

Core Java Interview Questions & Answers

Q1. What is JVM, JDK, JRE?

- JVM: Executes Java bytecode, platform-independent.
- JRE: JVM + libraries for running Java apps.
- JDK: JRE + development tools.

Q2. What is JIT Compiler?

- Just-In-Time Compiler, part of JVM.
- Converts bytecode to native machine code at runtime for performance.

Q3. Is Java interpreted or compiled language?

- Both. Code is compiled into bytecode, then interpreted/compiled by JVM.

Q4. Data types in Java?

- Primitive (8): byte, short, int, long, float, double, char, boolean.
- Non-primitive: String, Arrays, Classes, Interfaces.

Q5. Primitive vs Non-Primitive?

- Primitive: Fixed size, predefined, stored in stack.
- Non-Primitive: Created by user, dynamic size, stored in heap.

Q6. Difference between double and float?

- float: 4 bytes, 7 digits precision.
- double: 8 bytes, 15 digits precision.

Q7. What is type casting and types?

- Converting one data type to another.
- Widening (implicit): int → double.
- Narrowing (explicit): double → int.

Q8. What is narrowing vs widening?

- Widening (safe): byte → short → int → long → float → double.
- Narrowing (unsafe): double → float → long → int → short → byte.

Q9. What are arrays in Java?

- Collection of same-type elements, stored in contiguous memory.

Q10. Types of arrays?

- 1D Array, 2D Array, Jagged Array.

Q11. Prime number program:

```
public class PrimeCheck {  
    public static void main(String[] args) {  
        int num = 29, flag = 0;  
        for (int i = 2; i <= num / 2; i++) {  
            if (num % i == 0) { flag = 1; break; }  
        }  
        if (flag == 0) System.out.println(num + " is Prime");  
        else System.out.println(num + " is Not Prime");  
    }  
}
```

Q12. Swap without third variable:

```
public class SwapNumbers {  
    public static void main(String[] args) {  
        int a = 5, b = 10;  
        a = a + b;  
        b = a - b;  
        a = a - b;  
        System.out.println("a=" + a + ", b=" + b);  
    }  
}
```

Q13. What is String?

- Sequence of characters, immutable, stored in heap/SCP.

Q14. What is String Constant Pool?

- Memory region inside heap where string literals are stored.
- Ensures memory efficiency by reusing literals.