| | [**Overview**](http://docs.google.com/overview-summary.html) | [**Package**](http://docs.google.com/package-summary.html) | **Class** | [**Use**](http://docs.google.com/class-use/Writer.html) | [**Tree**](http://docs.google.com/package-tree.html) | [**Deprecated**](http://docs.google.com/deprecated-list.html) | [**Index**](http://docs.google.com/index-files/index-1.html) | [**Help**](http://docs.google.com/help-doc.html) | | --- | --- | --- | --- | --- | --- | --- | --- | | | ***Java™ Platform***  ***Standard Ed. 6*** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| [**PREV CLASS**](http://docs.google.com/java/io/WriteAbortedException.html)   NEXT CLASS | [**FRAMES**](http://docs.google.com/index.html?java/io/Writer.html)    [**NO FRAMES**](http://docs.google.com/Writer.html)     [**All Classes**](http://docs.google.com/allclasses-noframe.html) |
| SUMMARY: NESTED | [FIELD](#3znysh7) | [CONSTR](#2et92p0) | [METHOD](#tyjcwt) | DETAIL: [FIELD](#1t3h5sf) | [CONSTR](#2s8eyo1) | [METHOD](#26in1rg) |

## **java.io**

Class Writer

[java.lang.Object](http://docs.google.com/java/lang/Object.html)  
 **java.io.Writer**

**All Implemented Interfaces:** [Closeable](http://docs.google.com/java/io/Closeable.html), [Flushable](http://docs.google.com/java/io/Flushable.html), [Appendable](http://docs.google.com/java/lang/Appendable.html) **Direct Known Subclasses:** [BufferedWriter](http://docs.google.com/java/io/BufferedWriter.html), [CharArrayWriter](http://docs.google.com/java/io/CharArrayWriter.html), [FilterWriter](http://docs.google.com/java/io/FilterWriter.html), [OutputStreamWriter](http://docs.google.com/java/io/OutputStreamWriter.html), [PipedWriter](http://docs.google.com/java/io/PipedWriter.html), [PrintWriter](http://docs.google.com/java/io/PrintWriter.html), [StringWriter](http://docs.google.com/java/io/StringWriter.html)

public abstract class **Writer**extends [Object](http://docs.google.com/java/lang/Object.html)implements [Appendable](http://docs.google.com/java/lang/Appendable.html), [Closeable](http://docs.google.com/java/io/Closeable.html), [Flushable](http://docs.google.com/java/io/Flushable.html)

Abstract class for writing to character streams. The only methods that a subclass must implement are write(char[], int, int), flush(), and close(). Most subclasses, however, will override some of the methods defined here in order to provide higher efficiency, additional functionality, or both.

**Since:** JDK1.1 **See Also:**[Writer](http://docs.google.com/java/io/Writer.html), [BufferedWriter](http://docs.google.com/java/io/BufferedWriter.html), [CharArrayWriter](http://docs.google.com/java/io/CharArrayWriter.html), [FilterWriter](http://docs.google.com/java/io/FilterWriter.html), [OutputStreamWriter](http://docs.google.com/java/io/OutputStreamWriter.html), [FileWriter](http://docs.google.com/java/io/FileWriter.html), [PipedWriter](http://docs.google.com/java/io/PipedWriter.html), [PrintWriter](http://docs.google.com/java/io/PrintWriter.html), [StringWriter](http://docs.google.com/java/io/StringWriter.html), [Reader](http://docs.google.com/java/io/Reader.html)

| **Field Summary** | |
| --- | --- |
| protected  [Object](http://docs.google.com/java/lang/Object.html) | [**lock**](http://docs.google.com/java/io/Writer.html#lock)            The object used to synchronize operations on this stream. |

| **Constructor Summary** | |
| --- | --- |
| protected | [**Writer**](http://docs.google.com/java/io/Writer.html#Writer())()            Creates a new character-stream writer whose critical sections will synchronize on the writer itself. |
| protected | [**Writer**](http://docs.google.com/java/io/Writer.html#Writer(java.lang.Object))([Object](http://docs.google.com/java/lang/Object.html) lock)            Creates a new character-stream writer whose critical sections will synchronize on the given object. |

