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## C++

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## Reference

**C library:**  
**Containers:**  
**Input/Output:**  
  <fstream>  
  <iomanip>  
  <ios>  
  <iosfwd>  
  <iostream>  
  <istream>  
  <ostream>  
  <sstream>  
  <streambuf>  
**Multi-threading:**  
**Other:**

## &lt;fstream&gt;

**class templates:**  
  basic\_filebuf  
  basic\_fstream  
  basic\_ifstream  
  basic\_ofstream

**classes:**

  filebuf  
  fstream  
  ifstream  
  **ofstream**  
  wfilebuf  
  wfstream  
  wifstream  
  wofstream

## ofstream

ofstream::ofstream

**public member functions:**

  ofstream::close  
  ofstream::is\_open  
  ofstream::open  
  ofstream::operator=  
  ofstream::rdbuf  
  ofstream::swap

**non-member overloads:**

swap (basic\_ofstream)

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class

**std::ofstream**

&lt;fstream&gt;

typedef basic\_ofstream&lt;char&gt; ofstream;

**Output file stream**

Output stream class to operate on files.

Objects of this class maintain a `filebuf` object as their *internal stream buffer*, which performs input/output operations on the file they are associated with (if any).

File streams are associated with files either on [construction](#), or by calling member `open`.

This is an instantiation of `basic_ofstream` with the following template parameters:

template parameter	definition	comments
charT	char	Aliased as member <code>char_type</code>
traits	<code>char_traits&lt;char&gt;</code>	Aliased as member <code>traits_type</code>

Apart from the internal *file stream buffer*, objects of this class keep a set of internal fields inherited from `ios_base`, `ios` and `istream`:

	field	member functions	description
Formatting	format flags	<code>flags</code> <code>setf</code> <code>unsetf</code>	A set of internal flags that affect how certain input/output operations are interpreted or generated. See member type <code>fmtflags</code> .
	field width	<code>width</code>	Width of the next formatted element to insert.
	display precision	<code>precision</code>	Decimal precision for the next floating-point value inserted.
	locale	<code>getloc</code> <code>imbue</code>	The <code>locale</code> object used by the function for formatted input/output operations affected by localization properties.
	fill character	<code>fill</code>	Character to pad a formatted field up to the <i>field width</i> ( <code>width</code> ).
State	error state	<code>rdstate</code> <code>setstate</code> <code>clear</code>	The current error state of the stream. Individual values may be obtained by calling <code>good</code> , <code>eof</code> , <code>fail</code> and <code>bad</code> . See member type <code>iostate</code> .
	exception mask	<code>exceptions</code>	The state flags for which a <i>failure</i> exception is thrown. See member type <code>iostate</code> .
Other	callback stack	<code>register_callback</code>	Stack of pointers to functions that are called when certain events occur.
	extensible arrays	<code>iword</code> <code>pword</code> <code>xalloc</code>	Internal arrays to store objects of type <code>long</code> and <code>void*</code> .
	tied stream	<code>tie</code>	Pointer to output stream that is flushed before each i/o operation on this stream.
	stream buffer	<code>rdbuf</code>	Pointer to the associated <code>streambuf</code> object, which is charge of all input/output operations.
	character count	<code>gcount</code>	Count of characters read by last unformatted input operation.

**Member types**

The class declares the following member types:

member type	definition
<code>char_type</code>	<code>char</code>
<code>traits_type</code>	<code>char_traits&lt;char&gt;</code>
<code>int_type</code>	<code>int</code>
<code>pos_type</code>	<code>streampos</code>
<code>off_type</code>	<code>streamoff</code>

These member types are inherited from its base classes `ostream` and `ios_base`:

<b>event</b>	Type to indicate event type (public member type )
<b>event_callback</b>	Event callback function type (public member type )
<b>failure</b>	Base class for stream exceptions (public member class )
<b>fmtflags</b>	Type for stream format flags (public member type )

<b>Init</b>	Initialize standard stream objects (public member class )
<b>iostate</b>	Type for stream state flags (public member type )
<b>openmode</b>	Type for stream opening mode flags (public member type )
<b>seekdir</b>	Type for stream seeking direction flag (public member type )
<b>sentry</b>	Prepare stream for output (public member class )

### *fx* Public member functions

<b>(constructor)</b>	Construct object (public member function )
<b>open</b>	Open file (public member function )
<b>is_open</b>	Check if file is open (public member function )
<b>close</b>	Close file (public member function )
<b>rdbuf</b>	Get stream buffer (public member function )
<b>operator=</b> <small>C++11</small>	Move assignment (public member function )
<b>swap</b> <small>C++11</small>	Swap internals (public member function )

### *fx* Public member functions inherited from ostream

<b>operator&lt;&lt;</b>	Insert formatted output (public member function )
<b>put</b>	Put character (public member function )
<b>write</b>	Write block of data (public member function )
<b>tellp</b>	Get position in output sequence (public member function )
<b>seekp</b>	Set position in output sequence (public member function )
<b>flush</b>	Flush output stream buffer (public member function )

### *fx* Public member functions inherited from ios

<b>good</b>	Check whether state of stream is good (public member function )
<b>eof</b>	Check whether eofbit is set (public member function )
<b>fail</b>	Check whether either failbit or badbit is set (public member function )
<b>bad</b>	Check whether badbit is set (public member function )
<b>operator!</b>	Evaluate stream (not) (public member function )
<b>operator bool</b> <small>C++11</small>	Evaluate stream (public member function )
<b>rdstate</b>	Get error state flags (public member function )
<b>setstate</b>	Set error state flag (public member function )
<b>clear</b>	Set error state flags (public member function )
<b>copyfmt</b>	Copy formatting information (public member function )
<b>fill</b>	Get/set fill character (public member function )
<b>exceptions</b>	Get/set exceptions mask (public member function )
<b>imbue</b>	Imbue locale (public member function )
<b>tie</b>	Get/set tied stream (public member function )
<b>rdbuf</b>	Get/set stream buffer (public member function )
<b>narrow</b>	Narrow character (public member function )
<b>widen</b>	Widen character (public member function )

### *fx* Public member functions inherited from ios\_base

<b>flags</b>	Get/set format flags (public member function )
<b>setf</b>	Set specific format flags (public member function )
<b>unsetf</b>	Clear specific format flags (public member function )
<b>precision</b>	Get/Set floating-point decimal precision (public member function )
<b>width</b>	Get/set field width (public member function )
<b>imbue</b>	Imbue locale (public member function )
<b>getloc</b>	Get current locale (public member function )
<b>xalloc</b>	Get new index for extensible array [static] (public static member function )
<b>word</b>	Get integer element of extensible array (public member function )
<b>pword</b>	Get pointer element of extensible array (public member function )
<b>register_callback</b>	Register event callback function (public member function )
<b>sync_with_stdio</b>	Toggle synchronization with cstdio streams [static] (public static member function )

### *fx* Non-member function overloads

 **swap** Swap output file streams ([function template](#) )