Application Engineering and Development

ISY G100

Exam II

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Closed Book

Professor

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1. (25 pts) We developed an engineering and architecture technique for the construction of applications that fits any business requirements. The technique has been used to implement multiple homework exercise.
   1. Given a business problem outline the steps for the assembly of a software application. Your steps must be as detailed as possible.
   2. Draw a diagram showing the different components that make up an application.
2. (25 pts) Consider the following business model for retailers like Best-Buy:

For the following functions write English-like Pseudocode describing the steps for retrieving or summing up the results. Assume orders have four statuses as an attribute: “In progress”, “Paid”, “Delivered but unpaid”, or “Cancelled”. Notice that cash or revenues received is different from sales volume. There is no need to write java code or sorting algorithms, just the logic.

1. getTopThreeProfitableProducts(), returns the list of three most profitable products
2. findTopTenSalesPeople(), returns the sales people in terms of total sales volume made. Sales people are measured in terms of the sales orders successfully submitted (not cancelled). Returns a sorted list of the best ones.
3. getTopTenSuppliers() returns the revenues associated with the best 10 suppliers along with their name
4. getTotalGenerateSalesVolume(), returns the total sales volume (order or order items)for the business as a whole.
5. getTotalRevenues(), returns the total cash generated by the business.
6. getTotalUnpaidOrders(), returns the orders that were delivered but are unpaid.
7. getTopThreeWorstCustomers, returns the customers with the largest unpaid orders.
8. (25 pts) For each of the methods above show the most appropriate classes where these methods should reside. For each method show the sequence of methods on the other classes that will be invoked to satisfy the calculation. Make sure to properly place all the required methods. We advocate modularity of the design which means each class will do a piece of the work (calculations).

Hint: for example findTopTenSalesPeople() requires getSalesVolumn() method from other class.

1. (25 pts)The model above show a Best-Buy type retailer selling products from multiple suppliers to end customers as well as sales to corporations through a sales force. However, it does not show inventory management at local stores. Suppose we want to modify the object model to include inventory management at local stores. In this case, the Business class will represent the company but we need to introduce stores to the model.
   1. Explain how the model will change to support the detailed inventory management at local stores.
   2. List five key questions (method calculations) of business intelligence importance that would be useful for a retailer like best buy. The questions could be at the store level or could be at the business level. Your answers here must different from the ones listed in the previous questions)
2. (25) We discussed the Xerox sales model where Xerox sales people mediate the sale. We also discussed the range pricing strategy (floor, ceiling, target, and actual). Write a complete enterprise model for this problem. Make sure to show where the pricing attributes will go. In addition, list 5 important questions that Xerox can ask from the model and explain how you will navigate the model to derive answers to these question. Use “foreach” to iterate over objects of the classes.