

**Database Management  
2019-2020**

**Midterm Homework: LinkKariyerMood Database**

**(Do the homework with your 2-to-4 members team. Due date is 19-20 December 2019)**

In this homework, you will design a database model for the virtually integrated version (say LinkKariyerMood) of the popular web applications LinkedIn, kariyer.net and moodle (or any other learning management system). The homework is more than a technical implementation homework, which means it should much more concentrated on the design of the database. How you integrated these web applications is critical for the evaluation and the originality of your design is crucial.

After analyzing the web applications, you are expected to:

**ANALYSIS**

1. Write a brief explanation using your own words (in English) about these applications in terms of their scope.
2. Write an analysis report for each web application:
  - a. What is the aim of each application?
  - b. What are the main entities of them?
  - c. What are the characteristics of each entity?
  - d. What relationships exists among the entities?
  - e. What are the constraints related to entities, their characteristics and the relationships among them?

**DESIGN-CONCEPTUAL DESIGN**

3. Create an EER diagram for the virtually integrated version of the applications, LinkKariyerMood. Try to use enhanced/extended features of ER modeling. Do not use any tool. You can use any drawing application with the right legend for ER modeling. The output of this step is just an EER diagram for LinkKariyerMood.
4. The most important point of your design is how to integrate web applications and generate added value. Therefore, you should accurately examine the contribution of each web application's own core feature to the integrated application. You should determine the interaction points of the applications. You can define new entities where interaction and integration are required. At this point your creativity has an artistic significance.

**DESIGN-LOGICAL MODEL**

5. Convert EER diagram into relational model using the methodology that will be introduced in your course.

**IMPLEMENTATION-PHYSICAL MODEL**

6. Write down the appropriate SQL scripts (DDL statements) for creating the database and its relational model. You can select any of the DBMS you wish.

7. Populate the database you just created again using SQL script file loaded with sample tuples. (The tables should have enough number of tuples for the SELECT statements to be run accordingly.)
8. Write down 3 triggers for 3 different tables. Triggers should be meaningful.
9. Write down 3 check constraints and 3 assertions. Check constraints and assertions should be meaningful.
10. Write down the following SQL statements:
  - a. Write sample INSERT, DELETE and UPDATE statements for 3 of the tables you have chosen.
  - b. Write 10 SELECT statements for the database you have implemented.
    - i. 3 of them should use just one table.
    - ii. 4 of them should use minimum 2 tables.
    - iii. 3 of them should use minimum 3 tables.
  - c. Write 5 original SELECT statements that you think critical to interaction and integration points for the database.

GRADING:

ANALYSIS	40 points.
DESIGN	30 points.
IMPLEMENTATION	30 points.