

:mod:`resource` --- Resource usage information

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) resource.rst, line 1); [backlink](#)

Unknown interpreted text role "mod".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) resource.rst, line 4)

Unknown directive type "module".

```
.. module:: resource
   :platform: Unix
   :synopsis: An interface to provide resource usage information on the current process.
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) resource.rst, line 8)

Unknown directive type "moduleauthor".

```
.. moduleauthor:: Jeremy Hylton <jeremy@alum.mit.edu>
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) resource.rst, line 9)

Unknown directive type "sectionauthor".

```
.. sectionauthor:: Jeremy Hylton <jeremy@alum.mit.edu>
```

This module provides basic mechanisms for measuring and controlling system resources utilized by a program.

Symbolic constants are used to specify particular system resources and to request usage information about either the current process or its children.

An `:exc:`OSError`` is raised on syscall failure.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) resource.rst, line 19); [backlink](#)

Unknown interpreted text role "exc".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) resource.rst, line 22)

Unknown directive type "exception".

```
.. exception:: error

   A deprecated alias of :exc:`OSError`.

.. versionchanged:: 3.3
   Following :pep:`3151`, this class was made an alias of :exc:`OSError`.
```

Resource Limits

Resources usage can be limited using the `:func:`setrlimit`` function described below. Each resource is controlled by a pair of limits: a soft limit and a hard limit. The soft limit is the current limit, and may be lowered or raised by a process over time. The soft limit can never exceed the hard limit. The hard limit can be lowered to any value greater than the soft limit, but not raised. (Only processes with the effective UID of the super-user can raise a hard limit.)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) resource.rst, line 33); [backlink](#)

Unknown interpreted text role "func".

The specific resources that can be limited are system dependent. They are described in the `manpage: `getrlimit(2)`` man page. The resources listed below are supported when the underlying operating system supports them; resources which cannot be checked or controlled by the operating system are not defined in this module for those platforms.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) resource.rst, line 41); [backlink](#)

Unknown interpreted text role "manpage".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) resource.rst, line 48)

Unknown directive type "data".

```
.. data:: RLIM_INFINITY
```

Constant used to represent the limit for an unlimited resource.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) resource.rst, line 53)

Unknown directive type "function".

```
.. function:: getrlimit(resource)
```

Returns a tuple ``(soft, hard)`` with the current soft and hard limits of *resource*. Raises :exc:`ValueError` if an invalid resource is specified, or :exc:`error` if the underlying system call fails unexpectedly.

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Unknown directive type "function".

```
.. function:: setrlimit(resource, limits)
```

Sets new limits of consumption of *resource*. The *limits* argument must be a tuple ``(soft, hard)`` of two integers describing the new limits. A value of :data:`~resource.RLIM_INFINITY` can be used to request a limit that is unlimited.

Raises :exc:`ValueError` if an invalid resource is specified, if the new soft limit exceeds the hard limit, or if a process tries to raise its hard limit. Specifying a limit of :data:`~resource.RLIM_INFINITY` when the hard or system limit for that resource is not unlimited will result in a :exc:`ValueError`. A process with the effective UID of super-user can request any valid limit value, including unlimited, but :exc:`ValueError` will still be raised if the requested limit exceeds the system imposed limit.

``setrlimit`` may also raise :exc:`error` if the underlying system call fails.

VxWorks only supports setting :data:`~RLIMIT_NOFILE`.

```
.. audit-event:: resource.setrlimit resource,limits resource.setrlimit
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) resource.rst, line 84)

Unknown directive type "function".

```
.. function:: prlimit(pid, resource[, limits])
```

Combines :func:`setrlimit` and :func:`getrlimit` in one function and supports to get and set the resources limits of an arbitrary process. If *pid* is 0, then the call applies to the current process. *resource* and

`*limits*` have the same meaning as in `:func:`setrlimit``, except that `*limits*` is optional.

When `*limits*` is not given the function returns the `*resource*` limit of the process `*pid*`. When `*limits*` is given the `*resource*` limit of the process is set and the former resource limit is returned.

Raises `:exc:`ProcessLookupError`` when `*pid*` can't be found and `:exc:`PermissionError`` when the user doesn't have ```CAP_SYS_RESOURCE``` for the process.

.. audit-event:: resource.prlimit pid,resource,limits resource.prlimit

.. availability:: Linux 2.6.36 or later with glibc 2.13 or later.

.. versionadded:: 3.4

These symbols define resources whose consumption can be controlled using the `:func:`setrlimit`` and `:func:`getrlimit`` functions described below. The values of these symbols are exactly the constants used by C programs.

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Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) resource.rst, line 107); [backlink](#)

Unknown interpreted text role "func".

The Unix man page for `:manpage:`getrlimit(2)`` lists the available resources. Note that not all systems use the same symbol or same value to denote the same resource. This module does not attempt to mask platform differences --- symbols not defined for a platform will not be available from this module on that platform.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) resource.rst, line 111); [backlink](#)

Unknown interpreted text role "manpage".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) resource.rst, line 118)

Unknown directive type "data".

.. data:: RLIMIT_CORE

The maximum size (in bytes) of a core file that the current process can create. This may result in the creation of a partial core file if a larger core would be required to contain the entire process image.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) resource.rst, line 125)

Unknown directive type "data".

.. data:: RLIMIT_CPU

The maximum amount of processor time (in seconds) that a process can use. If this limit is exceeded, a `:const:`SIGXCPU`` signal is sent to the process. (See the `:mod:`signal`` module documentation for information about how to catch this signal and do something useful, e.g. flush open files to disk.)

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Unknown directive type "data".

