High-level API Index

> **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 1**)
>
> Unknown directive type "currentmodule".
>
> ```
> .. currentmodule:: asyncio
> ```

This page lists all high-level async/await enabled asyncio APIs.

Tasks

Utilities to run asyncio programs, create Tasks, and await on multiple things with timeouts.

:func:`run` **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 21);** *backlink* Unknown interpreted text role "func".	Create event loop, run a coroutine, close the loop.
:func:`create_task` **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 24);** *backlink* Unknown interpreted text role "func".	Start an asyncio Task.
`await` :func:`sleep` **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 27);** *backlink* Unknown interpreted text role "func".	Sleep for a number of seconds.
`await` :func:`gather` **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 30);** *backlink* Unknown interpreted text role "func".	Schedule and wait for things concurrently.

`await` :func:`wait_for` **System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, line 33); *backlink*** Unknown interpreted text role "func".	Run with a timeout.
`await` :func:`shield` **System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, line 36); *backlink*** Unknown interpreted text role "func".	Shield from cancellation.
`await` :func:`wait` **System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, line 39); *backlink*** Unknown interpreted text role "func".	Monitor for completion.
:func:`current_task` **System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, line 42); *backlink*** Unknown interpreted text role "func".	Return the current Task.
:func:`all_tasks` **System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, line 45); *backlink*** Unknown interpreted text role "func".	Return all tasks for an event loop.

:class:`Task`	Task object.
System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 48**); *backlink* Unknown interpreted text role "class".	
:func:`to_thread`	Asynchronously run a function in a separate OS thread.
System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 51**); *backlink* Unknown interpreted text role "func".	
:func:`run_coroutine_threadsafe`	Schedule a coroutine from another OS thread.
System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 54**); *backlink* Unknown interpreted text role "func".	
`for in` :func:`as_completed`	Monitor for completion with a `for` loop.
System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 57**); *backlink* Unknown interpreted text role "func".	

Examples

- :ref:`Using asyncio.gather() to run things in parallel <asyncio_example_gather>`.

  System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 63**); *backlink*

  Unknown interpreted text role "ref".

- :ref:`Using asyncio.wait_for() to enforce a timeout <asyncio_example_waitfor>`.

  System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 66**); *backlink*

  Unknown interpreted text role "ref".

- :ref:`Cancellation <asyncio_example_task_cancel>`.

  System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-`

resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst, line 69); *backlink*

Unknown interpreted text role "ref".

- :ref:`Using asyncio.sleep() <asyncio_example_sleep>`.

System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, line 71); *backlink*

Unknown interpreted text role "ref".

- See also the main :ref:`Tasks documentation page <coroutine>`.

System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, line 73); *backlink*

Unknown interpreted text role "ref".

Queues

Queues should be used to distribute work amongst multiple asyncio Tasks, implement connection pools, and pub/sub patterns.

:class:`Queue`	
System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, line 87); *backlink* Unknown interpreted text role "class".	A FIFO queue.
:class:`PriorityQueue`	
System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, line 90); *backlink* Unknown interpreted text role "class".	A priority queue.
:class:`LifoQueue`	
System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, line 93); *backlink* Unknown interpreted text role "class".	A LIFO queue.

Examples

- :ref:`Using asyncio.Queue to distribute workload between several Tasks <asyncio_example_queue_dist>`.

System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, line 99); *backlink*

Unknown interpreted text role "ref".

- See also the :ref:`Queues documentation page <asyncio-queues>`.

> **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst,` **line 102);** *backlink*
>
> Unknown interpreted text role "ref".

Subprocesses

Utilities to spawn subprocesses and run shell commands.

`await` :func:`create_subprocess_exec`	Create a subprocess.
System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst,` **line 114);** *backlink* Unknown interpreted text role "func".	
`await` :func:`create_subprocess_shell`	Run a shell command.
System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst,` **line 117);** *backlink* Unknown interpreted text role "func".	

Examples

- :ref:`Executing a shell command <asyncio_example_subprocess_shell>`.

> **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst,` **line 123);** *backlink*
>
> Unknown interpreted text role "ref".

- See also the :ref:`subprocess APIs <asyncio-subprocess>` documentation.

> **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst,` **line 125);** *backlink*
>
> Unknown interpreted text role "ref".

