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प्रज्ञानं ब्रह्म

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(Constituent Institute of Manipal University)
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THIRD SEMESTER B.E. (CSE) DEGREE END SEMESTER EXAMINATION
NOV./DEC. 2011
Object Oriented Programming using C++ (CSE 209)
DATE: 7-12-2011

TIME: 3 HOURS MAX.MARKS: 50

Instructions to Candidates

- Answer **any five** full questions.

1A. Explain reference variables with an example.

1B. Write a program and explain why we must avoid returning a reference to a local variable.

1C. What are overloaded member functions? Explain with a program. Also explain the reason one has to be careful while assigning default values to the formal arguments of member functions.

(2 + 3 + 5)

2A. Create a class Cust_class which contains data members for customer name and customer Id. Create a class City_class which contains data members for customer Id, city and state. Include parameterized constructors in both the classes. Create objects for two customers. Create a friend function for displaying a customer's name, Id, city and state. Use this function for displaying details of both the customers. Write a main( ) function to test the classes and the friend function.

2B. What is a Copy Constructor? Describe, with examples the three circumstances under which the copy constructor is called.

(6 + 4)

3A. Create a class named Instructor that contains first name, last name and phone number. Its only constructor requires all three as arguments. Create a class named CollegeCourse that is derived from Instructor and contains room number and number of credits. Its constructor should accept all arguments and pass the relevant ones to the constructor of Instructor. Each of these classes should contain a function that displays the object's values. Write a main( ) function that creates two CollegeCourse objects and displays their values.

3B. What is multiple inheritance? List the different ambiguities that can occur in multiple inheritance. With a program, explain any one ambiguity.

(6 + 4)

4A. What is a virtual destructor? Using an example, explain why it is needed.

4B. With a neat diagram, explain the class hierarchy provided by C++ for handling streams.

4C. Assume an integer variable containing the number 12345 is present in memory. Write a program to write this number to a file such that the same bit pattern is used to represent the number in the file. Also, read the number from the file to another variable and display it.

(4 + 3 + 3)

5A. What is operator overloading? List and explain any two reasons why operators are overloaded.

5B. Under what circumstances does overloading using friend functions become necessary? Explain with an example.

5C. Design a class called Job with three data members – Job number, time in hours to complete the job and per-hour rate charged for the job. Include a parameterized constructor and also a function to display the values. Overload the '+' operator so that it returns an integer that indicates the total time for two Jobs. Write a suitable main( ) function to demonstrate the above.

(3 + 2 + 5)

6A. Write a template function to swap two values. Use the swap function in main( ), to swap the values of two character variables.

6B. What are class templates? What is the need for class templates?

6C. Write a function to divide one integer by another. It should accept two parameters (integers) and return the result (integer). The function should throw an exception if the divisor is zero. Catch the exception in main( ) and display a suitable error message.

(3 + 2 + 5)

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