

AGENDA

Combined Training Java 17, 21 & 25 – Compact: Records, Virtual Threads, Stream Gatherers & All New Features from Java 12 to 25

5 days · Individual date · On-site or online · German / English · Customizable agenda · Certificate of completion

Part 1: Java 12-17

Major Features:

- switch Expressions
- Text Blocks
- Records
- Pattern Matching for instanceof
- Sealed Classes
- Strongly Encapsulate JDK Internals

Additional Enhancements:

- Helpful NullPointerExceptions
- Hidden Classes
- Warnings for value-based classes
- Context-specific deserialization filters

API Improvements:

- New String methods
- New Stream methods
- New Files methods
- New ByteBuffer methods
- The Teeing collector
- Hex formatting and parsing utility

Garbage Collection:

- Improvements to G1 and Parallel GC
- New: ZGC and Shenandoah
- Elastic Metaspace

Performance:

- Default and dynamic CDS archives
- Non-volatile mapped byte buffers
- Specialized TreeMap implementations
- Decoupling of Compressed Oops and Compressed Class Pointers

Tools:

- JFR event streaming
- Packaging tool

Deprecations:

- Thread suspend(), resume()
- ThreadGroup stop(), destroy(), isDestroyed(), setDaemon(), and isDaemon()
- Biased locking
- And more...

Part 2: Java 18-21

Major Features:

- Virtual Threads
- Sequenced Collections
- Record Patterns
- Pattern Matching for switch

Additional Features:

- UTF-8 by default
- Simple web server
- Code snippets in Java API documentation
- New system properties for System.out and System.err encoding
- Compiler warnings for lossy type casts
- Key Encapsulation Mechanism API

Bugfixes:

- IdentityHashMap's remove() and replace() methods use object identity

API Enhancements:

- New methods for String, StringBuilder, and StringBuffer
- New methods for Character
- New methods for Math
- HashMap.newHashMap()
- Additional date-time formats

Garbage Collection:

- String deduplication for ZGC, SerialGC, ParallelGC
- G1 enhancements
- Generational ZGC

Performance:

- Generational ZGC
- Alternative fast-locking scheme

Part 3: Java 22-25

Major Features:

- Unnamed Variables & Patterns
- Foreign Function & Memory API
- Markdown Documentation Comments
- Stream Gatherers
- Synchronize Virtual Threads without Pinning
- Scoped Values
- Compact Source Files and Instance Main Methods

Other New Features:

- Module Import Declarations
- Launch multi-file source-code programs
- Console methods with explicit Locale
- Class-File API
- Key Derivation Function API

API Enhancements:

- Locale-dependent list patterns
- Support for Duration until another Instant

Garbage Collection:

- G1 GC improvements
- ZGC: Generational mode by default

Deprecations & Removals:

- Deprecate finalization for removal
- Locale constructors
- URL constructors
- Thread.stop(), suspend(), resume()
- ThreadGroup
- Dynamic loading of agents

Performance / Memory Footprint:

- Compact Object Headers
- Ahead-of-Time Class Loading & Linking
- Relax alignment of array elements
- Change LockingMode default from LM_LEGACY to LM_LIGHTWEIGHT
- Linking run-time images without JMODs

Deprecations & Removals:

- Thread.countStackFrames()
- Old core reflection implementation
- Deprecations and removals in sun.misc.Unsafe
- Thread.suspend(), resume() und ThreadGroup.suspend(), resume(), stop()
- Security Manager

Looking Ahead:

- Primitive Types in patterns, instanceof, and switch
- Stable Values
- Vector API
- Structured Concurrency