Java OOP Interview Questions and Answers

1. What is abstraction?
Abstraction is the process of hiding internal implementation details and showing only the essential features of an object. It helps reduce complexity and increases efficiency.

2. Difference between interface and abstract class?
- An abstract class can have both abstract and concrete methods, while an interface only contains abstract methods (until Java 8).
- A class can extend one abstract class but can implement multiple interfaces.

3. Explain polymorphism with example.
Polymorphism means the ability of an object to take many forms. Example:
Method overriding and method overloading are types of polymorphism.

4. What is method overriding?
Method overriding occurs when a subclass provides a specific implementation of a method already defined in its parent class.

5. Explain “IS-A” vs “HAS-A” relationships.
- IS-A: represents inheritance (e.g., Dog IS-A Animal).
- HAS-A: represents composition (e.g., Car HAS-A Engine).

6. Why use inheritance?
Inheritance promotes code reusability and establishes a relationship between classes to organize code efficiently.

7. What is dynamic binding?
Dynamic binding (runtime polymorphism) occurs when a method call is resolved at runtime rather than compile time.

8. What is constructor chaining?
Constructor chaining is the process of calling one constructor from another constructor using 'this()' or 'super()'.

9. How to implement encapsulation?
By declaring class variables as private and providing public getter and setter methods to access and modify them.

10. Explain super keyword.
The 'super' keyword refers to the immediate parent class object. It is used to call parent class constructors, methods, or variables.