

DBMS Fundamentals

CSE 1300 – Assignment 3

SPRING 2026

Overview

This assignment will test your understanding of the basic DBMS concepts covered in class—from the difference between data and information to the types of database management systems, their advantages and disadvantages, and the use of database languages (DDL, DML, DCL, TCL, DQL). You will also practice writing SQL queries to reinforce your understanding of DDL and DML in an online shopping context.

Part A: Understanding Core Concepts

1. Data vs. Information (Short Answer)

- In your own words, explain how data differs from information.
- Provide one real-life university-related example that demonstrates how raw data can be processed into meaningful information.

(Example context: student enrollments, grades, or course records)

2. DBMS vs. File System (Short Answer)

- Briefly compare a DBMS with a traditional file system.
- Mention two advantages of using a DBMS instead of a file system for managing student and course registration data.

3. Types of DBMS (Matching)

Match the following software systems with the correct type of DBMS.

Software	Type of DBMS
PostgreSQL	?
MongoDB	?
db4o	?

Choose from:

Relational (RDBMS), Non-Relational (NoSQL), Object-Oriented (OODBMS)

Part B: DBMS Features & Pros/Cons

4. Key Features (Short Answer)

- List two features of a DBMS (for example: security, concurrency, backup & recovery).
- Explain why each feature is important in a university course registration system where many students and faculty access data simultaneously.

5. DBMS: Advantages and Disadvantages (Table)

Create a two-column table. In your own words, write:

Advantage	Disadvantage
Example: Data Integrity – Ensures student enrollment data remains accurate	Example: Complexity – Requires trained personnel to manage the system

- Add two advantages and two disadvantages (not including the examples above).

Part C: Database Language Identification

6. Match the Task to the Language Type

Fill in the correct SQL language type for each action below.

Choose from: DDL, DML, DCL, TCL, DQL

Action	Language Type
Create a new Courses table	?
Retrieve a list of students enrolled in a course	?
Update a student's final grade	?
Commit a completed transaction	?
Revoke database access from a teaching assistant	?

Part D: SQL Practice

You may use the W3Schools SQL Tryit Editor or any SQL editor discussed in class for this section.

7. Table Creation (DDL)

Write a CREATE TABLE statement for a Courses table with the following fields:

- course_id (Primary Key, integer)
- course_name (text)
- instructor (text)
- credits (integer)

8. Data Manipulation (DML)

Write the following SQL statements:

- Two INSERT statements to add two different courses to the Courses table.
- One SELECT statement to display all courses.
- One UPDATE statement to change the number of credits for one course.

Part E: Real-World Application

9. Application Scenario (Short Answer)

Choose University Course Registration as your industry.

- Write 2–3 sentences describing how a DBMS is used to manage student enrollments, courses, and academic records.
- Explain why data security and concurrent access are critical in this environment.

Submission Requirements

- Submit a PDF or Word document containing all answers to Parts A–E.
- Include SQL scripts or screenshots for Part D.
- Use your own words. Direct copying from slides or websites is not allowed.
- Ensure your submission includes:
 - Your full name
 - KSU ID
 - Assignment number