| **Method Summary** | |
| --- | --- |
| [Writer](http://docs.google.com/java/io/Writer.html) | [**append**](http://docs.google.com/java/io/Writer.html#append(char))(char c)            Appends the specified character to this writer. |
| [Writer](http://docs.google.com/java/io/Writer.html) | [**append**](http://docs.google.com/java/io/Writer.html#append(java.lang.CharSequence))([CharSequence](http://docs.google.com/java/lang/CharSequence.html) csq)            Appends the specified character sequence to this writer. |
| [Writer](http://docs.google.com/java/io/Writer.html) | [**append**](http://docs.google.com/java/io/Writer.html#append(java.lang.CharSequence,%20int,%20int))([CharSequence](http://docs.google.com/java/lang/CharSequence.html) csq, int start, int end)            Appends a subsequence of the specified character sequence to this writer. |
| abstract  void | [**close**](http://docs.google.com/java/io/Writer.html#close())()            Closes the stream, flushing it first. |
| abstract  void | [**flush**](http://docs.google.com/java/io/Writer.html#flush())()            Flushes the stream. |
| void | [**write**](http://docs.google.com/java/io/Writer.html#write(char%5B%5D))(char[] cbuf)            Writes an array of characters. |
| abstract  void | [**write**](http://docs.google.com/java/io/Writer.html#write(char%5B%5D,%20int,%20int))(char[] cbuf, int off, int len)            Writes a portion of an array of characters. |
| void | [**write**](http://docs.google.com/java/io/Writer.html#write(int))(int c)            Writes a single character. |
| void | [**write**](http://docs.google.com/java/io/Writer.html#write(java.lang.String))([String](http://docs.google.com/java/lang/String.html) str)            Writes a string. |
| void | [**write**](http://docs.google.com/java/io/Writer.html#write(java.lang.String,%20int,%20int))([String](http://docs.google.com/java/lang/String.html) str, int off, int len)            Writes a portion of a string. |

| **Methods inherited from class java.lang.**[**Object**](http://docs.google.com/java/lang/Object.html) |
| --- |
| [clone](http://docs.google.com/java/lang/Object.html#clone()), [equals](http://docs.google.com/java/lang/Object.html#equals(java.lang.Object)), [finalize](http://docs.google.com/java/lang/Object.html#finalize()), [getClass](http://docs.google.com/java/lang/Object.html#getClass()), [hashCode](http://docs.google.com/java/lang/Object.html#hashCode()), [notify](http://docs.google.com/java/lang/Object.html#notify()), [notifyAll](http://docs.google.com/java/lang/Object.html#notifyAll()), [toString](http://docs.google.com/java/lang/Object.html#toString()), [wait](http://docs.google.com/java/lang/Object.html#wait()), [wait](http://docs.google.com/java/lang/Object.html#wait(long)), [wait](http://docs.google.com/java/lang/Object.html#wait(long,%20int)) |

| **Field Detail** |
| --- |

### lock

protected [Object](http://docs.google.com/java/lang/Object.html) **lock**

The object used to synchronize operations on this stream. For efficiency, a character-stream object may use an object other than itself to protect critical sections. A subclass should therefore use the object in this field rather than this or a synchronized method.

| **Constructor Detail** |
| --- |

### Writer

protected **Writer**()

Creates a new character-stream writer whose critical sections will synchronize on the writer itself.

### Writer

protected **Writer**([Object](http://docs.google.com/java/lang/Object.html) lock)

Creates a new character-stream writer whose critical sections will synchronize on the given object.

**Parameters:**lock - Object to synchronize on

| **Method Detail** |
| --- |

### write

public void **write**(int c)  
 throws [IOException](http://docs.google.com/java/io/IOException.html)

Writes a single character. The character to be written is contained in the 16 low-order bits of the given integer value; the 16 high-order bits are ignored.

Subclasses that intend to support efficient single-character output should override this method.

**Parameters:**c - int specifying a character to be written **Throws:** [IOException](http://docs.google.com/java/io/IOException.html) - If an I/O error occurs

### write

public void **write**(char[] cbuf)  
 throws [IOException](http://docs.google.com/java/io/IOException.html)

Writes an array of characters.

**Parameters:**cbuf - Array of characters to be written **Throws:** [IOException](http://docs.google.com/java/io/IOException.html) - If an I/O error occurs

### write

public abstract void **write**(char[] cbuf,  
 int off,  
 int len)  
 throws [IOException](http://docs.google.com/java/io/IOException.html)

Writes a portion of an array of characters.

**Parameters:**cbuf - Array of charactersoff - Offset from which to start writing characterslen - Number of characters to write **Throws:** [IOException](http://docs.google.com/java/io/IOException.html) - If an I/O error occurs

### write

public void **write**([String](http://docs.google.com/java/lang/String.html) str)  
 throws [IOException](http://docs.google.com/java/io/IOException.html)

Writes a string.

**Parameters:**str - String to be written **Throws:** [IOException](http://docs.google.com/java/io/IOException.html) - If an I/O error occurs

### write

public void **write**([String](http://docs.google.com/java/lang/String.html) str,  
 int off,  
 int len)  
 throws [IOException](http://docs.google.com/java/io/IOException.html)

Writes a portion of a string.

**Parameters:**str - A Stringoff - Offset from which to start writing characterslen - Number of characters to write **Throws:** [IndexOutOfBoundsException](http://docs.google.com/java/lang/IndexOutOfBoundsException.html) - If off is negative, or len is negative, or off+len is negative or greater than the length of the given string [IOException](http://docs.google.com/java/io/IOException.html) - If an I/O error occurs

### append

public [Writer](http://docs.google.com/java/io/Writer.html) **append**([CharSequence](http://docs.google.com/java/lang/CharSequence.html) csq)  
 throws [IOException](http://docs.google.com/java/io/IOException.html)

Appends the specified character sequence to this writer.

