Faculty of Arts and Science
University of Toronto

Midterm Test

Department: Computer Science
Instructor: Steve Easterbrook
Date and Time: 10:10am, Thursday 26th Feb, 2009

Conditions: Closed Book
Duration: 50 minutes

This test counts for 20% of your final grade

Name: _____
(Please underline last name)

Student Number: _____

Question Marks

1 _____/20

2 _____/20

3 _____/20

Total_____/60   = _____%
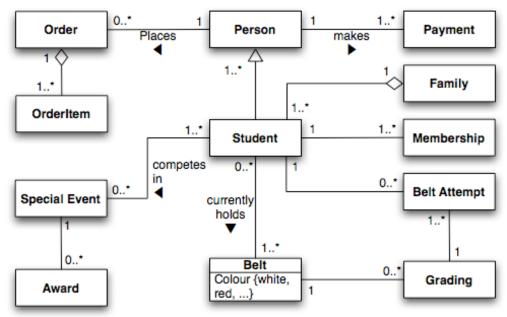
1.   [Short Questions; 20 marks total]

(a) [Software Architectures – 5 marks] What are coupling and cohesion, and why are they important in software design? Suggest measurable properties of a software design that can be used as indicators of the amount of coupling and cohesion.

(b) [Scaling Agile methods – 5 marks] Describe two aspects of agile software development that don't work well on very large software projects, and identify alternative strategies that can be used in their place. At what size of project do you expect such problems to kick in?

(c) [Uses of UML – 5 marks] What would you use a UML Sequence Diagram for? What are its advantages when used for this purpose?

(d) [Software Estimation – 5 marks] What is 3-point estimation? Why would you use it?

2.   **[Domain Models – 20 marks]** The following domain model captures some basic information about a kids' karate club. In answering the following questions, state any assumptions that you make.

a) How many times can a student attempt to earn a Black belt? [2 marks]

b) The model distinguishes between 'student' and 'person'. Why do some associations go to 'Student', and some to 'Person'? Are these modeling decisions sensible? [2 marks]

c) What are the implications of the multiplicities on the association between Person and Payment? [2 marks]

d) Does it matter that 'Person' is not associated with 'Family'? [2 marks]

e) In the model, each student is shown as belonging to exactly one family. If this rule is enforced in a database, what problems could this lead to? [2 marks]

f) The owner of the club wants to offer a family discount, so that if more than one student from the same family is a member of the club, they each get a 10% discount. How would you alter the model to capture this? [5 marks]

g) A student can only hold an award for a special event that he or she competes in. How would you modify the model to capture this constraint? [5 marks]

3.   **[Project Management – 20 marks]** A good software project manager should develop a realistic plan for the project, and then manage according to the plan, making adjustments if necessary. What measurements of a project does a manager needs in order to do this, and what kinds of adjustments can the manager make if the project is not going according to plan? Identify three tools a manager can use to track the progress of the project, and describe their advantages and disadvantages.

[scratch paper]

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