Printed Pages – 4 CS – 501

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

PAPER ID : 1003 Roll No. | | | | | | | | | | |

B.Tech.

FIFTH SEMESTER EXAMINATION, 2004-2005

OBJECT ORIENTED PROGRAMMING IN C++

Time : 2 Hours *Total Marks : 50*

Note : *Attempt ALL the questions.*

1. Answer *any four* parts of the following : **[3x4=12]**

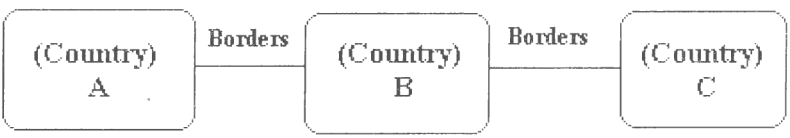
   (a) Define the following terms clearly.

   (i) Class (ii) Attribute

   (iii) Object (iv) Metadata

   (b) Explain the concept of links and associations with the help of suitable example.

   (c) Prepare a class diagram from the given instance diagram.



   (d) A directory file contains information about files in the directory including both ordinary files as well as other directory files. Prepare an object diagram which models directory files and ordinary files. A directory together with file name uniquely identifies a file.

(e) Describe various types of inheritances with examples.

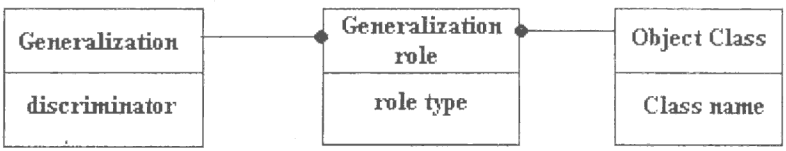
(f) Compare and contrast OOP Languages with procedural languages.

2. Attempt *any two* parts of the following : [6x2=12]

(a) (i) What do you understand by dynamic modelling? Explain.

(ii) What is difference between state and event?

(iii) Consider the given meta model of



generalization relationships. How well does this metamodel enforce the constraint that every generalization has exactly one super class? Discuss how accurately it reflects the logical structure of generalization relationships as it stands.

(b) Consider a telephone answering machine in which calls are automatically answered as follows: An incoming call is detected on the first ring and the machine answers the call with a prerecorded announcement. When the announcement is complete, the Caller's message is recorded. When the caller hangs up, the machine hangs up and shuts off.

Draw a state diagram for the machine.

(c) What is data flow diagram?

Prepare a data flow diagram for computing the mean of a sequence of input values. A separate control input is provided to reset the computation. Each time a new value is input, the mean of all values input since the last reset command should be output. Since you have no way of knowing how many values will be processed between resets, the amount of data storages that you use should not depend on the number of input values.

3. Answer *any two* parts of the following : [7x2=14]

(a) (i) What are major characteristics of an object oriented languages ? Describe.

(ii) Explain the use of private and public keywords. How are they different from each other ?

(b) (i) Write a program in C++ to generate Fibonacci series using recursion with member functions.

(ii) What do you understand by constructor and destructor? Explain with suitable example.

(c) (i) How are friend functions used to carry out overloading of operators ? In what kind of situations are they helpful ?

(ii) Write a program in C++ to declare classes X, Y and Z. Each class contains one character array as a data member. Apply multiple inheritances. Concatenate strings of classes X and Y and store it in the class Z. The program prints all the three strings.

4. Attempt *any two* parts of the following : [6x2=12]

(a) (i) Differentiate between the following :

[A] Static and dynamic binding

[B] Sequential and random file operations.

(ii) Explain briefly following

[A] Virtual functions

[B] Polymorphism

(b) Compare SA/SD approach with Object modelling Technique (OMT) with due emphasis on differences between them.

(c) A bank has stored the amounts of deposits gathered in a day in a text file BANK-DATA.DAT. Write a program in C++ to read this file and calculate the sum of all deposited amount.

- o O o -