VIT ®

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

Continuous Assessment Test - II, September 2018

B.Tech. (CSE), Fall Semester 2018 -2019

Course Code	: CSE4028	Duration : 90 Minutes
Course Name	: Object Oriented Software Development	Max Marks: 50
Slot	: D2 (Common to All Batches)	

Answer ALL the questions   (5 * 10 = 50 marks)

1. Consider the Library management system. It should provide the facility to issue the book, to calculate the fine during book return, the placement of the books on the shelfs, adding new books to the shelfs and removing old books from the shelfs.   **(10 marks)**

   Draw the activity diagram with swim lanes for each and every components of the above scenario.

2. Operating system with basic services such as interrupt and exception handling, thread scheduling and dispatching; resource management services such as object management, virtual memory shell and administration tools. consider the system and answer the following questions:

   i. Which architectural style is most appropriate for the given system?

   ii. Give a sketch of sample architecture for the given system. Explain the interaction between the parts of the architecture.

   iii. What are the coupling and cohesion characteristics for each architecture style with proper justification?   **(10 marks)**

3. Give a state diagram that describes the lifetime of a video tape in a video store. You can assume that a video tape is purchased, packaged properly (plastic case with identification information on the outside), put in the video store database, and is then put up for rental. Customers, who choose to rent it, check it out and return it in 3 days. If a customer fails to return it, the store calls him/her the next day. The call is repeated a second time after 2 more days, and if the tape is not returned within 2 more days, the store delegates the matter to a collection agency and removes the video tape from its collection. If the tape is damaged on return, it is removed from the collection database also. Finally, if the tape is missing during the annual store inventory, it is removed from the collection database as well.

Note:- Make sure to define events, conditions, actions for transitions in your diagram, where appropriate.

(10 marks)

4. Express the following class constraints in OCL:

(10 marks)

(Note: Use appropriate operators and instances of OCL)
   a) No employee can earn more than $200K
   b) An employee can only be assigned to projects run by her company
   c) No employee can earn more than her president
   d) The manager# of an employee is the same with the emp# of his/her manager

5. To buy a book electronically from chapters.com, a customer needs to select the book from a list provided by Chapters' e-Commerce system, provide credit card information to the system, then the system gets authorization from the bank for the payment, and -- if positive -- confirms the sale. The order is then sent to the orders department and when the book becomes available, it is shipped to the customer. Also, the order department charges the customer's credit card by informing the bank of the amount.

Draw a sequence diagram that models this process. Make sure that the model has all relevant actors and the interactions between them. Do show explicitly the time intervals when different actors actively participate in the modelling process.

(10 marks)

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