**Lab 3**

**Discussion:**

**Discuss how normalization helps reduce redundancy and improve data integrity.**

Normalization is the process of reducing data redundancy in a table and improving data integrity. It is an important part of relational database design because it helps to improve the speed, accuracy, and efficiency of the database.

Normalization is crucial as it helps eliminate redundant data and inconsistencies, ensuring more accurate, lean, and efficient databases. It also simplifies data management and enhances the speed and performance of the overall database system, thereby proving to be advantageous. It structures the data into smaller, related tables and ensures each piece of data is stored only once, thus reducing unnecessary duplication.

Consider potential trade-offs and when denormalization might be necessary.

Denormalization aims to enhance read performance, especially for complex queries. Say you were trying to grab all the relevant data for a report; instead of hopping from table to table, it’s like having your data all dressed up in one location. It is used for OLAP ( Online Analytics Processing ). Denormalization simplifies your queries, making them easier to understand and maintain. When data is spread across multiple tables, queries become complex, involving multiple joins and subqueries.