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# **Department of Computer Science & Engineering**

**QUESTION BANK FOR III SEMESTER (Term: Aug-Dec 2018)**

**C++ Laboratory (CSL37)**

**I.A. Marks: 50 Exam Hours: 03**

**Credits: 0:0:1 Exam Marks: 50**

**Develop the following programs using C++**

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|  | 1. Write and execute a C++ Program to display names, roll no’s, and grades of 3 students who have appeared in the examination. Create a class with data members as Name, Roll no and Marks for 3 subjects. Write a method to calculate the grade. Read and display the contents of an array using pointer to array of objects.   **NOTE: All the methods for a class need to be defined outside the class.** |
| 1. Write and execute a C++ program to solve the diamond problem. Suppose we have 2 classes B and C that derive from the same class A. We also have class D that derives from both B and C by using multiple inheritances.   **Hint: Use virtual base class** |
|  | * 1. Given that an EMPLOYEE class contains following members: data members: Employee number, Employee name, Basic, DA, IT, Net Salary .Write and execute a C++ program to read the data of N employee and compute Net salary of each employee (DA=52% of Basic and Income Tax (IT) =30% of the gross salary) using array of objects.   **NOTE: All the methods for a class need to be defined outside the class.** |
| * 1. Write and execute a C++ program to print the size of a file using C++ manipulators. |
|  | * 1. Write and execute a C++ program to create a class called '**COMPLEX**' to hold a complex number. Include a friend function to add and multiply two complex numbers. |
| * 1. Write a C++ program to create a class and overload **pre-increment** and **post-increment operator** for user-defined objects. |
|  | * 1. Write and execute a C++ program to implement bubble sort using class template. |
| * 1. Create a C++ class that includes constructors to do the following.  1. Create an uninitialized string. 2. Initialize an object with a string constant at the time of creation. 3. Create an object and initialize with another object.   Also write a function to concatenate two strings. |
|  | * 1. Write and execute a C++ program to create a class called '**TIME**' that has - three integer data members for hours, minutes and seconds - constructor to initialize the object to zero - constructor to initialize the object to some constant value - member function to add two TIME objects - member function to display time in HH:MM:SS format. Write a main function to create two TIME objects, add them and display the result in HH:MM:SS format. |
|  | * 1. Write and execute a C++ program to perform operations on list using STL to   i. Insert an Element at the Front&at the End  ii. Delete the Element at the Front&at the End  iii. Size of the List  iv. Remove Elements with Specific Values& duplicate values  v. Reverse the order of elements  vi. Merge& display Sorted Lists |
|  | * 1. Write and execute a C++ program to create a class called **STUDENT** with data members Usn, Name and Age. Using inheritance, create the classes **UGSTUDENT** and **PGSTUDENT** having fields as Semester, Fees and Stipend. Enter the data for at least 3 students. Find the semester wise average age for all UG and PG students. |
|  | 1. Write and execute a C++ program to implement stack with necessary exception handling. |
|  | * 1. Write and execute a C++ program that creates a binary file to hold student records. Read the data from the terminal which consists of Roll no., Name (a string of 30 or lesser no. of characters) and total marks for 3 subjects. Compute the grade and append it to the student record and display the complete record on terminal by reading the data from binary file. |
| * 1. Write a C++ program having student as an abstract class and create many derived classes such as Engineering, Science, medical etc. From the student class. Create their objects and process them. |
|  | * 1. Write and execute a C++ Program to find the Number of Lines in a Text File. |
|  | * 1. Write and execute a C++ program to implement the following inheritance.     Assume suitable data members and member functions for all the classes. Display the number of publications for a teacher and read three test marks in student class and display the percentage marks for a student in marks class. |
|  | * 1. Write and execute a C++ program to demonstrate the use of multiple try and catch blocks. Also demonstrate the re-throwing of the caught exceptions. |
| * 1. Write and execute a C++ program to consider a Bookshop which sells both book and video\_tapes, Create a class known as **MEDIA** that stores the Title and Price of publication then create two derived class, one for storing the number of pages in a book and another for storing the play time of the tape using the concept of pure virtual function and passing parameters to base class constructor. |
|  | * 1. Write and execute a C++ program to calculate volume of a BOX and Static member function **getCount( )** that returns the total number of objects after creating object. |
|  | * 1. Write and execute a C++ program using STL to   i. Insert an element into the vector  ii. Delete the last element from the vector  iii. Display the Size of vector  iv. Display the elements in vector  v. Clear the vector |
|  | * 1. Write and execute a C++ program to illustrate the order of execution of constructor and destructors using multiple inheritance and multilevel inheritance. |
|  | * 1. Write and execute a C++ program to Append the Content of a File at the end of another file. |
|  | * 1. Write and execute a C++ program using STL to   i. Insert an Element into the Map  ii. Delete the Element from the Map  iii. Find Element at a key in a Map  iv. Display value of an Element at a specific key  v. Size of the Map  vi. Display by using iterator |
| * 1. Write and execute a C++ program to read a paragraph from a text file and find the count of the vowels individually for each of the a, e, i, o and u for both the cases (Uppercase & Lowercase). Display the Count of the vowels individually and position at which they are found in another file. |

**Marks Distribution:**

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|  | **Write-Up** | **Execution** | **Viva** | **Change of Program** | **Total** |
| **Part – a** | **5 Marks** | **15 Marks** | **5 Marks** | **10 Marks** | **50 Marks** |
| **Part – b** | **5 Marks** | **20 Marks** |

**Note:**

* **The student has to execute one full question.**
* **In case of change of question the complete question has to be changed.**
* **In case of change of question 10Marks will be deducted and valued out of 40 only.**