An invocation of this method of the form out.append(csq) behaves in exactly the same way as the invocation

out.write(csq.toString())

Depending on the specification of toString for the character sequence csq, the entire sequence may not be appended. For instance, invoking the toString method of a character buffer will return a subsequence whose content depends upon the buffer's position and limit.

**Specified by:**[append](http://docs.google.com/java/lang/Appendable.html#append(java.lang.CharSequence)) in interface [Appendable](http://docs.google.com/java/lang/Appendable.html) **Parameters:**csq - The character sequence to append. If csq is null, then the four characters "null" are appended to this writer. **Returns:**This writer **Throws:** [IOException](http://docs.google.com/java/io/IOException.html) - If an I/O error occurs**Since:** 1.5

### append

public [Writer](http://docs.google.com/java/io/Writer.html) **append**([CharSequence](http://docs.google.com/java/lang/CharSequence.html) csq,  
 int start,  
 int end)  
 throws [IOException](http://docs.google.com/java/io/IOException.html)

Appends a subsequence of the specified character sequence to this writer. Appendable.

An invocation of this method of the form out.append(csq, start, end) when csq is not null behaves in exactly the same way as the invocation

out.write(csq.subSequence(start, end).toString())

**Specified by:**[append](http://docs.google.com/java/lang/Appendable.html#append(java.lang.CharSequence,%20int,%20int)) in interface [Appendable](http://docs.google.com/java/lang/Appendable.html) **Parameters:**csq - The character sequence from which a subsequence will be appended. If csq is null, then characters will be appended as if csq contained the four characters "null".start - The index of the first character in the subsequenceend - The index of the character following the last character in the subsequence **Returns:**This writer **Throws:** [IndexOutOfBoundsException](http://docs.google.com/java/lang/IndexOutOfBoundsException.html) - If start or end are negative, start is greater than end, or end is greater than csq.length() [IOException](http://docs.google.com/java/io/IOException.html) - If an I/O error occurs**Since:** 1.5

### append

public [Writer](http://docs.google.com/java/io/Writer.html) **append**(char c)  
 throws [IOException](http://docs.google.com/java/io/IOException.html)

Appends the specified character to this writer.

An invocation of this method of the form out.append(c) behaves in exactly the same way as the invocation

out.write(c)

**Specified by:**[append](http://docs.google.com/java/lang/Appendable.html#append(char)) in interface [Appendable](http://docs.google.com/java/lang/Appendable.html) **Parameters:**c - The 16-bit character to append **Returns:**This writer **Throws:** [IOException](http://docs.google.com/java/io/IOException.html) - If an I/O error occurs**Since:** 1.5

### flush

public abstract void **flush**()  
 throws [IOException](http://docs.google.com/java/io/IOException.html)

Flushes the stream. If the stream has saved any characters from the various write() methods in a buffer, write them immediately to their intended destination. Then, if that destination is another character or byte stream, flush it. Thus one flush() invocation will flush all the buffers in a chain of Writers and OutputStreams.

If the intended destination of this stream is an abstraction provided by the underlying operating system, for example a file, then flushing the stream guarantees only that bytes previously written to the stream are passed to the operating system for writing; it does not guarantee that they are actually written to a physical device such as a disk drive.

**Specified by:**[flush](http://docs.google.com/java/io/Flushable.html#flush()) in interface [Flushable](http://docs.google.com/java/io/Flushable.html) **Throws:** [IOException](http://docs.google.com/java/io/IOException.html) - If an I/O error occurs

### close

public abstract void **close**()  
 throws [IOException](http://docs.google.com/java/io/IOException.html)

Closes the stream, flushing it first. Once the stream has been closed, further write() or flush() invocations will cause an IOException to be thrown. Closing a previously closed stream has no effect.

**Specified by:**[close](http://docs.google.com/java/io/Closeable.html#close()) in interface [Closeable](http://docs.google.com/java/io/Closeable.html) **Throws:** [IOException](http://docs.google.com/java/io/IOException.html) - If an I/O error occurs

| | [**Overview**](http://docs.google.com/overview-summary.html) | [**Package**](http://docs.google.com/package-summary.html) | **Class** | [**Use**](http://docs.google.com/class-use/Writer.html) | [**Tree**](http://docs.google.com/package-tree.html) | [**Deprecated**](http://docs.google.com/deprecated-list.html) | [**Index**](http://docs.google.com/index-files/index-1.html) | [**Help**](http://docs.google.com/help-doc.html) | | --- | --- | --- | --- | --- | --- | --- | --- | | | ***Java™ Platform***  ***Standard Ed. 6*** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
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[Submit a bug or feature](http://bugs.sun.com/services/bugreport/index.jsp)

For further API reference and developer documentation, see [Java SE Developer Documentation](http://docs.google.com/webnotes/devdocs-vs-specs.html). That documentation contains more detailed, developer-targeted descriptions, with conceptual overviews, definitions of terms, workarounds, and working code examples.

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