I declare that this is all my own work.

SIGNATURE:

SWEN102

Introduction to Software Modelling Midterm Test

15 August 2008

Answer All Questions

Please Write Neatly

Time Allowed: 50 Minutes

Marks Overall: 50

Numeric Calculators Allowed. Non-Electronic Translation Dictionaries Allowed.

| | Topic | Marks | |
|----|---------------------------|----------|--|
| 1. | Essential Use Case Cards | 13 marks | |
| 2. | Use Case Diagrams | 12 marks | |
| 3. | Domain Analysis | 12 marks | |
| 4. | Object and Class Diagrams | 13 marks | |

- 1. Essential Use Case Cards [13 Marks]
 - (a) (3 Marks) Perform a *textual analysis* on the following description, to find candidate use cases. You should carefully and neatly underline key verb phrases in the text in the box.

Slob Out records sells second-hand CDs at a shop and on a website. In the shop, buyers can browse CD cases on racks. When they've chosen the CDs they want, they take them to the front desk where a shop assistant finds the actual CD, records the CD barcode that is being sold, and then the customer pays for the CDs.

Shoppers can get refunds if the CDs won't play properly. The CD needs to be scanned again, and the shop refunds payment. Shop assistants aren't allowed to give refunds: that can only be done by the store manager.

The manager can also list special CDs for sale on the website. Web surfers can browse the catalogue, and choose and pay for CDs with a credit card. Each day, a shop assistant needs to get a list of CDs sold on the web, and

send them to the buyers.

(b) (3 marks) Give names for the three candidate use cases you consider most important.

ii.

i.

iii.

(d) (4 marks) Draw **essential use case cards** for two important and interesting use cases in this system.

2. Use Case Diagrams [12 Marks Total]

The following use case diagram for a car sales website has been produced by an expensive, well-dressed contractor. Unfortunately he abandoned the project in the middle to devote his life to free software.



Circle **six distinct** problems in this diagram. For each problem, number it and describe why it is a problem.



- 3. Domain Analysis [12 Marks]
 - (a) (3 marks) Perform a *textual analysis* on the following description to find candidate classes. You should carefully and neatly underline key noun phrases in the text in the box.

The ClothesMasher 2010 washing machine can have up to 10 WashProgrammes. Each WashProgramme has a name (like 'spin', 'mywashing') and a list of wash phases: 'fill', 'wash', 'rinse', 'spin', 'mash', and 'empty'. The 'fill' phase fills the machine with water; 'wash' washes clothes for 5 minutes; 'spin' spins them; and the 'empty' phase empties out water.

(b) (3 marks) The description text above is incomplete. List one question you would ask the user or client of this system to clarify these requirements.

(c) (3 marks) Complete this small **Class Diagram** by drawing in the correct relationship between the ClothesMasherMachine and WashProgramme classes.



Wash -Programme

- (d) (3 marks) Draw an **Object Diagram** of the following system.
 - There is one ClothesMasher object.
 - It has one WashProgram with a name "superwash".
 - The superwash programme has a 'fill' phase, two 'wash' phases, a 'rinse' phase, and an 'empty' phase.

4. Object and Class Diagrams [13 Marks Total]

Consider the object diagram on this left-hand page, and draw a *well-designed* class diagram that could produce these objects on the right-hand page.





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