CMPE343 – Database Management Systems and Programming I

Fall 2025-2026

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Homework 1

THIS HOMEWORK WILL NOT BE GRADED. USE IT AS A PREPARATION TO THE MIDTERM EXAM

WE WILL SOLVE IT IN THE CLASS BEFORE THE MIDTERM EXAM WEEK!

Q1. For the given problem below, **draw the Entity Relationship (ER) diagram (25 Marks).** During your design, be careful about cardinality constraints, weak entities, total participation and generalization. Show primary keys. (Spring 2024-2025 Midterm Question)

In a veterinary clinic, there are several staff; managers, vets, receptionists, cashiers, and assistants. For all staff the data needs to be stored are staff no., name, address and social security no. For vets, graduated school, year graduated and specialties details are also stored.
The veterinary clinic keeps track of their customers (pet owners), so it collects some information from customers, such as, customer no., name, tel. and address. The veterinary clinic also pays an attention to their customer's pet's details. During the pet registration, the following information about the Pet is stored; pet no., name, date of birth and gender. In addition, for each pet, vaccination information is kept. Vaccination contains vaccination no, date and vaccination name. A pet can have more than one vaccination. But vaccination belongs to one pet.
A customer can have more than one pet and a pet can be owned by more than one customer. Each pet has its own vet (one vet). Vets can have more than one pet.

Q2. DBMS design and SQL queries: Use the table schema and the given records below for the following questions. You have to implement these tables and DDL/DML/SQL queries in MySQL DBMS or sqlite editor online. For each question, write DDL/DML/SQL QUERIES and find/show their answers.

Tutor(tid, t_fname, t_lname, hourly_wage)
Student(sid, s_fname, s_lname, address, city)
Course(course_code, title, credit, semester)
Takes(sid, course_code)
Teaches(tid, course_code, hours)

Tutor

Tid	t_fname	t_lname	hourly_wage
1	Alex	Jackson	40
2	David	Lewis	10
3	Sue	White	20

Student

sid	s_fname	s_lname	Address	city
1111	Jane	Morgan	Yasemin sokak, Gonyeli	Nicosia
2222	Katie	Smith	Gul sokak, Hamitkoy	Kyrenia
3333	Leslie	Carr	Zeytin sokak, Catalkoy	Kyrenia
4444	Max	McKane	Lale sokak, Küçükkaymaklı	Nicosia

Course

course_code	title	credit	semester
CMPE343	DBMS I	4	Fall
CMPE344	DBMS II	4	Spring
MATH101	Calculus I	4	Fall
MATH121	Linear Algebra	2	Fall
CMPE214	Visual Programming	3	Spring

Takes

Sid	course_code
1111	CMPE343
1111	CMPE214
2222	MATH101
2222	MATH121
4444	CMPE214
4444	CMPE344

Teaches

Tid	course_code	hours
1	CMPE343	3
1	CMPE344	3
2	MATH101	3
2	MATH121	2
3	CMPE214	3

Q2-1) Using **DDL statements (create table),** create tutor, student, course, takes and teaches tables. Make sure that you specify primary keys, foreign keys, unique and not null values **[20 Marks]**.

Q2-2) Using **insert into DML statements,** add the given records above to the designated tutor, student, course, takes and teaches tables. **[5 Marks]**

Q2-3) List all information about students who have taken a course called **'DBMS' (title) [5 Marks].**

Q2-4) Find the **last name of all tutors** whose hourly wage is **greater than 15 [5 Marks]**.

Q2-5) Find the **first name of all students** whose address contains the word **'koy' [5 Marks]**.

Q2-6) Display course_code of courses which have been taken by a student '1111' **[5 Marks]**.

Q2-7) Display the first, last name and address of all students **who live in Nicosia [5 Marks]**.

Q2-8) List course codes of courses that have **4 credits and** taught **in Spring Semester [5 Marks]**.

Q2-9) List course_codes of the courses that has **2 hours** lectures **[5 Marks]**.

Q2-10) **Add a new column** to the student table called **CGPA** that has **float datatype [5 Marks]**.

Q2-11) **Using DML based on sid**, add the following CGPA values into the student table **[10 Marks]**.

1111→ 2.88
2222→ 3.14
3333→ 2.05
4444→ 3.77