Interview Questions

JAVA-112: Session 4 - Inheritance

Answering interview questions is crucial in your journey of applied learning. Review them to ensure your understanding of important topics covered in the previous session and to prepare yourself for upcoming challenges. Remember that it's important to answer these questions on your own before viewing the solution. The solutions are hyperlinked to community posts on our platform.

**Note: The questions below have been sourced from previous interviews**

Questions

1. [Explain Inheritance.](https://crio.do/learn/crio-community/topic/explain-inheritance/169167)
2. [Difference between final and static keywords in Java](https://crio.do/learn/crio-community/topic/difference-between-final-and-static-keywords-in-java/169170).
3. [What are the different types of inheritance?](https://crio.do/learn/crio-community/topic/what-are-the-different-types-of-inheritance/188090)
4. [During inheritance, which will be inherited - public, private, protected. What are Collections? Can you name a few classes/interfaces in the Collections packag](https://www.crio.do/learn/crio-community/topic/during-inheritance-which-will-be-inherited-public-private-protected-what-are-collections-can-you-name-a-few-classes-interfaces-in-the-collections-package/180436/)
5. [e?](https://www.crio.do/learn/crio-community/topic/during-inheritance-which-will-be-inherited-public-private-protected-what-are-collections-can-you-name-a-few-classes-interfaces-in-the-collections-package/180436/)
6. [What are packages in Java?](https://www.crio.do/learn/crio-community/topic/what-are-packages-in-java/188095/)
7. [What are the different types of methods in inheritance?](https://crio.do/learn/crio-community/topic/what-are-the-different-types-of-methods-in-inheritance/188091)
8. [What are static methods and how are they used?](https://crio.do/learn/crio-community/topic/what-are-static-methods-and-how-are-they-used/252723)
9. [What is a static block and when is it executed?](https://crio.do/learn/crio-community/topic/what-is-a-static-block-and-when-is-it-executed/252724)
10. [What is the super keyword in Java?](https://crio.do/learn/crio-community/topic/what-is-the-super-keyword-in-java/252770)
11. [What is multiple inheritance? Does Java support multiple inheritance?](https://crio.do/learn/crio-community/topic/what-is-multiple-inheritance-does-java-support-multiple-inheritance/252772)
12. [Can you explain single inheritance and multiple inheritance?](https://crio.do/learn/crio-community/topic/can-you-explain-single-inheritance-and-multiple-inheritance/252820)
13. [What is the difference between extends and implements in Java?](https://crio.do/learn/crio-community/topic/what-is-the-difference-between-extends-and-implements-in-java/252821)
14. [How do static variables differ from instance variables in Java?](https://crio.do/learn/crio-community/topic/how-do-static-variables-differ-from-instance-variables-in-java/252941)
15. [Can you provide an example of a static variable and explain its usage?](https://crio.do/learn/crio-community/topic/can-you-provide-an-example-of-a-static-variable-and-explain-its-usage/252942)
16. [Can we override static methods in Java?](https://crio.do/learn/crio-community/topic/can-we-override-static-methods-in-java/252725)

**1. Explain Inheritance.**

Inheritance is an **OOP concept** where one class (**child/subclass**) acquires properties and methods from another class (**parent/superclass**).

* Promotes **code reuse** and **method overriding** for polymorphism.
* Syntax:

java

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class Parent { ... }

class Child extends Parent { ... }

**2. Difference between final and static keywords in Java.**

| **Aspect** | **final** | **static** |
| --- | --- | --- |
| Meaning | Used to declare constants, prevent method overriding, and inheritance | Belongs to the class rather than an object |
| Usage with variables | Value can’t be changed once assigned | Single copy shared by all objects |
| Usage with methods | Cannot be overridden | Can be called without creating an object |
| Usage with classes | Cannot be inherited | Not applicable |

**3. Different types of inheritance in Java.**

* **Single Inheritance** – One class inherits another.
* **Multilevel Inheritance** – Inheritance in multiple steps (A → B → C).
* **Hierarchical Inheritance** – Multiple classes inherit from one parent.
* **Multiple Inheritance (via Interfaces)** – A class implements multiple interfaces.
* **Hybrid Inheritance (via Interfaces)** – Combination of above, using interfaces to avoid ambiguity.

**4. During inheritance, which members are inherited?**

* **Public** → Inherited and accessible everywhere.
* **Protected** → Inherited and accessible in subclass (even in different packages).
* **Default (package-private)** → Inherited only if subclass is in same package.
* **Private** → **Not** inherited (but accessible through public/protected getters/setters).

**5. What are Collections? Examples?**

Collections in Java are **frameworks** that provide **architecture for storing and manipulating groups of objects**.

* Interfaces: List, Set, Queue, Map.
* Classes: ArrayList, HashSet, LinkedList, PriorityQueue, HashMap.

**6. What are packages in Java?**

Packages are **namespaces** that organize related classes and interfaces into a directory structure.

* Example: java.util, java.io, java.sql.
* Custom packages can be created with:

java

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package mypack;

**7. Different types of methods in inheritance.**

* **Inherited methods** – Directly available from parent.
* **Overridden methods** – Modified in subclass.
* **Abstract methods** – Implemented in subclass if parent is abstract.
* **Static methods** – Shared, not overridden (hidden instead).

**8. What are static methods and how are they used?**

* Declared with static keyword.
* Belong to the **class**, not the instance.
* Called without creating objects:

java

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Math.max(5, 10);

**9. What is a static block and when is it executed?**

* A block with static { ... } inside a class.
* Runs **once when the class is loaded** into memory.
* Example:

java

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static {

System.out.println("Class loaded!");

}

**10. What is the super keyword in Java?**

* Refers to **immediate parent class**.
* Used to:
  1. Call parent constructor (super() must be first line).
  2. Access parent methods.
  3. Access parent fields.

**11. What is multiple inheritance? Does Java support it?**

* Multiple inheritance: A class inherits from **more than one parent**.
* **Java doesn’t support it with classes** to avoid **diamond problem**, but **supports via interfaces**.

**12. Single vs Multiple Inheritance.**

* **Single**: One child → one parent (class A extends B).
* **Multiple**: One child → multiple parents (class A implements I1, I2).

**13. Difference between extends and implements.**

* extends: Used for **class-to-class** (or interface-to-interface) inheritance.
* implements: Used for **class-to-interface** implementation.

**14. Static vs Instance variables.**

| **Static Variable** | **Instance Variable** |
| --- | --- |
| One copy shared by all objects | Each object has its own copy |
| Belongs to class | Belongs to instance |
| Declared with static keyword | Declared normally |

**15. Example of static variable usage.**

java

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class Counter {

static int count = 0;

Counter() { count++; }

}

* All objects share the same count variable.
* Useful for tracking number of objects.

**16. Can we override static methods in Java?**

* **No**.
* They are **hidden**, not overridden.
* Method resolution happens at **compile time**, not runtime.