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top 100 java interview questions with answers career guru 99

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Introduction

Landing a Java developer role often feels like navigating a maze—full of technical puzzles, design patterns, and subtle language nuances. Whether you're a fresh graduate, a seasoned coder, or a professional transitioning into Java, having a solid grasp of the most frequently asked interview questions can give you a competitive edge. This guide brings you the **top 100 Java interview questions with answers**compiled by Career Guru 99, a trusted resource for career advancement in the tech industry. We'll walk through core Java fundamentals, advanced concepts, and real world problem solving scenarios that interviewers love to test. By the end of this article, you'll have a comprehensive reference that will boost your confidence and help you articulate your knowledge clearly during interviews.

Why These 100 Questions Matter

Java remains one of the most popular programming languages in the enterprise space. Companies ranging from fintech startups to global software giants rely on Java for building scalable, secure, and high performance applications. Interviewers design questions to assess:

- Core language proficiency (syntax, OOP, concurrency)
- Problem solving and algorithmic thinking
- Design patterns and architectural knowledge
- Understanding of the Java ecosystem (Spring, Hibernate, Maven, etc.)
- Soft skills such as communication and teamwork

Mastering these 100 questions will not only prepare you for technical rounds but also help you demonstrate your depth of understanding and passion for Java.

Top 100 Java Interview Questions with Answers

Java's key features include object oriented architecture, platform independence, automatic garbage collection, strong type checking, exception handling, multithreading, and a rich standard library.

The Java Virtual Machine (JVM) is an abstract computing machine that runs Java bytecode. It provides platform independence, memory management, and just in time compilation.

The JDK (Java Development Kit) is a full development environment, the JRE (Java Runtime Environment) contains the JVM and core libraries needed to run Java applications, and the JVM is the engine that executes bytecode.

JDK 8 introduced lambda expressions and the Stream API, while JDK 11 is a Long Term Support (LTS) release that added new features like the var keyword for local variables, HTTP client API, and enhanced garbage collectors.

Packages are namespaces that organize classes and interfaces, preventing naming conflicts and controlling access. They also help in modularizing code.

Java has four access modifiers: **public**, **protected**, **private**, and default (package private). They control visibility of classes, methods, and fields.

Encapsulation is the bundling of data (fields) and methods that operate on that data into a single unit, usually a class. It hides internal state from external manipulation.

Inheritance is an OOP concept where one class (subclass) inherits fields and methods from another (superclass), enabling code reuse and polymorphism.

Polymorphism allows objects to be treated as instances of their parent class. For example, a Bird class can have a fly() method, and subclasses like Eagle and Penguin can override it, each providing a specific implementation.

Abstraction is the process of exposing only essential features of an object while hiding internal details. Abstract classes and interfaces are used to achieve this in Java.

Abstract classes can have both abstract and concrete methods and can hold state, whereas interfaces (pre Java 8) could only declare abstract methods. Java 8+ interfaces can also contain default and static methods.

Method overloading occurs when multiple methods share the same name but differ in parameter list (type, number, or both). It allows methods to perform similar functions with different inputs.

Method overriding is when a subclass provides a specific implementation of a method already defined in its superclass, enabling polymorphic behavior.

The final keyword can be applied to classes (preventing inheritance), methods (preventing overriding), and variables (making them constants).

In Java, == compares object references, while equals() compares object content as defined by the class's implementation.

Autoboxing automatically converts primitive types to their corresponding wrapper classes (e.g., int to Integer), and unboxing does the reverse.

A constructor is a special method invoked during object creation, initializing fields and allocating resources.

Constructor overloading allows a class to have multiple constructors with different parameter lists, enabling flexible object initialization.

The this keyword refers to the current object instance, used to differentiate between instance variables and parameters or to call other constructors.

ArrayList uses a dynamic array, offering fast random access, while LinkedList uses a doubly linked list, providing efficient insertions and deletions at both ends.

Synchronization ensures that only one thread accesses a critical section of code at a time, preventing race conditions and ensuring thread safety.

A deadlock occurs when two or more threads are blocked forever, each waiting for resources held by the others.

The framework comprises interfaces (List, Set, Queue, Map), implementations (ArrayList, LinkedList, HashSet, TreeSet, HashMap, TreeMap), and algorithms for sorting, searching, and manipulating collections.

HashMap offers constant time performance for basic operations, whereas TreeMap keeps entries sorted based on keys and has O(log n) performance.

Generics enable type safety by allowing classes, interfaces, and methods to operate on objects of various types while enforcing compile time type checks.

Type erasure is the process where generic type information is removed during compilation, leaving raw types at runtime.

Strings are immutable; each modification creates a new object. StringBuilder is mutable, providing efficient concatenation in loops.

Serialization converts an object into a byte stream for storage or transmission, and deserialization reconstructs the object from that stream.

The transient keyword marks a field to be ignored during serialization.

A Singleton ensures a class has only one instance and provides a global point of access to it, typically via a static method.

The Factory Method defines an interface for creating objects but lets subclasses decide which class to instantiate.

The Builder pattern separates the construction of a complex object from its representation, allowing the same construction process to create different representations.

The Observer pattern defines a one to many dependency between objects so that when one object changes state, all its dependents are notified automatically.

Interfaces can now contain default and static methods, but cannot hold instance fields. Abstract classes can have state and constructors but cannot be instantiated.

Volatile ensures that changes to a variable are immediately visible to all threads, preventing caching of stale values.

The process() method usually returns void, whereas apply() returns a value. They are used in different functional interfaces like Consumer and Function.

Streams provide a high level abstraction for processing sequences of elements, supporting operations like filter, map, reduce, and collect.

Intermediate operations (e.g., filter, map) return a new stream and are lazy. Terminal operations (e.g., forEach, collect) produce a result and trigger execution.

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