CBCS Scheme

16MCA22

Second Semester MCA Degree Examination, June/July 2017
Object Oriented Programming Using C++

Time: 3 hrs.   Max. Marks: 80

Note: Answer FIVE full questions, choosing one full question from each module.

Module-1

1   a. Explain the five basic data types of C++ along with their size in bits.   (04 Marks)
    b. What are const and volatile qualifiers? Give an example.   (04 Marks)
    c. Write a program to implement stack operations. Use constructor and destructor for the stack class.   (08 Marks)

OR

2   a. Explain the four principles of object oriented programming.   (04 Marks)
    b. Write a program which overloads a function for calculating the perimeter of geometrical figures like square, rectangle and triangle. The formulae for perimeter of a square is $4 \times$ side, for a rectangle is $2 \times$ (length + breadth) and for a triangle is sum of its three sides respectively.   (06 Marks)
    c. Explain the concept of a static data member and a static member function with a suitable example.   (06 Marks)

Module-2

3   a. Create a student class with three data members: student name, USN, percentage. Create an array of student objects, enter the details for the students and display the details.   (05 Marks)
    b. Explain the concept of pointer to an object with an example.   (05 Marks)
    c. What is a copy constructor? Give an example of initializing the elements of an integer array.   (06 Marks)

OR

4   a. Write a program to find the difference of two numbers using default arguments.   (04 Marks)
    b. Explain the usage of reference parameters with an example of swapping two numbers.
                                                                                      (06 Marks)
    c. Explain the usage of dynamic allocation operators new and delete with an example.
                                                                                      (06 Marks)

Module-3

5   a. Create a class called MATRIX using two dimensional array of integers. Implement the following operators by overloading: The operator = which checks the compatibility of two matrices to be subtracted. Overload the operator '−' for matrix subtraction as $m_3 = m_1 - m_2$ when ($m_1 = m_2$).   (08 Marks)
    b. Create a class called complex which has two data members real part, imaginary part. Implement a friend function for overloading '+' operator which can compute the sum of two complex numbers and the function returns the complex object.   (08 Marks)

OR

6 a. Create a base class base with two protected data members i and j and two public methods setij( ) and showij( ) to set the values of i and j and display the values of i and j respectively. Create a derived class which inherits base class as protected. Show how derived class object sets the values of i and j and display their values. **(08 Marks)**

   b. What is the need for a virtual base class? Show how a virtual base class eliminates ambiguity. **(08 Marks)**

Module-4

7 a. How is run time polymorphism implemented in C++? Create a base class with a function fun1( ) defined in it. Show how fun1( ) can be overriden during runtime. **(08 Marks)**

   b. What is a generic function? Write a generic function to implement bubble sort on an array of integers and an array of doubles in ascending order. **(08 Marks)**

OR

8 a. What is an exception? Handle the exception when a division by zero occurs. **(08 Marks)**

   b. Give an example for handling derived class exceptions. **(08 Marks)**

Module-5

9 a. Mention the four built in streams in C++. Give an example of setting two format flags in ios. **(05 Marks)**

   b. Give an example for creating our own manipulator function. **(05 Marks)**

   c. Create an inventory file and write 3 items and their respective costs in it. **(06 Marks)**

OR

10 a. Create a student file and enter 3 students data like their USN and total marks. **(05 Marks)**

    b. Explain the three foundational items of STL. Give one example of each. **(06 Marks)**

    c. Create a vector of char of size 10 and assign the values to the elements of vector. **(05 Marks)**

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