Streams

High-level APIs to work with network IO.

`await` :func:`open_connection` **System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, line 138); *backlink*** Unknown interpreted text role "func".	Establish a TCP connection.
`await` :func:`open_unix_connection` **System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, line 141); *backlink*** Unknown interpreted text role "func".	Establish a Unix socket connection.
`await` :func:`start_server` **System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, line 144); *backlink*** Unknown interpreted text role "func".	Start a TCP server.
`await` :func:`start_unix_server` **System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, line 147); *backlink*** Unknown interpreted text role "func".	Start a Unix socket server.
:class:`StreamReader` **System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, line 150); *backlink*** Unknown interpreted text role "class".	High-level async/await object to receive network data.

:class:`StreamWriter`

> **System Message: ERROR/3**
> **(`D:\onboarding-resources\sample-`**
> **`onboarding-resources\cpython-`**
> **`main\Doc\library\(cpython-main)(Doc)`**
> **`(library)asyncio-api-index.rst`, line**
> **153);** *backlink*
>
> Unknown interpreted text role "class".

High-level async/await object to send network data.

Examples

- :ref:`Example TCP client <asyncio_example_stream>`.

  > **System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-`**
  > **`resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-`**
  > **`index.rst`, line 159);** *backlink*
  >
  > Unknown interpreted text role "ref".

- See also the :ref:`streams APIs <asyncio-streams>` documentation.

  > **System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-`**
  > **`resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-`**
  > **`index.rst`, line 161);** *backlink*
  >
  > Unknown interpreted text role "ref".

Synchronization

Threading-like synchronization primitives that can be used in Tasks.

:class:`Lock`	
> **System Message: ERROR/3** > **(`D:\onboarding-resources\sample-`** > **`onboarding-resources\cpython-`** > **`main\Doc\library\(cpython-main)(Doc)`** > **`(library)asyncio-api-index.rst`, line** > **174);** *backlink* > Unknown interpreted text role "class".	A mutex lock.
:class:`Event`	
> **System Message: ERROR/3** > **(`D:\onboarding-resources\sample-`** > **`onboarding-resources\cpython-`** > **`main\Doc\library\(cpython-main)(Doc)`** > **`(library)asyncio-api-index.rst`, line** > **177);** *backlink* > Unknown interpreted text role "class".	An event object.

:class:`Condition` **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 180);** *backlink* Unknown interpreted text role "class".	A condition object.
:class:`Semaphore` **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 183);** *backlink* Unknown interpreted text role "class".	A semaphore.
:class:`BoundedSemaphore` **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 186);** *backlink* Unknown interpreted text role "class".	A bounded semaphore.
:class:`Barrier` **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 189);** *backlink* Unknown interpreted text role "class".	A barrier object.

Examples

- :ref:`Using asyncio.Event <asyncio_example_sync_event>`.

  > **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 195);** *backlink*
  >
  > Unknown interpreted text role "ref".

- :ref:`Using asyncio.Barrier <asyncio_example_barrier>`.

  > **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 197);** *backlink*
  >
  > Unknown interpreted text role "ref".

- See also the documentation of asyncio :ref:`synchronization primitives <asyncio-sync>`.

  > **System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-`

resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst, **line 199);** *backlink*

Unknown interpreted text role "ref".

Exceptions

:exc:`asyncio.CancelledError`	Raised when a Task is cancelled. See also :meth:`Task.cancel`.
System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 211);** *backlink* Unknown interpreted text role "exc".	**System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 212);** *backlink* Unknown interpreted text role "meth".
:exc:`asyncio.BrokenBarrierError`	Raised when a Barrier is broken. See also :meth:`Barrier.wait`.
System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 214);** *backlink* Unknown interpreted text role "exc".	**System Message: ERROR/3** (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 215);** *backlink* Unknown interpreted text role "meth".

Examples

- :ref:`Handling CancelledError to run code on cancellation request <asyncio_example_task_cancel>`.

  System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 220);** *backlink*

  Unknown interpreted text role "ref".

- See also the full list of :ref:`asyncio-specific exceptions <asyncio-exceptions>`.

  System Message: ERROR/3 (`D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main)(Doc)(library)asyncio-api-index.rst`, **line 223);** *backlink*

  Unknown interpreted text role "ref".