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A 1241

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2006.

(8)

Fifth Semester

(8)

Information Technology

(3)

IF 354 — OBJECT ORIENTED ANALYSIS AND DESIGN

(5)

Time : Three hours

Maximum : 100 marks

(8)

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

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1. Do you agree that "Object conceals the internal data and procedures"? Justify your answer with an example.
2. With an example explain how multiplicity is expressed in a class diagram.
3. "Use-cases are better than flowcharts in understanding the user requirements" — Do you agree this statement? Justify.
4. What is UML? Explain why UML is required?
5. What is a scenario? How scenario is related to a use case?
6. What are synchronous and asynchronous messages? How they are represented in Sequence Diagram?
7. What is meant by an active object and a passive object?
8. What is meant by Inheritance? Explain with a suitable example from a real programming problem.
9. How does Object orientation reduces the software development time? Explain.
10. What do you mean by Objects Life-line? In which diagram it is used? How it is represented?

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PART B — (5 × 16 = 80 marks)

11. At the end of each academic year the under graduate program committee of department determines which subjects will be offered for final year students in the following year. Head of the department allocates duties to members of the teaching staff to lecture each of the subjects which are supposed to be available in the following year. Each faculty member updates the course handbook entry for his or her subject by giving detailed course plan and evaluation instructions. The course coordinator updates other entries (like course schedule, regulations, time table etc.) of the course handbook and checks the subject entries made by the lecturers. Undergraduate Teaching office Clerk (UTC) prints the course handbook and the course coordinator generates the HTML version of the course handbook and publishes on the Intranet. Third year course coordinator gives the list of students supposed to enter final year to final year course coordinator and UTC. Each student is advised by a staff counselor who was assigned during their first year and remains in that role till they leave the college. Students provisionally register for subjects by filling in paper forms and handing them to the UTC. UTC then prepares the faculty member-wise lists of the students taking their subjects.

You have been approached by the Institute authorities to design a system to automate this course registration process, so that the students can register for the course on-line and HOD, faculty members, staff counselors and UTC can process the information very fast. Assume missing or other necessary data appropriately and state those assumptions made.

Draw the details :

- (i) Use-case diagram
 - (ii) Class diagram
 - (iii) Sequence diagram.
12. (a) (i) Explain how object technology helps in designing complex software? What are advantages and disadvantages of OO methodology? (10)
- (ii) With an example explain how object orientation supports reusability. (6)
- Or
- (b) (i) What are macro processes in object oriented software development life cycle? Explain each process in detail. (8)
- (ii) Explain super-sub class relationship with a programming example. (8)

13. (a) (i) Why analysis is a difficult activity? What are the different ways for extracting information about a system during analysis? Explain any one of them. (8)

(ii) With an example differentiate between composition and aggregation relationships? (8)

Or

(b) (i) What are the primary components of a use case model? Explain different types of relationships existing between use cases with an example. (8)

(ii) How does an Activity Diagram depict the dynamic behaviour of a system? Explain with an example. (8)

14. (a) (i) What is an Object Diagram? How an object is represented in an object diagram? With an example explain different types of Associations. (10)

(ii) What is the use of sequence and state diagrams? Explain. (6)

Or

(b) (i) What are the guidelines that need to be followed while designing a class? Explain with an example. (10)

(ii) "Testing is part of every stage in OO development, whereas in structured development testing starts after implementation" — Do you agree this? Justify. (6)

15. (a) (i) Describe the role of documentation in software development? (8)

(ii) Is it necessary to document both static and dynamic behaviour? Give clear justification. (8)

Or

(b) Write short notes on :

(i) CRC cards

(ii) Abstraction

(iii) Polymorphism

(iv) Deployment diagram.

(4 × 4 = 16)