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Database Development and Use

Assignment 1.3

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In it’s simplest terms, a relationship is what links tables together. According to indeed, a relationship between databases is “an association between tables.” In other words, a relationship describes how different pieces of data link together. For example, a database may have a “Users” table. This “Users” table may then rely on information from a corresponding “Names” table, an “Addresses” table, and an “Age” table. These tables are all “related” to the “Users” table, and to each other, in that they all contain information that is being used to populate the “Users” table.

Some advantages of relational databases rely on the structure of the databases. Relational databases are highly structured due to the use of tables, and can be easily represented logically and physically. In addition, relational databases are often designed in such a way that the same piece of data does not appear twice, eliminating redundancy. Non-relational databases, however, do not rely as heavily on a single structure. Non-relational databases are designed to support scalability and increasing capacity. Non-relational databases are designed in such a way that data can be stored from multiple sources, and in multiple formats, so that few transformations are needed when the data is stored or retrieved. The scalability and flexibility of non-relational databases make them uniquely beneficial to use in web applications and the internet.

Some disadvantages of relational databases stem from their structured nature. Relational databases require more planning and modeling than non-relational databases, because tables and columns need to be clearly defined so that data can be fit into somewhat rigid categories.This additional leads into maintenance issues, as developers and database management teams must regularly spend time optimizing the database as new information is added into it. On the other hand, Non-relational databases have many issues of their own. They can be harder to query than their relational counterparts due to the fact that data may not be consistent throughout the database. Additionally, non-relational databases may or may not use a schema, and each database will have its own pros and cons that need to be considered when designing the database.

MySQL is a common tool used to create relational databases. One useful feature is that it works with basic SQL, making it very easy to learn and use. It also has an abundance of documentation and an active community, ensuring that problems can almost always be resolved quickly. Similarly, MongoDB is a common tool used to create and manage non-relational databases. MongoDB allows data to be stored as documents, which can be grouped into different collections. These documents are self contained, so that developers can focus on one data set without having to worry about tables. MongoDB also does not use a schema, meaning that different types of documents can all be grouped together, enabling greater flexibility for the development team.

References:

What is a relationship in database? (definition and types). (n.d.). https://in.indeed.com/career-advice/career-development/what-is-relationship-in-database

*What is a relational database management system?: Microsoft Azure*. What is a Relational Database Management System? | Microsoft Azure. (n.d.). https://azure.microsoft.com/en-us/resources/cloud-computing-dictionary/what-is-a-relational-database/?ef\_id=\_k\_CjwKCAjwkNOpBhBEEiwAb3Mvvc3a6krV5OchJpCVMHNoLY9PVoeSxCdL4kcUh883MbbxrxpMBmmptRoCk0kQAvD\_BwE\_k\_&OCID=AIDcmme9zx2qiz\_SEM\_\_k\_CjwKCAjwkNOpBhBEEiwAb3Mvvc3a6krV5OchJpCVMHNoLY9PVoeSxCdL4kcUh883MbbxrxpMBmmptRoCk0kQAvD\_BwE\_k\_&gclid=CjwKCAjwkNOpBhBEEiwAb3Mvvc3a6krV5OchJpCVMHNoLY9PVoeSxCdL4kcUh883MbbxrxpMBmmptRoCk0kQAvD\_BwE

Foote, K. D. (2023, March 27). *NoSQL databases: Advantages and disadvantages*. DATAVERSITY. https://www.dataversity.net/nosql-databases-advantages-and-disadvantages/

Lutkevich, B., &amp; Biscobing, J. (2021, June 24). What is a relational database?. Data Management. https://www.techtarget.com/searchdatamanagement/definition/relational-database

Pomponio, A. (n.d.). MySQL Overview: Key Features, benefits, and use cases. OpenLogic by Perforce. https://www.openlogic.com/blog/mysql-overview

Writer, C. B. T., BasuMallick, C., Writer, T., 17, L. U. A., Chiradeep BasuMallick; What is mongodb? features and use cases. Spiceworks. https://www.spiceworks.com/tech/cloud/articles/what-is-mongodb/