

# What's new in JavaDoc?

New features since JDK 17

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# About me

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# Agenda

- 1 JavaDoc Overview
- 2 History and Timeline
- 3 New Features in Depth
- 4 Demo

# JavaDoc Team

- Hannes Wallnoefer
- Nizar Benalla
- Jonathan Gibbons (emeritus)
- Pavel Rappo

With contributions from Joe Darcy, Jan Lahoda, Chen Liang, Christian Stein, Alex Buckley, Maurizio Cimadamore...

# JavaDoc Overview

- javadoc command line tool
- jdk.javadoc module
  - Doclet API (exported)
    - Write custom Doclets and Taglets
  - Tool and Standard Doclet implementation (internal)
    - Turn code into HTML5 documentation
  - Service interface to invoke JavaDoc tool programmatically
  - Relies on other JDK/Java SE APIs such as `javax.lang.model.*`

# JavaDoc History

- Part of Java since the beginning
- There used to be Doclets for other formats (e.g. DocBook XML)
- These days it's HTML5 (Standard Doclet)
  - But Doclet API is still there to enable other things

# Anatomy of a JavaDoc Comment

```
/**  
 * Returns a list of items added by {@link #add(Item)}.  
 *  
 * @return a list of items  
 * @since 1.5  
 */  
public List<Item> retrieve();
```

- Main description
- Block tags
- Inline tags

# Timeline

Release	Features	Issue/JEP
JDK 17	Summary Page for New APIs	<a href="#">JDK-8265055</a>
JDK 18	Code Snippets	<a href="#">JEP 413</a>
JDK 19	Search Enhancements (Multiple Search Terms, Search Page)	<a href="#">JDK-8283640</a> , <a href="#">JDK-8291533</a>
JDK 20	Summary Page for External Specifications & @spec tag CSS Themes	<a href="#">JDK-8264740</a> <a href="#">JDK-8289334</a>
JDK 21	JavaDoc Output Specification	<a href="#">JDK-8274665</a>

# Timeline (continued)

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Release	Features	Issue/JEP
JDK 22	Directed Inheritance with {@inheritDoc}	<a href="#"><u>JDK-8287152</u></a>
JDK 23	Markdown (JEP 467), Navigation Improvements (JDK-8320458)	<a href="#"><u>JEP 467</u></a> <a href="#"><u>JDK-8325167</u></a>
JDK 24+	UI Refinements, DocLint Improvements, Enhanced public API...	

# API Summary Pages

- **Deprecated API**
  - Controlled via `@java.lang.Deprecated` or `@deprecated` JavaDoc tag
- **New API**
  - Controlled via `@since` JavaDoc tag
- **External Specifications**
  - Controlled via `@spec` tag
- **Preview API, Restricted Methods**
  - JDK/Java SE specific features

# Summary Page for Deprecated API

OVERVIEW TREE PREVIEW NEW **DEPRECATED** INDEX SEARCH HELP Java SE 23 & JDK 23

Search

## Deprecated API

Show API deprecated in:  12  13  14  15  16  17  18  19  20  21  23  other  all

### Contents

- Terminally Deprecated
- Exception Classes
- Fields
- Methods
- Constructors

### Terminally Deprecated Elements

Element ↕	Deprecated in ↕	Description
<code>java.lang.Enum.finalize()</code>	18	Finalization has been deprecated for removal. See <code>Object.finalize()</code> for background information and details about migration options.

# Summary Page for New API

OVERVIEW TREE PREVIEW **NEW** DEPRECATED INDEX SEARCH HELP Java SE 23 & JDK 23

Search

## New API since JDK 11

Show API added in:  12  13  14  15  16  17  18  19  20  21  22  23  all

### Contents

- Packages
- Interfaces
- Classes
- Enum Classes
- Exception Classes
- Fields
- Methods
- Constructors
- Enum Constants

### New Packages

Package ↕	Added in ↕	Description
<code>java.lang.classfile<sup>PREVIEW</sup></code>	22	Provides classfile parsing, generation, and transformation library.
<code>java.lang.classfile.attribute<sup>PREVIEW</sup></code>	22	Provides interfaces describing classfile attributes for the <code>java.lang.classfile<sup>PREVIEW</sup></code> library.

# Summary Page for Preview API

OVERVIEW TREE **PREVIEW** NEW DEPRECATED INDEX SEARCH HELP Java SE 23 & JDK 23

Search

## Preview API

Show preview API for:

- 466: ClassFile API (Second Preview) <sup>↗</sup>
- 473: Stream Gatherers (Second Preview) <sup>↗</sup>
- 476: Module Import Declarations (Preview) <sup>↗</sup>
- 477: Implicitly Declared Classes and Instance Main Methods (Third Preview) <sup>↗</sup>
- 480: Structured Concurrency (Third Preview) <sup>↗</sup>
- 481: Scoped Values (Third Preview) <sup>↗</sup>
- Toggle all

## Contents

Classes  
Methods

**Classes**

Class ↕	Preview Feature ↕	Description
<code>java.io.IO<sup>PREVIEW</sup></code>	Implicitly Declared Classes and Instance Main Methods	A collection of static convenience methods that provide access to <a href="#">system console</a> for implicitly declared classes.

