

1. What is method overloading?

Method overloading allows defining multiple methods with the same name but different parameters in the same class, improving readability and enabling compile-time polymorphism.

2. How do you handle divide-by-zero?

Divide-by-zero is handled using a try-catch block to catch `ArithmeticException` and prevent program termination.

3. Difference between `==` and `.equals()`?

`==` compares object references, while `.equals()` compares the actual content or values of objects.

4. What are the basic data types in Java?

Java has eight primitive data types: byte, short, int, long, float, double, char, and boolean.

5. How is Scanner used for input?

The Scanner class is used to read input from various sources such as the keyboard, console, or files.

6. Explain the role of a loop.

A loop repeatedly executes a block of code until a specified condition is met, reducing redundancy.

7. Difference between while and for loop?

A for loop is used when the number of iterations is known, whereas a while loop is used when it is unknown and depends on a condition.

8. What is the JVM?

The Java Virtual Machine executes Java bytecode, converting it into machine-specific code and ensuring platform independence.

9. How is Java platform-independent?

Java is platform-independent because its code is compiled into bytecode, which runs on any system that has a JVM.

10. How do you debug a Java program?

Debugging can be done by using print statements or an IDE debugger to trace variables, set breakpoints, and analyze code flow.