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CSD310   
Database Development & Use

Assignment 1.3

June 8, 2025

1. In the context of relational databases, what are relationships? Describe at least two and provide an example of their use.  
   *In a relational database, information is stored in tables (like a spreadsheet). A relationship is just a way for those tables to be connected so they can work together. Two common types of relationships are:*

*One-to-many relationship: one row in one table is linked to many rows in another (example: one customer can place many orders, so the customer table connects to many rows in the orders table.)*

*Many-to-many relationship: Many-to-many relationship: Many rows in one table are linked to many rows in another (example: students can take many classes, and classes can have many students. You would need a third table (like Enrollments) to keep track of who is in which class.*

1. What are the advantages of relational databases? What are the advantages of NoSQL databases?   
   *Relational databases (like MySQL) keep data organized and make sure it follows rules (like no missing info). They are great for things like banking or inventory where data needs to be very accurate.  
   NoSQL databases are more flexible; you don’t have to plan out a structure in advance.   
   Better for handling huge amounts of data or when your product changes a lot*
2. What are the disadvantages of relational databases? What are the disadvantages of NoSQL databases?  
   *Relationship databases are harder to change once you’ve built it and if you need to add something new, it can take a lot of time. They’re also not the best for big systems that need to grow quickly.  
   NoSQL databases are not as strict, so they might allow messy or inconsistent data if you’re not careful when entering. Each system works a little differently which can make it hard to learn or switch between systems*
3. Identify at least two features of MySQL and two features of MongoDB, and describe what they are and how they are used.  
     
   *MySQL:* *uses a language called SQL, which helps you ask the database questions like “show me all orders from last week”  
   MySQL keeps data in separate but connected tables and checks that connections make sense (like not letting you add an order for a customer who doesn’t exist)*

*NoSQL: Stores info in documents (like a JSON file), which can hold lots of details in one place  
NoSQL is easy to grow across servers, so it’s good for apps with a lot of users or data*