

University of Eswatini

Department of Computer Science

Final Examination

2019/20

Title of Paper: Practices in Software Engineering II

Course Number: CSC491

Time Allowed: Three (3) hours

*Instructions: Answer **ALL** questions*

You are not allowed to open this paper until you have been told to do so by the invigilator.

Question 1

- a) Discuss the steps you would go about when doing the Object Oriented Analysis (OOA) process. [17]
- b) A counting device may be used as a binary counter, decimal counter, hexadecimal counter or any other base specified by the user. The device may also be used as a character counter and a date counter. The count value may be increased and decreased using increment and decrement buttons.

Draw an OOA diagram for the scenario above highlighting all the steps.
[8]

Question 2

- a) Discuss cohesion, giving examples where appropriate. [13]
- b) Discuss coupling, giving examples where appropriate [12]

Question 3

VIP cosmetics

VIP cosmetics is a successful network sales company. The company sells a variety of health and beauty products through selected distributors. A distributor is a person who has committed himself to selling the products of the company. The distributors then sell to the general public. VIP keeps a list of all its distributors. This list details the distributor name, postal address and other essential details.

Distributors buy products by placing orders with VIP head office. The order contains a list of items that the distributor wants to buy. This list details the product identity code and the quantity being ordered. The total cost for each order item may also be computed by multiplying the quantity by the product price. The product price may be obtained from a list of all the products. This list details the product code, name, description and price. The total cost of each order may be computed by summing the cost of each item on the order.

Distributors receive a discount depending on how many points they have accumulated since joining VIP as a distributor. The number of points is proportional to the accumulated total cost of their orders. For example, if they place an order costing E200 they receive an extra 200 points. Distributors who have just joined VIP receive 30% discount. Distributors

who have accumulated 2 500 points receive 35% discount, 10 000 points receive 40% discount, 20 000 points receive 44% discount, 40 000 points receive 48% discount and 80 000 points receives 52% discount.

VIP requires a software system that will help their head office personnel in processing the orders. On receiving an order they want to be able to quickly calculate the item cost, the gross total cost for each order and the discounted cost for each order. They also want a system that will keep track of the accumulated points for each distributor and hence making it easy to calculate the discount.

Sometimes they want to view the list of distributors, orders and products. This listing must be selectable such that when a distributor is selected, the order list for the distributor is also visible. In turn this order list must be selectable such that when an item is selected on the order list the product details are also visible.

a) Draw a Use Case diagram using the scenario above. [15]

b) Draw a Sequence diagram using paragraph 2 in the above scenario.
[10]

Question 4

Blackboard is a learning management system that allows staff to add resources for students to access online. PowerPoint, video, audio, animation, and other applications are created outside of Blackboard and added into Blackboard courses for students to enhance teaching and learning efforts. It is Web-based server software which features course management, customizable open architecture, and scalable design that allows integration with student information systems and authentication protocols. It may be installed on local servers. Its main purposes are to add online elements to courses traditionally delivered face-to-face and to develop completely online courses with few or no face-to-face meetings. For example:

- Communication e.g. chatting, discussions, making announcements etc.
- Content e.g. sharing course material, submitting assignments, assessments, calendars etc.

Using the scenario above do the following:

- a) **Develop a test strategy** – now that you understand the system, explain how you are going to test the different functionalities and levels of Blackboard. Explain which modes of testing you are going to use and why. [20]
- b) **Define your scope** – define the scope and boundaries of your test strategy. Tell us what features will be tested, and which ones you will not test and why. [5]

End!!!