

**Introduction to Databases
2023-2024**

Project: Country Transportation Database

(Do the project with your 4-members team. Due date is 25 December 2023)

MAIN SCENARIO

In this project, it is requested to develop a transportation database model in which different transportation alternatives for a country (sea, air, road, mobile transportation, metro, etc.) are recorded at macro and micro levels. In this system, transportation will be provided with a unique card for each citizen. Citizens' transportation histories, searches and preferences will be recorded. Macro and micro level queries can be made in the system.

The project is more than a technical implementation project, which means you should focus much more on the analysis and design of the database. How you combine each design is critical for the evaluation and the originality of your design is crucial.

ANALYSIS

(2 pts for each website) Examine the websites below and write the data requirements for each website that fit the main scenario above.

<https://www.turkishairlines.com/>

<https://www.tcddtasimacilik.gov.tr/seferler/yuksek-hizli-tren?date=2022-09-18>

<https://www.marti.tech/>

<https://www.obilet.com/>

<https://www.ido.com.tr/>

<https://www.izban.com.tr/Sayfalar/Anasayfa.aspx>

<https://yolcu360.com/>

DESIGN-CONCEPTUAL DESIGN

(3 pts for each EER) Create separate EER diagrams for each website according to your data requirements.

(20) Combine all E2/R diagrams. Explain your method before starting the assembly process.

DESIGN-LOGICAL MODEL

(15) Convert EER diagram into a relational model using the methodology that will be introduced in your course.

IMPLEMENTATION-PHYSICAL MODEL

1. (4 pts) 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.
2. (4 pts) Populate the database you just created again using SQL script file loaded with sample tuples. The initial database should have the tuples of our department. (The tables should have enough tuples for the SELECT statements to be run accordingly.)
3. (3 pts) Write down 3 triggers for 3 different tables. Triggers should be meaningful.
4. (3 pts) Write down 3 meaningful check constraints.
5. Write down the following SQL statements:
 - a. (3 pts) Write sample INSERT, DELETE and UPDATE statements for 3 of the tables you have chosen.
 - b. Write 5 SELECT statements for the database you have implemented.
 - i. (2 pts) 2 of them should use a minimum of 2 tables.
 - ii. (3 pts) 3 of them should use a minimum of 3 tables.
 - c. (2 pts for each) Write 4 original SELECT statements that you think are critical.

GRADING:

ANALYSIS	14 points.
DESIGN	56 points.
IMPLEMENTATION	30 points.