Database Systems Homework #2 (Due date: May 11, 2021)

Goal: Construct a relational database for an online shopping mall for multiple sellers.

0. Notice

   - Answers in Step 1 can be written in English or Korean, and answers in Step 2 should include ER diagrams. The file name of the report should be Homework2_StudentID.pdf, where StudentID is a student identifier given to a GIST student.

   - For Steps 3 – 5, execute SQL queries using SQLite in Jupyter notebook. You need to take screenshots of SQL queries and results and put them into the report. In addition, save SQL queries and results as Homework2_StudentID.ipynb, where StudentID is a student identifier given to a GIST student.

   - For Step 6, execute the JDBC code. You need to take screenshots of a code and results, and paste them into the report. In addition, save the Java file as Homework2_StudentID.java, where StudentID is a student identifier given to a GIST student

   - A manual for JDBC is available in a class webpage.

   - Submit   Homework2_StudentID.pdf,   Homework2_StudentID.ipynb,   and Homework2_StudentID.java to **the GEL system** by **9:00 pm** on November 11, 2021.

   - Late submission policy: For every day after due date, 20% of gained marks are deducted.

   - Do not copy other students' answers.

1. (10 pts) specify functional requirements for an online shopping mall for multiple sellers.

   - At least three different types of entities (Customer, Seller, Product, etc) should be included.

   - At least five functional requirements for the online shopping mall should be included.

   - Examples

     ■ Show all products a customer previously purchased.

     ■ Show a list of customers who purchased products sold by a seller.

     ■ List products whose title match a substring.

2. (20 pts) Design Entity-Relationship diagrams.

   - Database should contain at least three entities.

   - An entity should have at least one relationship with other entities.

3. (25 pts) Transform Entity-Relationship diagrams in Step 2 into relational schemas. Then, design SQL statements for creating Tables corresponding to the relational schemas.

4. (10 pts) Insert synthetic data into Tables.

5. (25 pts) Convert the functional requirements in Step 1 into SQL query statements. Then, execute queries using data constructed in Step 4, and show the results.

   - All Tables in Step 3 should be queried at least once.

   - Results should be not empty or null.

6. (10 pts) Use JDBC to execute at least one SQL statement in Step 5.