INSY6112

Assignment 1

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Question 1

Question 1. Recommended Database Type

I recommend using a NoSQL database for the platform. NoSQL databases are designed to handle large volumes of unstructured and semi structured data offering flexibility and scalability that traditional relational databases may lack in. (GeeksforGeeks, 2023).

Question 2. Motivation for Using NoSQL

1. Scalability

NoSQL databases support horizontal scaling allowing the addition of more servers as data volume increases. This is crucial for platforms with millions of users generating vast amounts of data. (GeeksforGeeks, 2018).

2. Flexibility

They do not require a fixed schema enabling the storage of diverse data types such as text images and videos without the need for database redesigns. (GeeksforGeeks, 2018).

3. Real-Time Performance

NoSQL databases are optimized for fast read and write operations ensuring instant updates on user fees and notifications. (GeeksforGeeks, 2018).

Question 3. Types of Data Stored

- **User Profiles:** Names, profile pictures, bios and settings.
- **Posts and Media:** Text posts, photos, videos, live streams and VR content.
- **Interactions:** Likes, comments, shares, reactions and hashtags.
- **Analytics Data:** Trending topics, likes per minute and live viewer counts. (GeeksforGeeks, 2022).

Question 4. Types of NoSQL Databases (GeeksforGeeks, 2022)

1. Column Family Stores

Store data in columns grouped into families. Works well for large scale analytics and time series data. Example: Apache Cassandra for storing likes shares and comments over time (Apache Cassandra, 2024).

2. Key Value Stores

Store data as key value pairs where the key is unique and the value is the data. Very fast for lookups. Example: Redis is used for notifications and feed updates (Redis keyspace notifications, 2025).

3. Document Oriented Databases

Store data in documents Each document contains all the data for a record. Example: MongoDB is used for posts and user profiles with different fields (MongoDB, 2024) (GeeksforGeeks, 2022).

4. Graph Databases

Store data as nodes (entities) and edges (relationships). Good for social networks and recommendations. (GeeksforGeeks, 2022).

Question 5. Three Vs of Big Data

1. Volume

The platform stores huge amounts of posts media and interactions every day. NoSQL can scale out to store all of this (GeeksforGeeks, 2018).

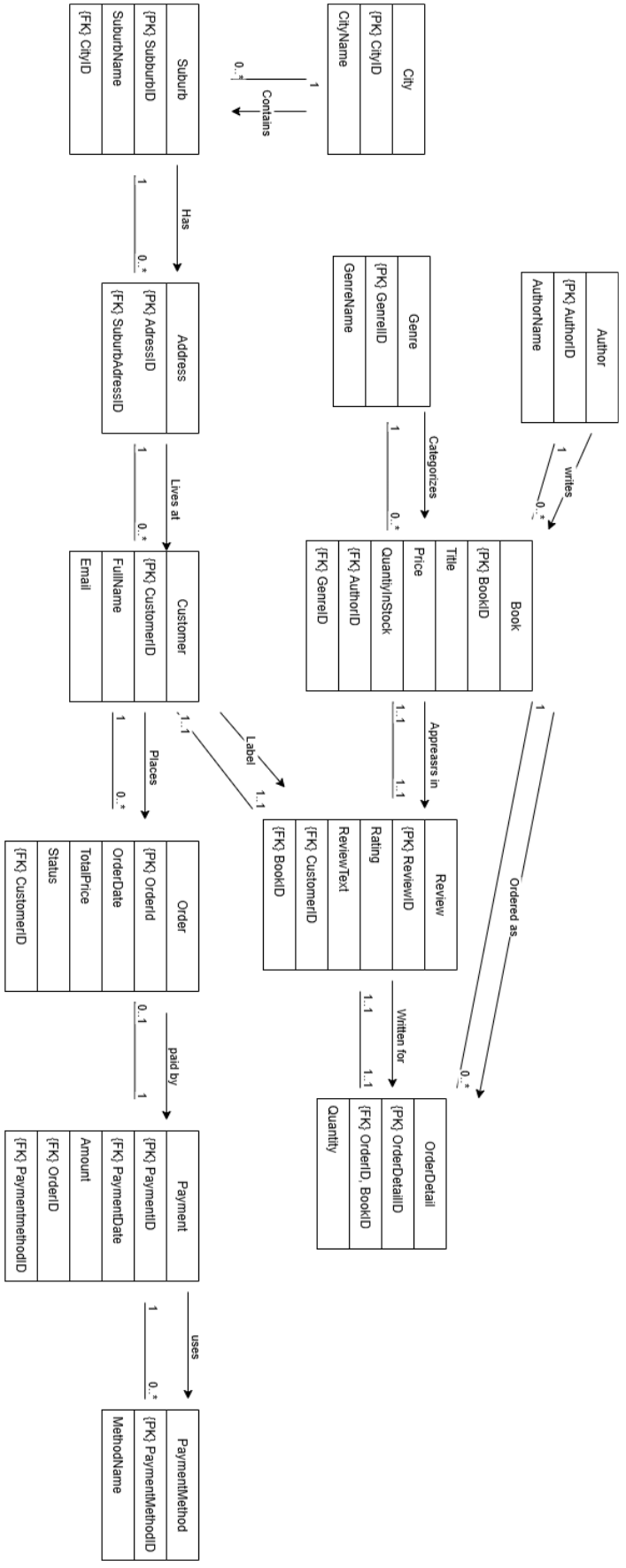
2. Velocity

Data is created at high speed. NoSQL can process and update feeds instantly as users interact (GeeksforGeeks, 2018).

3. Variety

Data comes in many formats: text, images, videos and VR. NoSQL can handle all these types without a fixed schema (GeeksforGeeks, 2018).

Question 2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