

Assignment 1

Please make sure that you always use notations consistent with lecture notes. Different notations will not be accepted. The deadline for assignment 1 is: **Fri 11 Oct, 5:00 pm**

Question 1 (10 marks)

An online food delivery company hires you to design a small database to store information about the online orders. You're given the following requirements:

- A customer is uniquely identified by his/her email. For each customer, we also record his/her name, phone number and address. The address is composed of suburb and street.
- A rider is uniquely identified by his/her ID. We will keep record of the rider's age, gender, phone number and available working periods. Each rider can have multiply available working periods.
- A restaurant is uniquely identified by its ID. For each restaurant, the location, the contact person and the contact number will be recorded. The location is composed of suburb and street.
- Each restaurant must have one or more dishes and each dish must be provided by exact one restaurant. Each dish contains a name, a short description and a price. A dish is uniquely identified by a restaurant ID and a dish ID.
- An order is uniquely identified by an order ID. An order must be created by exact one customer and allocated with exact one rider. A customer can have zero or more orders, but a rider must have delivered at least one order. An order must involve one restaurant, but a customer cannot order from multiple restaurant in one order. For each order, it must contain one or more dishes, and we record the quantities of each dish and the order time. Besides, each restaurant and dish can be included in zero or more orders.

Draw an ER diagram to represent the scenario, clearly state the assumptions you make if any.

Question 2 (6 marks)

Convert your ER-diagram from Question 1 into a relational model.

Question 3 (9 marks)

Consider the following relational schemas:

Song (sID, title, releaseDate)

GenreOfSong (sID, genre)

Artist (aID, name, age, gender)

SongCreating (aID, sID, role)

Company (cID, Name, location)

JoinIn (aID, cID, joinDate)

Write relational algebra expression to answer the following questions:

- 1) Find the *titles* of *pop* songs that are *composed* by *Taylor Swift*. (2 marks)
- 2) Find the *titles* of songs that are *composed* by *Taylor Swift* or *Ed Sheeran*. (2 marks)
- 3) Find the names of *female* artists in *Universal Music Group* who have participated in creating some *pop* songs but have never participated in creating any *hip-hop* songs. (2 marks)
- 4) Find the *names* of the artists who have participated in creating all *genres* of songs and have cooperated with *Taylor Swift* at least once when creating songs. Note that, Taylor Swift herself should be excluded from the result. (3 marks)

Note that, only the operators in the lecture slides can be used in your answer. The *role* in *SongCreating* can be lyrics writer, composer, producer, singer, etc.

Assignment Submission

We accept electronic submissions only. Please submit your assignments as follows:

- The file name should be **ass1.pdf**.
- Log into the CSE server, ensure that you are in the directory containing the file to be submitted. (**note: we only accept files with .pdf extension**)
- Type “give cs9311 ass1 ass1.pdf” to submit.
- You can also use the web give system to submit.
- In case that the system is not working properly, you **must** take the following actions:
 - 1) Please keep a screen capture (including **timestamp** and the **size** of the submitted file) for your submissions as proof. If you are not sure how, please have a look at the [guidelines](#).
 - 2) Please keep a copy of your submitted file on the CSE server. If you are not sure how, please have a look at [taggi](#).

Note:

1. If the size of your pdf file is larger than **2MB**, the system will not accept the submission. If you face this problem, try converting to compress pdf.
2. If you have any problems in submissions, please email to comp9311unsw@gmail.com.
3. We do not accept e-mail submissions.

Late Submission Penalty

20% per day.