WEEK 1 ASSIGNMEMT ON INTRODUCTION TO DATABASE

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Database is a structured collection of data organized for efficient retrieval, storage, and manipulation.

Table is a data structure within a database that organizes data into rows and columns, where each row represents a record and each column represents a field.

Record is a single instance of data within a database table, also referred to as a row.

Field is a single piece of data within a database record, also referred to as a column.

Primary Key is a unique identifier for each record in a database table, used to ensure data integrity and enable efficient querying.

SQL (Structured Query Language) is a domain-specific language used for managing and manipulating relational databases, including tasks such as querying, updating, and defining database schema.

Query is a request for data or information from a database, typically written in SQL, specifying criteria for selecting and retrieving data.

Index is a data structure that improves the speed of data retrieval operations on a database table by providing quick access to specific rows based on the values of one or more columns.

Normalization is the process of organizing a database schema to reduce redundancy and dependency, thereby improving data integrity and minimizing anomalies during data manipulation.

Database Management System (DBMS) is a ssoftware that facilitates the creation, maintenance, and utilization of databases by providing various functionalities such as data storage, retrieval, security, and concurrency control.

Section B: Discussions

Purpose of Primary Key is to uniquely identifies each record in a database table, ensuring data integrity by preventing duplicate or null values. For example, in a "Students" table, the primary key might be "Student ID," ensuring each student's identification is unique.

Difference between DBMS and Database: A database is an organized collection of data, while a DBMS is software that manages and manipulates databases.

DBMS acts as an interface between users and the database, handling tasks such as data storage, retrieval, and security.

Importance of Normalization: Normalization reduces data redundancy and dependency in a database, leading to improved data integrity and consistency. For example, by breaking down a single table with customer information into multiple tables such as "Customers" and "Orders," normalization ensures that each piece of data is stored only once, reducing the risk of update anomalies.