CSE 1300

ASSIGNMENT 3

DBMS Fundamentals

Overview:

This assignment will test your understanding of the basic concepts covered in the class—ranging from the difference between data and information to types of database management systems, their advantages, disadvantages, and the database languages used (DDL, DML, DCL, TCL, DQL). You will also do a short hands-on activity to reinforce how DDL and DML work in practice.

Part A: Understanding Key Concepts

1. Data vs. Information (Short Answer)

- In **two or three sentences**, explain how "data" differs from "information." Give **one** real-life example to illustrate your point.

2. DBMS Definition (Short Answer)

- In **your own words**, what is a **Database Management System (DBMS)**?
- Mention **one** advantage of a DBMS compared to a **traditional file system.**

3. Types of DBMS (Short Answer)

- Name the **three** main categories of DBMS mentioned in the class:
    1. **Relational (RDBMS)**
    2. **Non-Relational (NoSQL)**
    3. **Object-Oriented (OODBMS)**
- For **each** type, list **one** real-world example of a software system (e.g., MySQL for RDBMS) and **one** simple use case where it would be suitable.

Part B: Features, Advantages & Disadvantages

4. Key Features of a DBMS (Short Explanation)

- From the class, list **two** features of a DBMS and **briefly** describe why each feature is important in real-life applications.

5. Advantages vs. Disadvantages (Table)

- Create a **two-column** table labeled **Advantages** and **Disadvantages**.

- From the slides, select **two** advantages and **two** disadvantages of using a DBMS.
- Provide **one** or **two** sentences explaining **each** advantage/disadvantage in **your own words**.

Part C: Database Languages

6. Identify the Language Type (Matching Exercise)

Below are several actions you can perform on a database. Match each action to the correct **database language type**(DDL, DML, DCL, TCL, or DQL). Copy the table below into your answer and fill in the blanks.

Action	Language Type
1. Create a new table called "Students" in your DB	(DDL, DML, DCL, TCL, or DQL?)
2. Insert a new row of data into the "Students" table	
3. Revoke a user's SELECT permission on the "Students" table	
4. SELECT all rows from the "Students" table	
5. COMMIT all changes made during the current transaction	

Part D: Simple Hands-On Practice

Perform this section using any relational DBMS you have access to w3schools (https://www.w3schools.com/sql/trysql.asp?filename=trysql_select_all)

7. Data Definition Language (DDL)

- Write a **CREATE TABLE** statement to make a table named `Employees` with at least **4 columns**, for example:
  - `emp_id` (primary key, integer)
  - `first_name` (text)
  - `last_name` (text)
  - `salary` (numeric)

(You only need to include data types. No need for advanced constraints unless you want to.)

8. Data Manipulation Language (DML)

- Write **two** `INSERT` statements to add **two** different employees into your `Employees` table.

- Write a `SELECT` statement to **retrieve** all rows from the `Employees` table.
- *(Optional)* Write an `UPDATE` statement to change the **salary** of one employee.

Part E: Reflection on Applications

9. Real-World Applications (Short Answer)

- Mention **one** specific industry from the slides (e.g., Banking & Finance, University, Airlines).
- In **two or three sentences**, describe **how** a DBMS is critical in that industry and **why** data consistency and security are important there.

Submission Requirements

1. **Document Format**: Submit a PDF or Word file with your answers for **Parts A–E**.
2. **SQL Scripts**: For **Part D**, include either the SQL statements directly in your document or the screenshots from the w3schools link provided.
3. **Clarity & Originality**: Ensure your explanations are in **your own words**.

Grading Criteria

Criterion	Points
Part A (Key Concepts)	20
Part B (Features, Advantages/Disadvantages)	20
Part C (Database Languages)	20
Part D (DDL & DML Hands-On)	20
Part E (Reflection)	20
Total	100

Additional Notes

- If you encounter any issues, reach out to your instructor.
- Make sure data formatting and charts are clear and readable.