**FINAL Exam: DATABASE**

**WEP 2024**

**{3h 00}**

25 JAN 2023

Student’s name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Classroom name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**RULES:**

* Chatting and talking to other students is forbidden
* You are allowed to use PhpMyAdmin or VSCode or any other software. But it is not required
* Write (copy/paste) your answer below the question. Do not screenshot.
* ERD diagram you can screenshot and insert into this document

|  |  |
| --- | --- |
| **EXERCISES** | **POINTS** |
| THOERYS | 20 |
| EXERCISE 1 | 20 |
| EXERCISE 2 | 20 |
| EXERCISE 3 | 20 |
| EXERCISE 4 | 20 |
| **TOTAL** | **100** |

# THEORY (20 pts) multiple choices

*There are only ONE correct answer. You will get 2 points for each correct answer.*

1. Which is NOT DBMS (Database Management System)?
   1. MySQL
   2. SQL Server
   3. PostgreSQL
   4. XAMPP
2. A STUDENT can study in a CLASS and a CLASS is belong to many STUDENTS. So, the relationship between student and class is: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. Many to many
   2. One to one
   3. One to many
   4. Many to one
3. Which is NOT the rule in 1st NF (First Normal Form)?
   1. Each column of the table must be a single value, No multiple value.
   2. A column can contain values of different types.
   3. Each column/attribute in a table should have a unique name.
   4. The order in which you store the data does not matter.
4. A primary key that is composed of more than one column is\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. Primary key
   2. Foreign key
   3. Relation key
   4. Composite key
5. What is the best attribute type of the attribute “Date of Birth”?
   1. Varchar
   2. Integer
   3. Date time
   4. Time
   5. Date
6. The synonym of the word “ROW” in database is\_\_\_\_\_\_\_\_\_\_\_\_\_.
   1. Attribute
   2. Relation
   3. Table
   4. Record
7. In real life, consider which entity relationship below belong to a many to many relationship.
   1. Author and Book
   2. Shop and Address
   3. Product and Brand
   4. Seller and product
8. What is NOT the logical operator in SQL query?
   1. IN
   2. AND
   3. OR
   4. WHERE
9. What does the SQL “Group by” clause do?
   1. Groups rows based on a specified condition in the WHERE clause.
   2. Sorts the result set in ascending order based on the specified column.
   3. Aggregate data base on specified columns, treating them as groups.
   4. Combines two or more table based on common column.
10. Which SQL statement is used to retrieve all the columns from a table named "employees" where the "salary" is greater than 50000?
    1. SELECT \* FROM employees WHERE salary > 50000;
    2. SELECT \* FROM employees HAVING salary > 50000;
    3. GET \* FROM employees WHERE salary > 50000;
    4. RETRIEVE \* FROM employees WHERE salary > 50000;

# Exercise 01 (20 points) Design Entity Relational Diagram

*Read the scenario below carefully and draw ER Diagram for this system following the requirement.*

**Scenario**

Imagine you are developing an e-commerce platform for a client who sells products online. The platform includes entities such as "Customer," "Product," "Order," and "Supplier." Customers can place orders for multiple products, and each order can consist of one or more products. Additionally, suppliers provide products that can be featured in multiple orders.

**Requirement**

1. Identify at least four entities for your ERD. Include entities such as "Customer," "Product," "Order," and "Supplier." *[04 pts]*
2. Establish relationships between these entities. Ensure that you have a mix of relation types, including one-to-one, one-to-many, and many-to-many relationships. *[04 pts]*
3. Include relevant attributes for each entity. For example, a "Customer" entity might have attributes like CustomerID, FirstName, LastName, Email, etc. *[04 pts]*
4. Pay attention to cardinality and participation constraints. Clearly define the minimum and maximum number of instances allowed in each relationship. *[04 pts]*
5. Use appropriate notation for your ERD. You can use crow's foot notation or any other standard notation. *[04 pts]*

# Exercise 02 (20 points) Format the table below following 3rd NF

*We have a table containing data about customers ordering products from a computer shop.*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ID | Product name | Price | Seller name | Seller phone | Customers | Order code | Order date |
| 1 | Computer | 250$ | Korng | 088443322 | Kadin | 003 | 20/02/2023 |
| 2 | Keyboard | 20 | Davit | 092383433 | Kadin | 001 | 21/03/2023 |
| 3 | Monitor | 300$ | Korng | 088443322 | Kimleang | 002 | 30/01/2023 |
| 4 | Computer | 250$ | Davit | 092383433 | Kimleang | 004 | 03/01/2023 |