Project#2

Advanced Data Technologies

Overview

Advanced data management technologies encompass modern approaches, tools, and systems designed to effectively handle the challenges posed by the exponential growth of data in today's digital landscape. These technologies provide efficient, scalable, and robust solutions for storing, processing, analyzing, and governing data, enabling organizations to derive valuable insights and make informed decisions. Key advanced data management technologies include big data technologies like the Hadoop ecosystem, NoSQL databases, and data lakes; cloud data management solutions such as cloud data warehouses, managed database services, and cloud-based data integration; data virtualization and data fabric architectures for unified data access and seamless integration; data governance frameworks, lineage tracking, and compliance with data privacy regulations; advanced analytics capabilities including in-database analytics and integration with AI/ML platforms; as well as emerging trends like distributed ledgers, serverless data processing, and edge computing for IoT data management. By adopting these cutting-edge technologies, organizations can unlock the true potential of their data assets, gain deeper insights, ensure data quality and governance, leverage advanced analytics and AI/ML capabilities, and ultimately drive innovation and business success in the data-driven economy.

Objective

This project focuses on embracing NoSQL and newSQL databases as a valuable skill. That's why, we challenge you to explore and understand the concepts and applications of NoSQL and NewSQL databases, focusing on their role in modern data storage and retrieval.

Instructions

1. **Form Groups**: Form groups of two students. Ensure that each group has a balanced mix of skills and experiences to contribute to the project.
2. **Select a Topic**: Choose one of the following topics

   - Document Databases
   - Key-Value Stores
   - Wide-Column Databases
   - Graph Databases
   - Vector Databases
   - NewSQL databases

Project Deliverables, Deadlines and Assessment

- Final Presentation material (60%)
  - Deadline: **TBA**
  - Documentation encompassing
    - A clear and engaging presentation (summarizing the Overview of a Chosen NoSQL Database, its key features and benefits, and Real-World Use Cases)
    - A Hands-on Experience report illustrating Installation and Configuration, Basic Operations, and Advanced Features
    - The script of the hand-on experience itself.

- Q&A Interaction (30%)
  - Deadline: **TBA**
  - Active participation in the Q&A session following the presentation, demonstrating a thorough understanding of the project and the ability to answer questions thoughtfully and comprehensively