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**PRACTICAL ASSIGNMENT**

**ASSIGNMENT 1**

**QUESTION 1**

**DEFINITION OF THE RECOMMENDED DATABASE TYPE**

The recommended database type is NoSQL. A NoSQL database is a non-relational database that is designed to take and manage a big volume of semi-structured and unstructured data. The NoSQL database is meant for horizontal scaling, flexible schema management, and high availability. This makes it appropriate for fast growing and dynamic apps (Google Cloud).

**DETAILED MOTIVATION OF WHY THIS PARTICULAR TYPE OF DATABASE IS BEING RECOMMENDED**

The scalability because NoSQL databases distribute data over multiple servers because it supports horizontal scaling. For a social media platform where user interactions and content creation are rapidly growing, this is important(MongoDB).

The real time processing because NoSQL databases work well for real time analytics because they allow fast read and write operations. It would make it possible to process features and fast feed updates with ease(MongoDB).

The data structures flexibility because a NoSQL database would allow flexible and dynamic data storage. This would be a big advantage when and if the platform adds new kinds of content and new forms of interactions(MongoDB).

**DISCUSSION OF THE KINDS OF DATA THAT WOULD BE STORED IN SUCH A DATABASE**

The user’s profiles that would include details like their name, preferences and pictures.

The content data such as posts, images, videos, GIFs, and live streams.

User interactions such as liking posts or adding comments, shares, reacting and views.

Notifications for alerts of new followers, comments, likes and messages sent to the user (Google Cloud).

**A LIST AND DEFINITION OF 4 TYPES OF THE RECOMMENDED DATABASE, WITH EACH DEFINITION CONSISTING OF ATLEAST 3 SENTENCES**

Graph database

It is designed for storing and querying the relationships effectively and efficiently. It is of the best use for social media connections, influencer networks and friend recommendations. Examples of a graph database is Neo4j and ArangoDB (GeeksforGeeks).

Column-Family database

It stores data in column format for fast organizing and retrievals. It is beneficial for managing large analytics and monitoring interactions. Examples of a column-family database include HBase and Apache Cassandra(GeeksforGeeks).

Key-Value Store

It uses a simple and very easy key-value pair to retrieve data quickly. It is perfect for caching preferences, notifications and user sessions. Examples of a key-value store include Redis and Amazon DynamoDB(GeeksforGeeks).

Document-Based database

It uses either JSON or BSON to store data, giving schema designers more flexibility. It is suitable for storing user profiles, posts and comments because each document can have many different structures. Examples of a document-based database is MongoDB and CouchDB(GeeksforGeeks).

**THE 3 V’s OF BIG DATA AS IT PERTAINS TO THE SCENARIO PROVIDED**

Volume

Millions of users produce large amounts of data, including analytics, posts and interactions. For the platform to manage this large amount of data effectively, a scalable database is needed.

Velocity

Likes per second, popular topics and live commenting are examples of the data that is generated and updated in real time. For a good user experience the database must allow for quick read and write operations.

Variety

The platform manages a variety of data types, unstructured data, semi-structured data and structured data are all included in this. How diverse of data this is, it can be handled with flexibility in a NoSQL database.

**QUESTION 2**

**1**

|  |
| --- |
| Customer |
| PK CustomerID  FullName  Email  ShippingAddress  Suburb  City |

|  |
| --- |
| Review |
| PK ReviewID  Rating  ReviewText  FK CustomerID  FK BookID |

|  |
| --- |
| Order |
| PK OrderID  TotalPrice  Status  OrderDate  FK CustomerID |

|  |
| --- |
| Book |
| PK BookID  Title  Author  Genre  Price  QuantityInStock |

**1**

|  |
| --- |
| Payment |
| PK PaymentID  PaymentDate  PaymentAmount  PaymentMethod  FK OrderID |

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