# Options for API Summary Pages

- **Deprecated API**

- Enabled by default
- Disable with `-nodeprecated` option

- **New API**

- Enable with `-since` and `-since-label` options:

```
javadoc -since 1.0,1.1,1.2,1.3 -since-label "New API since Release 1.0"
```

- Use `-nosince` option to ignore all `@since` tags

# Snippets

- Convenient way to add example code without using HTML

```
{@snippet :  
    public static void main(String... args) {  
        System.out.println("Hello, World!");  
    }  
}
```

```
public static void main(String... args) {  
    System.out.println("Hello, World!");  
}
```



# Snippet Features: Markup

- Highlight, Link, Replace

```
{@snippet lang=java :  
    b.flip();    // @link substring=flip target=#flip  
    b.limit(42); // @highlight substring=42  
}
```

```
b.flip();  
b.limit(42);
```



# Snippet Features: Inline, External and Hybrid Snippets

- Store snippets in `snippet-files` directory
- Refer by filename and optional region:

```
{@snippet class=ExternalSnippet }  
{@snippet class=ExternalSnippet region=print }
```

- Separate main and snippet code
- Make snippet code testable

# Snippet Features: Metadata

- Snippets know about their content type
  - You can tell them using the lang attribute
  - Default is lang=java
- Just add syntax highlighting JS and CSS

```
// Syntax highlighting FTW!  
public void sayHello(String name) {  
    System.out.println("Hello " + name);  
}
```



# Search Improvements

- Multiple search terms

“compute fun”



`Map.computeIfAbsent(K, Function)`

- CamelCase search

“HM cont”



`HashMap.containsKey(Object)`

# Search Features

- Tags to create searchable items
  - `{@index}`
  - `{@systemProperty}`
  - `{@spec}`
- HTML Headers in doc comments are added to the search index

# Search Page

- Static search page allows linking to search results
- Can be used as Bookmarklet

## Search

[Reset](#)[▶ Additional resources](#)

Found 173 results

[Classes and Interfaces \(33\)](#)[Members \(71\)](#)[Packages \(3\)](#)[Modules \(2\)](#)[Search Tags \(64\)](#)

### Module

### Package

java.net.http

java.net.**http**

jdk.httpserver

com.sun.net.**httpserver**

jdk.httpserver

com.sun.net.**httpserver.spi**

# New Navigation Features

- Table of Contents
- Breadcrumb navigation

OVERVIEW **CLASS** USE TREE PREVIEW NEW DEPRECATED INDEX SEARCH HELP

Java SE 24 & JDK 24  
DRAFT 24-ea+35-3640

java.base > java.util > **TreeMap**

Search

Contents

**Description**

- Nested Class Summary
- Constructor Summary
- Method Summary
- Constructor Details
  - TreeMap()
  - TreeMap(Comparator)
  - TreeMap(Map)
  - TreeMap(SortedMap)
- Method Details
  - size()
  - containsKey(Object)

## Class **TreeMap**<K,V>

java.lang.Object  
java.util.AbstractMap<K,V>  
java.util.TreeMap<K,V>

**Type Parameters:**

- K - the type of keys maintained by this map
- V - the type of mapped values

**All Implemented Interfaces:**

Serializable, Cloneable, Map<K,V>, NavigableMap<K,V>, SequencedMap<K,V>, SortedMap<K,V>

---

```
public class TreeMap<K,V>  
extends AbstractMap<K,V>  
implements NavigableMap<K,V>, Cloneable, Serializable
```

A Red-Black tree based [NavigableMap](#) implementation. The map is sorted according to the [natural ordering](#) of its keys, or by a [Comparator](#) provided at map creation time, depending on which constructor is used.

# Markdown Documentation Comments

- Markdown is a popular format to author HTML
- JavaDoc uses the Java implementation of **CommonMark**
- Use `///` end-of-line comment to create a Markdown doc comment

```
/// Prints a short welcome message.  
public void sayHello() {...}
```

# Markdown Doc Comments: JavaDoc integration

- Use [] Markdown links to link to API elements

```
[MyClass#someMethod()]
```

```
[Link with custom label][#otherMethod()]
```

- Markdown headings are added to the search index

```
# Searchable Heading
```

```
## Subheading
```

# Markdown Doc Comments: JavaDoc integration

- Use JavaDoc tags just like in traditional doc comments

```
/// {@inheritDoc}  
/// In addition, this methods calls [#wait()].  
///  
/// @param i the index  
public void m(int i) ...
```

# Markdown Documentation Comments

- Use `/* */` comments in code examples – no restrictions as in traditional doc comments

```
/// A code example with a traditional doc comment:  
///  
///     /**  
///     * Traditional doc comment  
///     */  
///     public void foo() {...}
```

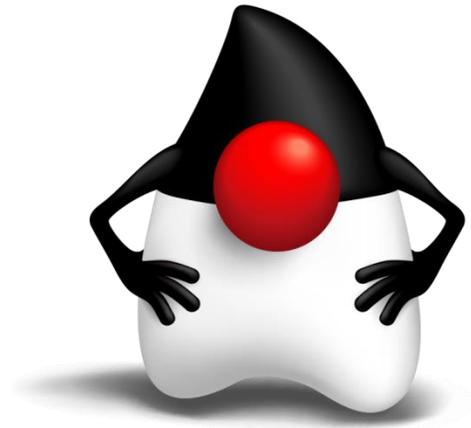
# Markdown Documentation Comments

- Supports Table Extension

```
/// | Latin | Greek |  
/// |-----|-----|  
/// | a      | alpha |  
/// | b      | beta  |  
/// | c      | gamma |
```

# Demo

# Thanks!





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