COMP3013 2024 Fall

Assignment 1

Note: there is no requirement on ER diagram drawing. You are allowed to draw ER diagrams using any tool. But you need to make sure that your drawing is clear enough. TAs have rights to remove marks if your graph unreadable. Please do not try to challenge us.

For the submission, please pack your answers to Q2 and Q3 to **A** **SINGLE PDF FILE**. Rename the PDF file as COMP3013\_23F\_A1\_XXXX, where XXXX is your student ID. Answers of Q1 are submitted via **iSpace Feedback**. Submissions which do not following the guideline may **not be marked**.

Q1. The schema of a database is given as follows. Keys are underlined.

* // is an integer and

Write a query for each following question. Please submit your answers of this question via **iSpace Feedback**. (7 marks for each)

1. Find the name of books which are written by Kleene (author).
2. Find the name of books which have received a rating score less than 3.
3. Find the name of reviewers who have made a comment to book “Quantum Finance” (book name).
4. Find the name of reviewers who have written some book.
5. Find the authors who have written multiple books.
6. Find the name of books which have been rated at both score 1 and score 5.
7. Can one reviewer rate a book multiple times? Why?

Q2. Suppose you are a medical school student. You want to design an ER diagram to model illnesses, treatments, and medicines under the following assumptions. (35 marks)

* Each illness is described as ID, name, and discoverer’s name.
* Every illness is associated with one or multiple cause(s).
* Each cause is described as ID, name, and description.
* Some causes are associated to one or multiple organ(s) to describe where the causes happen.
* Each organ is defined by ID, name, and body system.
* Every illness is associated with one or multiple symptom(s). Each association also describes how long the symptom occurs.
* A symptom is defined by ID, name, and effect.
* Each illness is treated by at most one treatment.
* Each treatment is defined by ID, name, equipment, and method.
* Each illness is given zero, one, or multiple medicine(s).
* If a medicine is given to an illness, the quantity is modeled.
* Each medicine is defined by ID, name, and ingredient.

You do not need to make more assumptions on your design.

Q3. Given the tables, what is the execution outcome (including both table title and table content) of the following queries? (4 marks for each)

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 101 | Alice | 19 |
| 102 | Bob | 18 |

Table 1 Student

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 101 | Database | 80 |
| 102 | Database | 65 |

Table 2 Enroll

|  |  |  |
| --- | --- | --- |
|  |  |  |
| 101 | Database | Only a joke |
| 102 | Discrete Math | Excellent course |

Table 3 Comment

1. SELECT \* FROM Enroll, Comment WHERE Enroll.course = Comment.course
2. SELECT \* FROM Student NATURAL JOIN Enroll NATURAL JOIN Comment
3. SELECT \* FROM Enroll NATURAL RIGHT OUTER JOIN Comment
4. SELECT sID, course FROM Enroll JOIN Comment