CSE2DES/CSE5DES – 2013 – Assignment– Part 1

Due Date: 9.30am Friday September 20, 2013

Assessment: This part is worth 50% of the total Assignment Mark

Where to Submit: Part 1 of the assignment is to be submitted in hard-copy format to the relevant submission box on the first floor of the Beth Gleeson Building (behind BG139).

The electronic copy is to be submitted on latcs6 using the submit command

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submit DES <the assignment>
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This is an individual assignment. You are not permitted to work as a group when writing this assignment.

Copying, Plagiarism: Plagiarism is the submission of somebody else's work in a manner that gives the impression that the work is your own. The Department of Computer Science and Computer Engineering treats plagiarism very seriously. When it is detected, penalties are strictly imposed. Students are referred to the Department of Computer Science and Computer Engineering's Handbook and policy documents with regard to plagiarism.

No extensions will be given: Penalties are applied to late assignments (5% of total assignment mark given is deducted per day, accepted up to 5 days after the due date only). If there are circumstances that prevent the assignment being submitted on time, an application for special consideration may be made. See the departmental Student Handbook for details. Note that delays caused by computer downtime cannot be accepted as a valid reason for a late submission without penalty. Students must plan their work to allow for both scheduled and unscheduled downtime.

Return of Assignments: Assignments are to be returned within three weeks from the last day on which the assignment can be submitted.

Objectives: To learn to identify and describe use cases and to develop an object oriented structural domain model for a given problem domain.

Problem Statement

Eastern Suburb Gymnastics (ESG) is a regional organization that is responsible for running competitions among the gymnastics clubs in eastern suburbs of Melbourne. The competitions are organized into seasons. ESG needs a system to help organize and maintain records of the competitions that take place in a single season. The system, in essence, needs to keep information on the gymnasts, their clubs, the organization of the competitions, and the competition results.

Clubs and Club Members

At the beginning of the season, before any competition can take place, every club that wishes to participate in the competition must register with ESG. Each club is known by a unique name; however, for ease of reference, each is also given an ID, which is a short sequence of characters. Each club must provide a contact person's name and phone number, and the club's address and fax number.

In registering with ESG, a club submits a list of their members who will participate in the season's competitions. During the season, additional members can be registered while the season's competitions are in progress. The date a gymnast registers for competition is recorded. Those who register when the club is registered have the first day of the season as the registered date. For each gymnast, ESG requires their name, date of birth, gender and phone contact. ESG then issues them with a unique ID.

Meets, Competitions and Events

The competitions are organized into a series of *meets*. Each meet is held in the course of one day at one particular venue.

Each meet consists of *competitions* in four *divisions*: Women's Junior (WJ), Women's Senior (WS), Men's Junior (MJ), and Men's Senior (MS). A division is identified by a code (e.g. WJ) and has a name (e.g. Women's Junior). Junior divisions are for gymnasts up to 15 years of age by the first date of the season.

Each competition consists of a series of events run on different equipment. The events in a competition are drawn from a standard list of event types. Each type of event has a code and a descriptive name that is also unique. Certain event types are for women or for men only.

A sample of the result of a competition in a meet is shown below.

Meet: M01 – Vacation Classic
Date: June 15, 2009
Division: Women's Senior

	Event Scores			
Club	**Uneven Bars**	**Balance Beam**	**Vault**	**Floor Exercises**
Blackburn	42.2	41.0	37.4	39.6
Box Hill	40.6	42.5	43.8	38.5
Donvale	38.4	39.8	42.6	41.3
Eltham	41.5	40.2	44.8	43.6

Each meet is identified by an ID (e.g. "M01"), and has a name (e.g. Vacation Classic). A competition within a meet is identified across the system by the combination of the meet ID and the division code. [1]

Teams in Competitions

When a club registers for a particular meet, the club enters a subset of its members. This subset is known as a *team*. When a team is at a meet, it must participate in all the events of that competition. A team must have the same set of members competing for each event within a competition.

Scoring

Each event in a meet has a judging panel assigned to it. These people are qualified to give scores for this event. ESG (and the system) maintains a list of judges including their personal details (name, phone number) and the types of events they are qualified to judge. For ease of reference, each judge is given a unique ID.

Each judge rates the performance of a gymnast on an event. The highest and lowest scores will be thrown out, and the rest averaged to be the gymnast's score for the event. This average will be entered into the system. The event score for a team is the sum of all its members' scores for the event. The competition score for a team (which is also its meet score) is the sum of the team's event scores.

(The season's ranking of the teams depends not only on their total scores for the meets but also on other factors, for example, the team sizes and the best performances of the members for various events. The rules and procedure for ranking, however, do not concern us here).

Further Details and Requirements

1. None of the IDs are automatically generated by the system.
2. Though the divisions and event types are taken from existing standards, the system must provide facilities for the user to enter their details into the system. Moreover, it is the responsibility of the user to ensure that these details are entered correctly.
3. To avoid some undesirable complications, it is decided that the system would allow us to register a club at the start of the season *without* having to enter its members at the same time.

[1] Note that in this problem statement, the word "competition" has been used in *two* different senses. First it is used in the sense of ordinary English, which is defined in the Oxford Dictionary as "an event or contest in which people take part in order to establish superiority or supremacy in a particular area". Then it is used in an application-specific sense as described in this section.

Your Tasks

Task 1 (50 marks)

Identify and describe *all* the use cases that are needed to *enter* data into the system.

In addition, describe the use case to generate the report on the performance of a given gymnast in a meet.

You are not required to consider use cases which change details about existing objects or relationships, or delete these objects or relationships. Nor do you need to consider any query use cases except the one stated above.

Make a list of the use cases and number them. Then describe them using the Main Flow-Extension format.

Note: You are required to specify identify and specify all use cases that fit the requirements given above. As for marking, about 5 of such use cases will be marked.

Task 2 (50 marks)

Construct the domain class model (a.k.a. structural class model).

For each class, include *both attribute names and attribute types*. You don't need to include methods. For relationships, among other things, include *all relationship multiplicities*. If necessary, you can use more than one class diagrams to avoid cluttering your model.

Clearly state any assumptions you make, or any decisions you take that, in your opinion, require clarification of your position.

What to submit

- Both *hard copy* and *electronic copy* of your assignment (i.e. use case descriptions and domain class model)
- The hard copy is to be submitted in the submission box
- Electronic copy of your assignment must be in either in WORD or PDF format

Task 3 (10 marks) – For CSE5DES only

Discuss how you would *validate* the domain class model you construct in Task 2.

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