Newest features of Latest version of JAVA

The latest version of java is Java 24 (JDK 24) as of March 18,2025.

Key features are:-

1) **Stream Gatherers (JEP 485) -**

   Introduces a new API for creating custom intermediate stream operations, making it easier to implement operations like sliding windows, batching, etc., in a declarative, composable way.

2) **Synchronize Virtual Threads Without Pinning (JEP 491)** -

   Resolves a limitation where virtual threads (from Java 21's Project Loom) couldn't behave optimally inside synchronized blocks.
   Allows virtual threads to release their underlying OS-thread (carrier) even when using synchronization, improving throughput

3) **Ahead-of-Time (AOT) Class Loading & Linking (JEP 483) -**

   Enhances startup times by preloading and linking classes before runtime, reducing application launch latency.

4) **Compact Object Headers (JEP 450) — Experimental**

   Shrinks object header size (in 64-bit JVM) from ~12–16 bytes down to 8 bytes, reducing memory footprint and improving cache performance for object-heavy applications.

5) **Generational Shenandoah GC (JEP 404) — Experimental**

   Adds a generational mode to Shenandoah GC (separating young/old generation), intended to improve GC performance characteristics without replacing the non-generational mode