema called?

1. ☐ Querying of Database
2. ☐ Programming
3. ☐ Optimization of Database
4. ☐ Database Design

> Which software program facilitates the creation, management, and access of databases?

1. ☐ Word processor
2. ☐ Web browser
3. ☐ Database management system (DBMS)
4. ☐ Operating system

> Which of the following statements is NOT true about Microsoft Access?

1. ☐ It is a relational database management system
2. ☐ It combines a graphical user interface with a database engine.
3. ☐ It is primarily used for enterprise-level applications.
4. ☐ It offers various tools for data analysis and reporting.

> What is the primary function of a database query?

1. ☐ Create new data in the database
2. ☐ Modify existing data in the database
3. ☐ Delete data from the database
4. ☐ Retrieve specific data from the database

Exercises

- Write an SQL query to select all customers from a table named 'customers'.

Answer:

```
select * from customers;
```

Review Questions

- What is a database?
- Explain the difference between relational and non-relational databases.
- Describe the steps involved in database design.
- What are the different types of databases?
- What are the advantages of using a database?
- What is the role of a database management system (DBMS)?
- Define a database and write a note on Microsoft Access.
- What is a database, and what are the steps involved in designing one? Additionally, describe the different types of databases and the advantages of using them.

References and Bibliography

- Access video training
- What is Microsoft Access? - Database.Guide