Java Interview Questions and Answers

Q1. What is Java?

Answer: Java is a high-level, object-oriented programming language that is platform-independent.

Q2. What are the features of Java?

Answer: Platform independent, object-oriented, secure, robust, multithreaded, portable.

Q3. What is JVM?

Answer: Java Virtual Machine executes Java bytecode and makes Java platform-independent.

Q4. What is JDK?

Answer: Java Development Kit is a software package with tools for developing and running Java programs.

Q5. What is JRE?

Answer: Java Runtime Environment provides libraries, JVM, and other components to run applications.

Q6. What is the difference between JDK, JRE, and JVM?

Answer: JDK = development tools + JRE, JRE = libraries + JVM, JVM = executes bytecode.

Q7. What are the data types in Java?

Answer: Primitive types (int, char, boolean, etc.) and non-primitive types (arrays, classes, interfaces).

Q8. What is the difference between primitive and non-primitive data types?

Answer: Primitive are basic types, non-primitive are objects with methods.

Q9. What is a class in Java?

Answer: A class is a blueprint for objects that defines fields and methods.

Q10. What is an object in Java?

Answer: An object is an instance of a class with its own state and behavior.

Q11. What is inheritance in Java?

Answer: Inheritance allows a class to inherit fields and methods from another class.

Q12. What are types of inheritance in Java?

Answer: Single, Multilevel, Hierarchical. Java does not support multiple inheritance using classes.

Q13. What is polymorphism in Java?
Answer: Polymorphism allows performing a single action in different ways (overloading and overriding).

Q14. What is method overloading?
Answer: Method overloading allows multiple methods with the same name but different parameter lists.

Q15. What is method overriding?
Answer: Method overriding occurs when a subclass provides a specific implementation of a method from its superclass.

Q16. What is encapsulation in Java?
Answer: Encapsulation is bundling data (fields) and methods into a single unit (class).

Q17. What is abstraction in Java?
Answer: Abstraction hides implementation details and shows only functionality using abstract classes and interfaces.

Q18. What is an interface in Java?
Answer: An interface is a collection of abstract methods and constants that a class can implement.

Q19. What is the difference between abstract class and interface?
Answer: Abstract class can have both abstract and concrete methods, interface only abstract (till Java 7). Java 8+ allows default and static methods in interfaces.

Q20. What is the difference between final, finally, and finalize?
Answer: final = keyword for constants, finally = block for cleanup in try-catch, finalize() = method called before garbage collection.

Q21. What is the difference between == and .equals()?
Answer: == compares references, .equals() compares object values.

Q22. What is a constructor in Java?
Answer: A constructor initializes objects when they are created.

Q23. What are types of constructors in Java?
Answer: Default constructor and parameterized constructor.

Q24. What is the difference between constructor and method?
Answer: Constructor initializes objects and has no return type, method defines behavior and has a return type.

Q25. What is static keyword in Java?
Answer: static means the variable, method, or block belongs to the class rather than an instance.

Q26. What are static methods?
Answer: Methods that belong to the class, not objects, and can be called without creating an instance.

Q27. What is the difference between this and super?
Answer: this refers to the current object, super refers to the parent class object.

Q28. What is exception handling in Java?
Answer: Exception handling handles runtime errors using try, catch, throw, throws, and finally.

Q29. What is the difference between checked and unchecked exceptions?
Answer: Checked exceptions are checked at compile time, unchecked exceptions occur at runtime.

Q30. What is a try-catch block?
Answer: try contains risky code, catch handles exceptions.

Q31. What is throw and throws in Java?
Answer: throw is used to throw an exception, throws declares exceptions in method signature.

Q32. What is garbage collection in Java?
Answer: Garbage collection automatically removes unused objects from memory.

Q33. What is multithreading in Java?
Answer: Multithreading allows concurrent execution of multiple threads.

Q34. What is synchronization in Java?
Answer: Synchronization ensures that only one thread accesses a resource at a time.

Q35. What is the difference between process and thread?
Answer: Process is an independent program, thread is a lightweight unit of a process.

Q36. What are access modifiers in Java?
Answer: public, private, protected, and default.

Q37. What is the difference between public, private, and protected?
Answer: public = accessible everywhere, private = within class only, protected = within package and subclasses.

Q38. What is the difference between Array and ArrayList?
Answer: Array has fixed size, ArrayList is dynamic and part of Collection framework.

Q39. What is the difference between HashMap and Hashtable?
Answer: HashMap is non-synchronized, allows null keys/values; Hashtable is synchronized and doesn't allow nulls.

Q40. What is the difference between HashSet and TreeSet?

Answer: HashSet stores elements unordered, TreeSet stores them in sorted order.

Q41. What is the difference between String, StringBuilder, and StringBuffer?

Answer: String is immutable, StringBuilder and StringBuffer are mutable (StringBuffer is thread-safe).

Q42. What is the difference between abstract class and concrete class?

Answer: Abstract class cannot be instantiated, concrete class provides full implementation and can be instantiated.

Q43. What is the difference between compile-time and runtime polymorphism?

Answer: Compile-time polymorphism = method overloading, runtime polymorphism = method overriding.

Q44. What is JDBC?

Answer: Java Database Connectivity is an API to connect and execute queries with databases.

Q45. What is serialization in Java?

Answer: Serialization is converting an object into a byte stream for storage or transmission.

Q46. What is deserialization in Java?

Answer: Deserialization is reconstructing an object from a byte stream.

Q47. What is a package in Java?

Answer: A package is a collection of related classes and interfaces organized together.

Q48. What is the difference between throw and Throwable?

Answer: throw is a keyword, Throwable is the superclass of all exceptions and errors.

Q49. What is the difference between LinkedList and ArrayList?

Answer: ArrayList is faster for accessing, LinkedList is faster for insertions and deletions.

Q50. What is the difference between Comparable and Comparator?

Answer: Comparable provides natural ordering via compareTo(), Comparator provides custom ordering via compare().

Q51. What are lambda expressions in Java?

Answer: Introduced in Java 8, lambda expressions provide a way to implement functional programming with concise syntax.