ASSIGNMENT 1

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Name and describe three applications you have used that employed a database system to store and access persistent data

Online Trading Platform:

Purpose: Make it easier to purchase and sell items and services online.
Functions include user registration, product listings, a shopping cart, order management, and payment processing.
Simple interface design: User-friendly interface with search, product categories, and filters.

Banking Systems:

Manage client accounts, transactions, and financial activities.
Account creation, deposits, withdrawals, fund transfers, and transaction history.
Simple interface design: Secure login, account dashboard, transaction history, and balance summary.

University System:

Manage student records, course enrollment, and academic data.
Functions include student enrollment, course scheduling, grade management, and faculty records.
Simple interface design: Student portal featuring course catalogue, enrollment form, and grades/schedules.

Propose three applications in domain projects

- **Environmental Science Applications:**

  Purpose: To analyze climate data and forecast future weather trends.
  Functions include data collecting, statistical analysis, and visualization of weather trends.
  Simple interface design: Weather overlays, temperature trend graphs, and easy-to-use data entry forms are all included in this interactive map.

- **Supply Chain Management Applications:**

  Goal: Improve the movement of products and services throughout a supply chain.
  Functions include inventory management, order monitoring, and demand forecasting.
  Simple interface design: The dashboard displays real-time inventory levels, order progress, and user-friendly tools for controlling supply chain operations.

- **Healthcare Management Applications:**

  The goal is to keep and access patient medical information efficiently while also facilitating healthcare workflows.
  Functions include patient registration, appointment scheduling, and medical record management.
  Simple interface design: Patient profile includes demographic information, an appointment schedule, and simple search and filter options for medical records

If data can be retrieved efficiently and effectively, why data mining is needed?

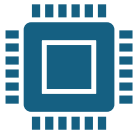
Data mining uncovers hidden patterns and insights in vast datasets that typical database querying approaches may miss.

Data mining allows for detecting patterns, correlations, and anomalies that can give useful business insight.

It may be used for predictive modeling and forecasting based on previous data, allowing firms to make better decisions.

What are the things current database system cannot do?

Handling unstructured data: Current database systems are limited in their ability to handle unstructured data such as photos, videos, and natural language text without further processing.



Real-time data processing: Database systems may struggle to handle real-time data or highly large-scale distributed systems effectively.

Complex analytics and machine learning algorithms may not be supported by database systems by default, necessitating the use of specialized tools or frameworks for integration.

Describe at least three tables that might be used to store information in a social-network/social media system such as Twitter or Reddit.

COLUMNS INCLUDE USER ID, USERNAME, EMAIL, PASSWORD, PROFILE IMAGE, AND BIO.
THE PURPOSE IS TO STORE USER INFORMATION AND LOGIN CREDENTIALS.

POST TABLE: COLUMNS INCLUDE POST ID, USER ID, CONTENT, TIMESTAMP, LIKES, AND COMMENTS.
PURPOSE: TO STORE INDIVIDUAL POSTS PRODUCED BY USERS, AS WELL AS ACCOMPANYING METADATA.

RELATIONSHIP TABLE: COLUMNS INCLUDE USER 1 ID, USER 2 ID, AND RELATIONSHIP TYPE.
PURPOSE: TO STORE USER CONNECTIONS SUCH AS FOLLOWING, FRIENDING, AND BANNING.