Chapter 8 : Inheritance

Reference : E. Balaguruswamy Object Oriented Programming With C++; chapter-8.

Topics:

- **Topic 1: Basic of inheritance**
- **Topic 2: Single Inheritance**
- **Topic 3: Multilevel Inheritance**
- **Topic 4: Multiple Inheritance**
- **Topic 5: Hierarchical Inheritance**
- **Topic 6: Virtual Base Class**
- **Topic 7: Function overriding**
- **Topic 8: Programs**

Questions:

Topic 1: Basic of inheritance

1. What does inheritance mean in C++? Write down the importance of inheritance.
   or, What is reusability? How do you achieve this in C++?
2. Write down the advantages and disadvantages of inheritance.
3. Describe the visibility chart for inheritance.
   or, explain different visibility of inheritance.
   or, differentiate between public,private and protected inheritance with example.
4. When do we use protected visibility specifiers to a class member?
   or, What is protected use for?
5. Differentiate between private visibility modifier and protected visibility modifier?
6. What is containership? How does it differ from inheritance?
7. What are the different forms of inheritance? give an example for each.
   or,Describe multiple and multilevel inheritance with necessary figures.

Topic 2: Single Inheritance:

8. We know that a private member of a base class is not inheritable. Is it possible for the objects of a derived class to access the private members of the base class? If yes,how? Remember the base class can not be modified.

Topic 3: Multilevel Inheritance:

9. Write a C++ program to illustrate multilevel inheritance.
10. Describe the problem of multilevel inheritance.

Topic 4: Multiple Inheritance:

11. What is multiple inheritance? What is the syntax of multiple inheritance? When do we use multiple inheritance? Write a C++ program to illustrate multiple inheritance.
12. How can the ambiguity problem be handled in multiple inheritance?describe with an example.
13. What are the implications of the following two definitions?
    I. Class A : public B , private C { //……}
    II. Class A : public C , protected B { //……}

Topic 5: Hierarchical Inheritance:

14. Write a C++ program to illustrate hierarchical inheritance.
15. How do the properties of the following two derived classes differ:
    III. Class D1 : private B{ //……}
    IV. Class D2 : public B{ //……}

Topic 6: Virtual Base Class:

16. What is a virtual base class? When do we make a class virtual?
    Or, what is multipath inheritance?
    Or, when one base class **A** derives two classes **B , C** and these two classes derive one child class **D**,then what will happen? Is there any problem arise? Give your solution in this case.

Topic 7: Function overriding

17. What is function overriding? Explain with an example.
18. Differentiate between function overloading and function overriding.

Topic 8: Program:

19. Given the following base class:

```
class area_cl
{
   public:
      double height;
      double width;
};
```

Create two derived classes called rectangle and isosceles that inherit area_cl.Each class has a function area( ) that returns the area of a rectangle isosceles triangle,as appropriate.Use parameterized constructors to initialize height and width. Write the complete program.