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INFO 330 Databases and Data Modeling

Assignment 02

Enhancing a Database

Introduction

This document goes focuses more on database design and features of database design. An example of a feature is constraints and how they should be considered when designing them. There is also mention of abstraction layers and the benefits they provide. Topics discussed include database constraints, abstraction layers, metadata sheets and the important of using them, and important ideas to remember when designing a database. Much of the information in the answers comes from Professor Root and his videos provided.

1. Database constraints allow you to restrict the values of a column in a table. This can make the database more user friendly and easier to comb through for data. Constraints can make data uniform and standard across the entire column.
2. Abstraction layers act to separate the tables and how people interact with the tables. An example in the video is how views act as an abstraction layer. They are a saved select statement, but it does this in one command. This can benefit the user by keeping the original table and data untouched while allowing the user room to interact with the new table (the view) in SQL code. It also makes interaction easier for the user, it hides the complex processes from the user keeping it all under the hood.
3. Both ERD diagrams and metadata worksheets provide a visual for the user to see and understand. It can be difficult to understand the relations between tables via a query in SQL, but when it is visualized in an ERD it becomes easier to see how tables are related and how primary keys and foreign keys go together. Metadata worksheets allow you define what information the database contains and if the database is consistent and follows a logical system such as datatypes and naming convention.
4. A simple database needs appropriate constraints for the columns, it needs to follow rules of normalization. It is also good practice to make an ERD before starting on building a database to have a visual of the relationship between tables as well as create a metadata table to keep track of the tables and columns and constraints on them. It is also a good idea to have an abstraction layer between the database and the tables. It should utilize many stored procedures to read, add, change, and delete data.

Summary

There are a lot of things to consider when designing a database. What seems simple at first can become quite complicated, so it is a good idea to adopt good practices like keeping an up to date metadata sheet, using appropriate constraints, and more. Good habits such as will result in a cleaner database and easier experience when interacting with it.