Chapter 9 : Pointers,Virtual Function,Polymorphism

Reference : E. Balaguruswamy Object Oriented Programming With C++; chapter-9.

Topics:

- **Topic 1: Polymorphism**
- **Topic 2: this pointer**
- **Topic 3: Virtual function**
- **Topic 4: Pure virtual function**
- **Topic 5: Abstract class**
- **Topic 6: Program**

Questions:

Topic 1: Polymorphism

1. What is polymorphism? How do we achieve compile time polymorphism and runtime polymorphism?
2. Differentiate between compile time polymorphism and runtime polymorphism.
3. How polymorphism is achieved using function overloading?
4. How does polymorphism promote extensibility?

Topic 2: this pointer:

5. What is “this” pointer?Mention the application of “this” pointer.

Topic 3: Virtual function:

6. What is virtual function? Write down the rules of virtual function.
7. Write down the importance of virtual function.or, why do we need virtual function? or, how does a virtual function help to achieve the run time polymorphism?

Topic 4: Pure virtual function:

8. When do we make a virtual function “pure”.What are the implications of making a function pure virtual function?
9. Differentiate between virtual function and pure virtual function.

Topic 5: Abstract Class:

10. Define abstract base class.

Topic 6: Program:

11. Create an abstract base class called shape. Derive class rectangle from the base class shape and a class cube from the rectangle class.

    Data members: length , width - for class rectangle.
    height - for class cube.
    Member function: area( ),print( ) - for class rectangle.
    volume( ),print( ) - for class cube.

    Make function print( ) as virtual and declare as a pure virtual function in the base class.Write a main program to compute the area of the rectangle and volume of the cube and display the result using base class pointer.

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