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Printed Pages : 3 CS-501

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

PAPER ID : 1003 Roll No.

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 growing, but are not needed in the diagram. The many multiplicity indicates that a term may be used in more than one expression.

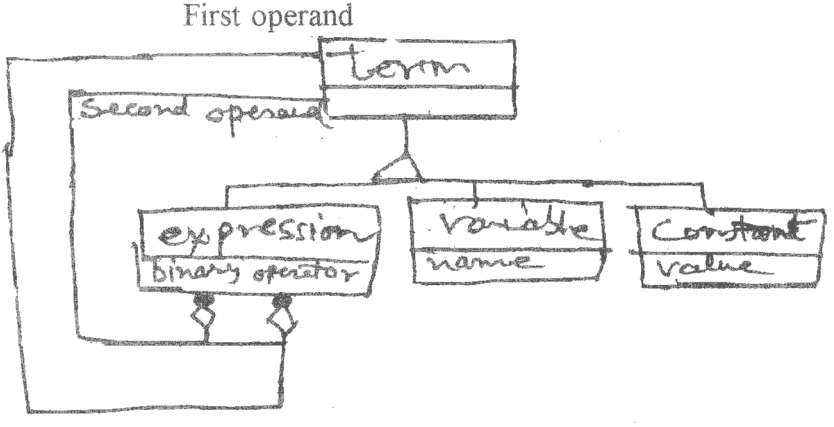

Fig. 1

(e) Define the terms derived links and derived attributes with an example.

(f) Consider the following diagram.

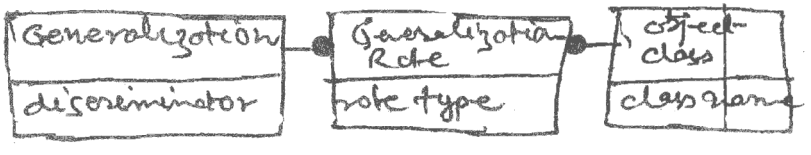

Fig: metamodel of generalization relationships.

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 side 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 core. 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, substraction, 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.