



THE UNIVERSITY OF THE WEST INDIES

EXAMINATION OF April 2005

Code and Name of Course: CS22Q – Introduction to Software Engineering

Paper:

Date and Time: April 29th 2005 9:00 – 11:00 a.m.

Duration: 2 Hrs.

INSTRUCTIONS TO CANDIDATES: This paper has 3 pages and 4 questions.

Do question 1 & any other two.

Question 1

Read-All bookshop is interested in setting up an efficient and reliable online computerized ordering system. Based on the recent success of online book stores they are motivated to go the similar route. Currently their systems are all manual. An inventory manager has a spreadsheet where she keeps track of all the books in the shop. The sales system is simply a cash register which generates a receipt of the sales for the customer. They wish to computerize their systems to go online and streamline their operations. The book shop sells books, magazines, CD's, DVD. All items have a unique number by which they can be identified. The number of items of a particular book, magazine, CD and DVD in the inventory should also be known. All printed material has a publisher associated with it and the digital media has a company that produces it. The author of the book is also stored. If a customer places an order online they have to submit a list of products, decide on a shipping method and a payment method. The customers can use either a Jamaican \$ credit card or a US \$ credit card. Both the cards have to be authenticated. For quick processing for repeat customers the bookshop needs to store the following details, their address, email, order details and their credit card details. The bookshop gives a 10% discount to those customers who use Lovebird Keycard. When the customer's order gets accepted they receive an order id. Customers can also cancel orders by entering their order id. Only those orders that have not been shipped can be cancelled. For the cancelled orders the accounting system needs to be notified to credit the customer's account. If the order has been shipped then the customer can choose to return the product. Customers can also review any order and contact customer service.

- a) Draw fully dressed use case diagrams for the given case study. Describe any two use cases in detail. [12 marks]
- b) Draw simple Class diagrams for the above case study. [8 marks]
- c) What different perspectives do Class diagrams and Sequence diagrams model in a system? Are they both important in designing a system? Explain using the above case study. [8 marks]

Question 2

- a) Due to some of the drawbacks of using the waterfall model for software development, other hybrid models e.g. incremental development are becoming more and more popular. Discuss these drawbacks and how the incremental model overcame them. [10 marks]
- b) Explain why the intangibility of software systems poses special problems for software project management. Discuss some of the ways that these problems could be reduced. [6 marks]

Question 3

- a) Explain the need for functional and non-functional requirements, show using examples. Compare and contrast the validation and verification process for these requirements [6 marks]
- b) Differentiate between user and system requirements. Be sure to explain why and who they are written for. [4 marks]
- c) Select one of the topics that you or your classmates have presented in the second set of presentations. Explain the topic and it's relevance to software engineering. [6 marks]

Question 4

- a) Some observers believe that the component based software engineering paradigm is the solution to the world's software crisis. What crises are they referring to and to what extent is software reuse an integral part of this paradigm. [6 marks]
- b) Discuss the three strategies for evolution of software systems. [6 marks]
- c) Explain the four attributes of good software. In an e-commerce system, which attributes would be more critical? Give reasons to support your answer. [4 marks]

END OF QUESTION PAPER