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**Experiment 5:**

**Data Modeling and Database**

CPE106L (Software Design Laboratory)

**Ju Hyoung Lee**

**John Paulo D. Fernandez**

**Neal Reine D. Taguiam**

Group No.: **7**

Section: **B2**

## **PreLab**



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| **Readings, Insights, and Reflection**  Lee, Fernandez, and Taguiam ()  In our fifth laboratory exercise, we will learn about databases and their core concepts. We will cover different types of databases, design fundamentals, and the requirements for each type of database in different programs. To manage the database, we will be using the SQL Management Studio application. With the help of SQL Lite or SQL Management Studio, we will learn about various concepts, interfaces, and how to use databases in our Python program.  Databases are crucial for storing and managing large amounts of data systematically and efficiently. They are specifically designed to provide data consistency, correctness, and security while still being efficient in data administration and retrieval. In the book "A Guide to SQL," it was mentioned that various kinds of databases have different functions depending on the user's need. For instance, if a user wants to store data about employees, annual expenses, or any other type of large data that needs to be organized, databases can be utilized. The group will use SQL to create a data management system. By using SQL, database speed could be improved as intelligent database design removes redundant data and maximizes information access and manipulation. It can shorten the time needed for data processing and make programs operate more smoothly.  In conclusion, the group gained an understanding of the importance of databases in managing and organizing data. By understanding the principles of database design and administration, organizations and businesses can enhance their operations and make better use of their data, particularly when focusing on databases in specific applications.  **Questions and Answers**  1. What are DML and DDL statements in Structured Query Language? Give examples of each.  DML or Data Manipulation Language statements are used in Structured Query Language (SQL) to create changes in the tables and records in a database. The main types of commands in DML are: Insert, Delete, and Update. DDL or Data Definition Language statements are used in SQL to help define/create a database structure. The types of commands in DDLs are: Create, Alter, Rename, Drop, and Truncate.  2. What are the categories of SQLite Functions? Give 3 examples of each category  The categories in SQLite Functions are: Aggregate Functions such as “COUNT”, “SUM”, and “AVG”; Math Functions such as “POWER”, “SQRT”, and “RANDOM”; Date and Time Functions such as “DATE”, “TIME”, and “STRFTIME”; Control Flow Functions such as “CASE”, “IFNULL”, and “NULLIF”; and lastly, String Functions such as “UPPER”, “LOWER”, and “LENGTH”.    3. How do you check if you have SQLite installed in system using the Linux terminal  To check if you have SQLite installed in the system using a Linux terminal, you can run the command “sqlite3”. If SQLite is installed in your system, it will show you what version is installed, if it isn’t, a notice indicating that the command wasn’t found will be displayed. |
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