MCA SEM - IV

Object Oriented Modeling & Design using UML

26 May 2009

614 : G-m. May

Con. 2275-09.

(REVISED COURSE)

BB-9507

(3 Hours) [Total Marks : 100

N.B. (1) Question No. 1 is **compulsory.**
(2) Attempt **any four** from the remaining **six** questions.

1. (a) A hire company owns many heavy machines (such as diggers, cranes, fork-lift trucks). Periodically the company buys new stock or sends old machines to the scrap yard. The machines are available for hire. 10
Customers who wish to hire these machines may book them, and they don't have to pay anything in advance. When they arrive to hire the machine, they must pay in advance for the required number of days. A customer who returns a machine late must pay a fee for the extra days.
When a machine is returned, it is sent to the garage for a very quick immediate inspection while the customer settles any outstanding fees. After each return, the machine is repaired if necessary, and serviced. Machines that cannot be economically repaired are scrapped.
(b) Draw an activity diagram for the Return use case, ideally including swimlanes. 10
A few more details are given below :—
When a machine is returned, it is sent immediately for a very quick inspection. If any problems are found, the customer is issued with a written warning that they may be sent further repair bills. Whilst the inspection is proceeding, the administrative staff are processing the return documents with the customer who, if they returned the vehicle late, must pay the fee for the extra days. When the inspection is complete and, if necessary, the customer has been given a warning and settled any outstanding payments, the customer and the administrator sign the return document and the customer can leave. After the inspection, the machine is kept in the garage for service and any required repairs.

2. (a) What are the benefits of reuse ? What the various forms of reuse in object oriented development ? Explain. 10
(b) List and explain various flexible guidelines for making class diagram. 10

3. (a) Explain sequence diagram using an example. Explain the notation to be used to represent iterations, conditional messaging, object creation and destruction and parallel processing. 10
(b) Explain logical architecture and hardware architecture model. 10

4. (a) Explain bottom up approach for software system design with suitable example. 10
(b) Explain the Abstraction approach for determining the classes. 10

5. (a) Differentiate between (any two) :— 10
(i) Aggregation and Composition
(ii) Activity Diagram and State Transition Diagram
(iii) Architectural Pattern and Design Pattern.
(b) Draw sequence diagram to deposit money in the bank. 10

6. (a) Explain Booch Methodology for object oriented development. 10
(b) Create state chart diagram for dialing a telephone number. 10

7. Write short notes on following (any four) :— 20
(a) Swimlanes
(b) Scenario
(c) Framework
(d) Stereotypes
(e) «extend»