COMP9311 23T3: Assignment 1
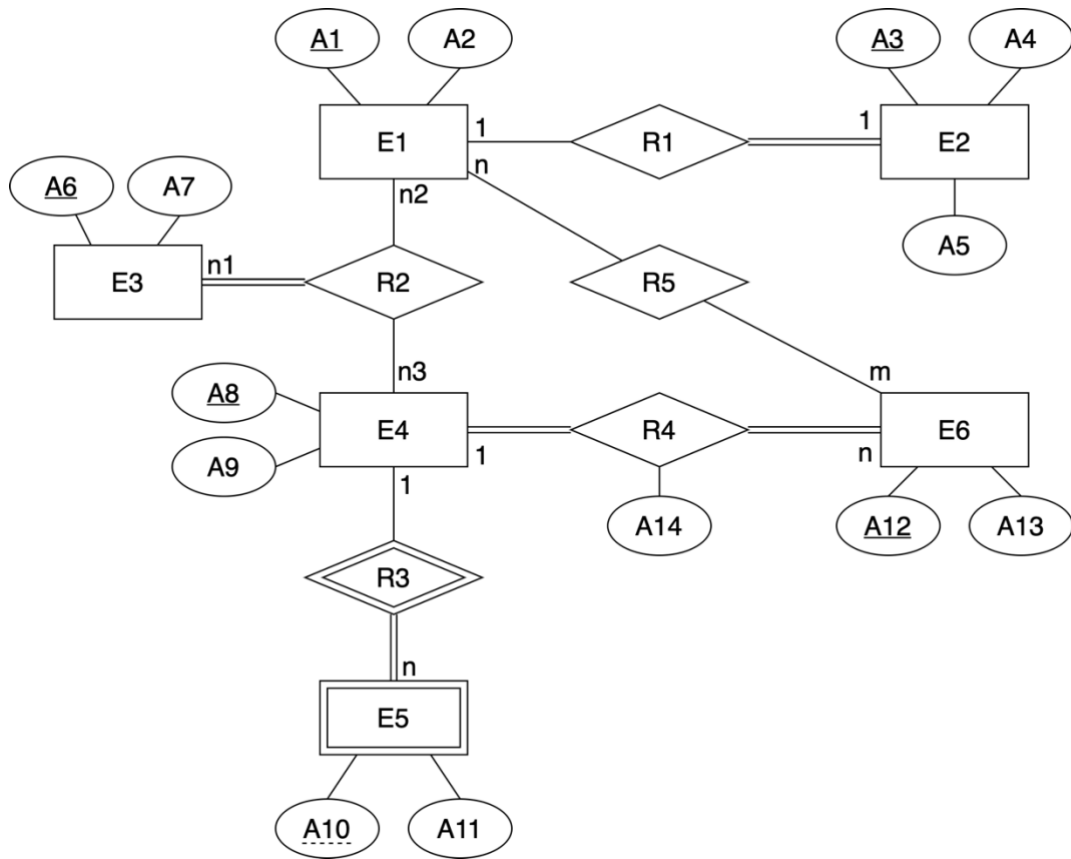**Deadline: Fri 16:59:59 6th October (Sydney Time)**

Question 1 (8 marks)

An organizer commissioned us to design a database for an inventory management system. They provide a summary of requirements as below.

- A supplier is identified by his/her id. We also record his/her name, phone number and supplier type. A supplier may have several supplier types.

- A product is identified by its id. We also record its name, price, production date and availability. A supplier must provide one or many products. Each product must be provided by one supplier.

- A manager is identified by his/her id. We also record his/her name, phone number, working hours and job description. Each manager is hired by one supplier. A supplier may hire zero or many managers.

- A manager can oversee zero or many products. Each product can be overseen by zero or many managers.

- An order is identified by its id. We also record its order date, status and price. We are interested in the number of products in each order as well.

- An order must involve one or many products. Each product is involved in at most one order.

- Each shipping is identified by its id. We also record the shipping address, shipping company and status. The shipping address is composed of street number, street name, city and country.

- An order can have at most one shipping and each shipping must correspond to an order.

- Each order is associated with zero or many invoices. An invoice is identified by a combination of the invoice id and the order id. It must exist along with the order. We also record its date, billing address, payment method and tax information.

Your task: draw an ER diagram to represent the scenario, **clearly state any reasonable assumptions that you choose to make**. Reasonable relation names are acceptable. *Please keep to the notations taught in the lecture.*

Question 2 (6 marks)

Your task: convert the above ER-diagram into a relational data model, and *please only keep to the notations/model taught in the lecture.*

Question 3 (10 marks)

Consider the following schema for a movie database:

Player (<u>pID</u>, pName, nationality)

Game (<u>gID</u>, gName, price, platform)

Genre (<u>gID, genre</u>)

Play (<u>pID, gID</u>, duration)

Your task: write the relational algebra expressions for the following queries:

1) Find the *names* of the games that are in the **role-playing** genre and have prices **lower than $200**. (2 marks)

2) Find the *names* of the players who have played **more than 5 games** where duration of each is **more than 3 hours**. Only consider the games that are on the **Windows** Platform. (2 marks)

3) Find the *names* of the games that are in both **Adventure** and **Action** genres at the same time and have been played by **German** players. (3 marks)

4) Find the *names* of the **Italian** players who have only played games that are on the **PSP** platform and have never played any game that are in the **Fighting** genre. (3 marks)

Note: Attributes that are not part of the primary key are not unique. *Please keep to the operators/notations taught in the lecture.*

Assignment Submission

- You must submit an electronic copy of their answers to the above questions to the course website in Moodle. You can handwrite your answers and scan or take a photo. Make sure they are legible.
- We only accept **.doc** or **.pdf** files.
- Please name your files in the following format: *ass1_**studentID**.doc* or *ass1_**studentID**.pdf* (e.g., **ass1_z5100000.doc** or **ass1_z5100000.pdf**).

Note:

1. If you have problems relating to your submission, please write to the course email at junhua.zhang@unsw.edu.au or yiheng.hu@unsw.edu.au.
   If there are issues with Moodle, send your assignment to the above email with the title "*<zid> COMP9311 Ass1 Submission*".
2. All submissions will be checked for plagiarism. The university regards plagiarism as a form of academic misconduct and has very strict rules. Not knowing the rules will not be considered *a valid* excuse when you are caught.
   a. For UNSW policies, penalties, and information to help avoid plagiarism, please see: https://student.unsw.edu.au/plagiarism.
   b. For guidelines in the online ELISE tutorials for all new UNSW students: https://subjectguides.library.unsw.edu.au/elise/plagiarism.

Late Submission Penalty

- 5% of the max assessment mark will be deducted for each day late (1 second late is considered as one day late), up to 5 days (5*24 hours).

- Submissions that are more than five days late will not be marked.