Quick Guide: C Language vs Java

This quick guide highlights the key differences and similarities between C and Java. It will help you stay confident in interviews by showing clear points about C in comparison to Java.

1. Language Type

- C is a **procedural programming language**.
- Java is an **object-oriented programming language**.

2. Memory Management

- C uses manual memory management with malloc() and free().
- Java uses automatic garbage collection for memory management.

3. Platform Dependency

- C is platform dependent — compiled programs run only on the same OS.
- Java is platform independent — 'Write Once, Run Anywhere' via JVM.

4. Compilation and Execution

- C programs are compiled directly to machine code (faster execution).
- Java programs are compiled to bytecode and executed by the JVM (slightly slower).

5. Syntax and Features

- C supports functions but not classes or objects.
- Java supports classes, objects, inheritance, polymorphism, etc.

6. Libraries and Usage

- C has limited standard libraries (mainly for system-level programming).
- Java has a rich API and libraries for web, mobile, and enterprise applications.

7. Pointers and Security

- C allows pointers, giving direct memory access (can cause security risks).
- Java does not support explicit pointers, making it more secure.

8. Typical Use Cases

- C is used for operating systems, embedded systems, and low-level programming.

- Java is used for enterprise software, Android apps, and web applications.

■ In short, C is closer to hardware and best for system-level programming, while Java is high-level, secure, and widely used for large-scale applications.