



Printed Pages : 3

CS-501

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 1003Roll No.

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B. Tech.**(SEM. V) EXAMINATION, 2007-08****OBJECT ORIENTED PROGRAMMING USING C++***Time : 2 Hours]**[Total Marks : 50***Note :** *Attempt all questions.***1. Attempt any Four parts :** **4×4=16**

- (a) How does one properly identify the classes and objects that are relevant to a particular application ? Explain.
- (b) Define the term generalization and inheritance with proper example and diagram.
- (c) What is meant by Abstract class ? Explain. Give their importance by suitable example.
- (d) Prepare an instance diagram for the class diagram shown in the given figures below for the expression $(X+Y/2) / (X/3+Y)$. Parentheses are used in the expression for grouping, but are not needed in the diagram. The many multiplicity indicates that a term may be used in more than one expression.

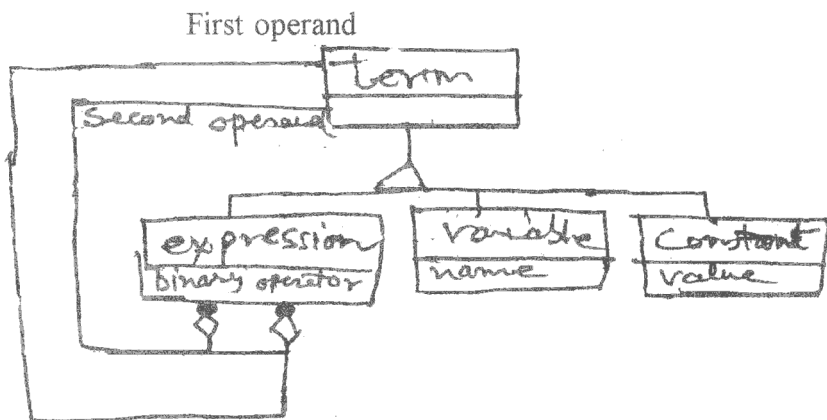


Fig. 1

- (e) Define the terms derived links and derived attributes with an example.
- (f) Consider the following diagram.

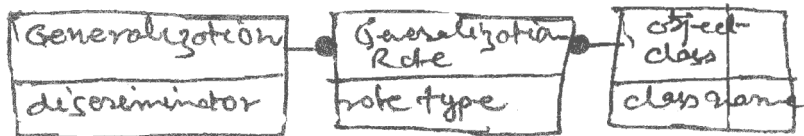


Fig: metamodel of generalization relationships.

Now, answer the following :

- (i) Describe how to find which class is the superclass of a generalization using the above metamodel.
- (ii) Does this model support multiple inheritance ? Explain.

2. Attempt any **two** of the following : **6×2=12**

- (a) Write scenarios for the following activities :
 - (i) An elevator ride to the top floor.
 - (ii) Getting ready to take a trip in your car.
Assume an automatic transmission. Don't forget your seat belt and emergency brake.
- (b) Discuss aggregation concurrency and concurrency within an object in detail.
- (c) Prepare a DFD for computing the volume and surface area of a cone. Inputs are height and the radius of the base of the cone outputs are volume and surface area. Discuss some ways of specifying operations.

3. Attempt any **two** parts : **6×2=12**

- (a) Write a class description for a fraction, a rational number composed of two integer values. Write methods for addition, subtraction, multiplication, and division of fractions. Do the above in C++.
- (b) What is meant by overloading of parameters ? Explain by an example in C++.
- (c) Write C++ program for insertion sort. Give algorithm also.

4. Attempt any **two** parts : **5×2=10**

- (a) Explain by example in C++ the following :
 - (i) File operations
 - (ii) D/o operations.
- (b) Define the following :
 - (i) Extensibility
 - (ii) Programming-in-the large.
- (c) Compare between object oriented methodology with the procedural methodology.