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CPE106L (Software Design Laboratory)

Group No.: **10**

Section: **B2**

## **PreLab**



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| **Readings, Insights, and Reflection**  **<COLLAMAT>**   * Chapter 1 of "A Guide to SQL" by Philip J. Pratt introduces the pivotal role of databases in modern businesses, emphasizing their efficiency in data storage and retrieval. Pratt elucidates the components of a Database Management System (DBMS) and the importance of SQL for data manipulation. Through practical examples from various industries, Pratt showcases how diverse enterprises utilize DBMS functionalities to meet their data management needs. The chapter underscores the necessity of a robust DBMS infrastructure and SQL proficiency for effective data management in contemporary businesses. * Chapter 2 delves into essential database concepts and design principles, emphasizing data modeling and the entity-relationship (ER) model's significance. Pratt highlights the importance of normalization in database design to mitigate data redundancy and ensure integrity. By blending theoretical discourse with practical insights, the chapter equips readers with the knowledge to navigate database design proficiently. * In Chapter 24 of “Core Python Programming,” R. Nageswara Rao introduces databases and their integration with Python. Rao explores various database types and focuses on MySQL, providing guidance on its integration with Python for database management. Through step-by-step instructions, Rao empowers readers to manipulate databases using Python, covering tasks from creation to querying and advanced topics like stored procedures and transactions. * "Python Projects" by Laura Cassell's Chapter 3 provides a comprehensive overview of relational database concepts and SQL. Cassell emphasizes the importance of database schema design for data integrity and minimization of redundancy. Through a blend of theory and practical insights, Cassell equips readers with the skills to proficiently manage databases and SQL, enabling them to build robust applications confidently.   **<CANDA>**   * In Chapter 1 of "A Guide to SQL" by Philip J. Pratt It talks about the databases for KimTay Pet Supplies and StayWell. A database is a structure that holds many types of information in addition to the connections between those types of information. For instance, the database for KimTay Pet Supplies has data on categories including sales representatives, clients, bills, and objects. Information about the management companies, property owners, inhabitants, and services provided for the properties may all be found in the StayWell database. * Whereas Chapter 2 of "A Guide to SQL" by Philip J. Pratt I discovered a technique for creating a database that satisfies a list of demands. I also pick up the ability to recognize the database's tables and columns in the process. Lastly learned how to spot connections between the tables. It clarifies the various kinds of connections that may be made between database items and emphasizes the need to create a database schema that is adaptable, scalable, and simple to manage. The significance of normalization in minimizing data redundancy and preserving data integrity is also covered in this chapter. In summary, the section highlights how important effective effective layout is to database administration, emphasizing the significance of rigorous analysis and planning to construct successful and efficient systems. * The "Core Python Programming" by R. The author, Nageswara Rao, introduces the idea of databases and the various kinds of databases which can be used with Python. Databases, according to the writer, are compilations of data that have been arranged and saved to make it simple to find and alter it. In addition, the book describes the various kinds of databases, including relational, NoSQL, and object-oriented databases, and how every kind has pros and cons that vary based on the use case. * Relational database concepts and Structured Query Language (SQL), two key ideas for creating reliable and scalable programs, are thoroughly covered in Chapter 3 of Laura Cassell's book "Python Projects". The basic idea of a relational database, the foundation of many contemporary software programs, is introduced at the beginning of the section. The writer goes into detail about how data is set up in tables with columns and rows and how these tables can be connected to one another. This section thus establishes a solid framework for comprehending the complexity of database design and maintenance.   **<ESTACION >**   * The chapters from three different books enrich the picture of database theory and its application in programming environments. In "A Guide to SQL" by Philip J. Pratt et al., the foundation on databases is introduced in Chapter 1, which explains what a database is and details the specific database requirements for entities like TAL Distributors, Colonial Adventure Tours, and Solaris Condominium Group. The practical application of database concepts goes on in Chapter 2, where the author explores the concepts of database, fundamentals of design, and the process of normalization, which is crucial for maintaining data integrity and reducing redundancy. * The next chapter in R. Nageswara Rao's book "Core Python Programming" is chapter 24. This chapter addresses the practical aspects of combining Python with different databases, be it relational systems like MySQL and PostgreSQL or NoSQL solutions like MongoDB and Cassandra. This chapter is mainly for Python programmers who will get a detailed guide on using MySQL with Python, including how to execute SQL commands, manipulate database data, and manage connections directly from Python scripts. * The final chapter of "Python Projects" by Laura Cassell, Chapter 3, delves into the use of relatimonal database concepts within Python projects, with a definite description of Structured Query Language (SQL) and the difference between Data Manipulation Language (DML) and Data Definition Language (DDL) commands. This exploration, in turn, is the foundation for both the technical aspects of organizing and structuring databases and the practical part of project implementation, which demonstrates how SQL can be utilized to improve Python applications. In this way, the chapters from the three books combined make an integrated learning course for those who want to improve their database management and application development skills using Python and SQL.   **<TRINIDAD >**   * The first chapter of Philip J. Pratt's "A Guide to SQL" highlights the importance of databases in contemporary company operations and highlights their effectiveness in storing and retrieving data. The elements of a Database Management System (DBMS) and the significance of SQL for data management are explained by Pratt. Pratt illustrates how distinct organizations use DBMS functionality to satisfy their data management demands with real-world examples from a range of sectors. The chapter emphasizes how efficient data management in modern enterprises requires both a strong DBMS architecture and SQL competency. * In contrast, Chapter 2 of Philip J. Pratt's "A Guide to SQL" taught me how to build a database that meets a set of requirements. In the process, I also learn how to identify the tables and columns in the database. Lastly, discovered how to identify table connections. It makes clear the different sorts of relationships that may be established between database objects and highlights the necessity of designing a flexible, scalable, and easy-to-maintain database schema. This chapter also discusses the need of normalization in reducing data redundancy and maintaining data integrity. * The third chapter of Laura Cassell's "Python Projects" offers a thorough introduction to relational database concepts and Structured Query Language (SQL), two key ideas for creating reliable and scalable applications. An introduction to the basic idea of a relational database, the foundation of many contemporary software programs, opens the chapter. The author explores how data is arranged into tables that have rows and columns and how these tables may be connected. The chapter establishes a strong basis for understanding the intricate details of database design and maintenance by accomplishing this. After that, the chapter delves into SQL, the common language for administering and interacting with relational databases.   **Answers to questions:**   1. The two main kinds of SQL statements are Data Manipulation Language (DML) and Data Definition Language (DDL). DDL commands, which include Create, Drop, Alter, Rename, and Truncate, are used to assist programmers in defining the database structure or schema. In the meanwhile, Insert, Update, and Delete commands included in DML statements are used to make modifications to records and tables in the database. 2. SQLite functions fall into four categories: advanced, math, string, date/time, and advanced. Date functions—such as DATE, TIME, and STRFTIME—manage DateTime data efficiently. String functions, such as LENGTH, UPPER, and LOWER, make it simple for users to work with character string data. The maximum, minimum, average, total, and count values inside a set are calculated using mathematical functions (e.g., MAX, MIN, and total). Lastly, sophisticated functions carry out intricate calculations and Boolean operations (such as COALESCE, NULLIF, and IFNULL). 3. A user must type "sqlite3" into the command line interface to determine whether SQLite is installed on their machine using the Linux terminal. The user can then execute the sqlite 3 software, often together with an extra SQLite database file, once the sqlite 3 version is displayed on the terminal. A new file with the matching file name will be produced if the original file is missing. The terminal will display "command not found" if SQLite is not installed. |