# Introduction to Databases

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# Welcome to the Course!

- Hello and welcome to this course!
- Almost everyone has used a database.
- Information about us is likely present in many databases globally.
- But who truly understands what a database is and its importance?

# What is a Database?

- A very straightforward description:
  - A form of electronic storage in which data is held.
- This explanation barely scratches the surface of its impact.
- Let's explore real-world contexts to understand its significance.

# Databases in Action: Typical Use Cases

- **Your Bank:**
  - Stores data for customers, bank accounts, and transactions.
- **Hospitals:**
  - Store patient data, staff data, laboratory data, and more.
- **Online Stores:**
  - Retain your profile information, shopping history, and accounting transactions.

# The Data Explosion: Beyond the Basics

- Many services access a diverse range of data:
  - Your location
  - Time spent on platforms
  - Friends you connected with
  - And many more facts!
- Online services and social media generate enormous amounts of data.
- This is due to large user bases and constant user activity.

# Big Data and the Internet of Things (IoT)

- With the Internet of Things (IoT), many extra devices are now connected.
- These continual streams of data have led to a revolution in database technology.
- This accommodates the **volume, variety, and complexity** of what is known as **Big Data**.

# What a Database Typically Does

- Whatever the source of the data, a database will typically carry out the following actions:
    - **Store** the data.
    - Form **connections or relationships** between segmented areas of the data.
    - **Filter** the data to show relevant records.
    - **Search** data to return matching records.
    - Have functions to allow data to be **updated, changed, and deleted** as required.

# Don't Worry (Yet)!

- Don't worry if you don't fully understand all these terms for now.
- You're just receiving a brief introduction to databases and data.
- During the course, you'll explore these concepts in more detail.
- These form part of the many other tasks of a back-end developer.

# What You Will Learn

- The concepts of data and databases.
- How data is related in the database.
- Different database structures and their uses.
- How to perform Create, Read, Update, and Delete (CRUD) operations.
- How to use SQL operators to sort and filter data.

# More Learning Objectives

- What database normalization is and how to normalize a database.
- You'll also get to build a fully operational database.
- Install and set up software called **XAMPP** on your computer.
- This will help progress your local and remote database learning.

# How You Will Learn

- Many videos will gradually guide you towards your goal.
- **Watch, pause, rewind, and rewatch** videos until you're confident.
- Consolidate knowledge by consulting course readings.
- Put your skills into practice during course exercises.
- Encounter several knowledge quizzes to self-check your progress.

# Connect with Classmates

- You're not alone in considering a career as a back-end developer.
- Work with course discussion prompts.
- Enable connection with your classmates.
- It's a great way to:
  - Share knowledge
  - Discuss difficulties
  - Make new friends!

# Commit to Your Study

- To be successful, it is helpful to commit to a regular and disciplined approach to learning.
- Be serious about your study.
- If possible, map out a study schedule with dates and times.
- Devote this time to attending the course.
- Think of it as regular attendance at a learning institute, even though it's online and self-paced.

# Course Summary

- This course provides you with a complete introduction to databases.
- It is part of a program of courses.
- This program leads you towards a career in back-end development.