```
.. data:: RLIMIT_FSIZE
```

The maximum size of a file which the process may create.

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Unknown directive type "data".

```
.. data:: RLIMIT_DATA
```

The maximum size (in bytes) of the process's heap.

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Unknown directive type "data".

```
.. data:: RLIMIT_STACK
```

The maximum size (in bytes) of the call stack for the current process. This only affects the stack of the main thread in a multi-threaded process.

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Unknown directive type "data".

```
.. data:: RLIMIT_RSS
```

The maximum resident set size that should be made available to the process.

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Unknown directive type "data".

```
.. data:: RLIMIT_NPROC
```

The maximum number of processes the current process may create.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) resource.rst, line 159)

Unknown directive type "data".

```
.. data:: RLIMIT_NOFILE
```

The maximum number of open file descriptors for the current process.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) resource.rst, line 164)

Unknown directive type "data".

```
.. data:: RLIMIT_OFILE
```

The BSD name for :const:`RLIMIT_NOFILE`.

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main\Doc\library\ (cpython-main) (Doc) (library) resource.rst, line 169)

Unknown directive type "data".

```
.. data:: RLIMIT_MEMLOCK
```

The maximum address space which may be locked in memory.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) resource.rst, line 174)

Unknown directive type "data".

```
.. data:: RLIMIT_VMEM
```

The largest area of mapped memory which the process may occupy.

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Unknown directive type "data".

```
.. data:: RLIMIT_AS
```

The maximum area (in bytes) of address space which may be taken by the process.

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Unknown directive type "data".

```
.. data:: RLIMIT_MSGQUEUE
```

The number of bytes that can be allocated for POSIX message queues.

```
.. availability:: Linux 2.6.8 or later.
```

```
.. versionadded:: 3.4
```

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Unknown directive type "data".

```
.. data:: RLIMIT_NICE
```

The ceiling for the process's nice level (calculated as `20 - rlim_cur`).

```
.. availability:: Linux 2.6.12 or later.
```

```
.. versionadded:: 3.4
```

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Unknown directive type "data".

```
.. data:: RLIMIT_RTPRIO
```

The ceiling of the real-time priority.

```
.. availability:: Linux 2.6.12 or later.
```

```
.. versionadded:: 3.4
```

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Unknown directive type "data".

```
.. data:: RLIMIT_RTIME
```

The time limit (in microseconds) on CPU time that a process can spend under real-time scheduling without making a blocking syscall.

```
.. availability:: Linux 2.6.25 or later.
```

```
.. versionadded:: 3.4
```

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Unknown directive type "data".

```
.. data:: RLIMIT_SIGPENDING
```

The number of signals which the process may queue.

```
.. availability:: Linux 2.6.8 or later.
```

```
.. versionadded:: 3.4
```

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Unknown directive type "data".

```
.. data:: RLIMIT_SBSIZE
```

The maximum size (in bytes) of socket buffer usage for this user. This limits the amount of network memory, and hence the amount of mbufs, that this user may hold at any time.

```
.. availability:: FreeBSD 9 or later.
```

```
.. versionadded:: 3.4
```

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Unknown directive type "data".

```
.. data:: RLIMIT_SWAP
```

The maximum size (in bytes) of the swap space that may be reserved or used by all of this user id's processes. This limit is enforced only if bit 1 of the vm.overcommit sysctl is set. Please see ``tuning(7) <https://www.freebsd.org/cgi/man.cgi?query=tuning&sektion=7>`` for a complete description of this sysctl.

```
.. availability:: FreeBSD 9 or later.
```

```
.. versionadded:: 3.4
```

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Unknown directive type "data".

```
.. data:: RLIMIT_NPTS
```

The maximum number of pseudo-terminals created by this user id.

```
.. availability:: FreeBSD 9 or later.
```

```
.. versionadded:: 3.4
```

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Unknown directive type "data".

```
.. data:: RLIMIT_KQUEUES
```

The maximum number of kqueues this user id is allowed to create.

```
.. availability:: FreeBSD 11 or later.
```

```
.. versionadded:: 3.10
```

Resource Usage

These functions are used to retrieve resource usage information:

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\ (cpython-main) (Doc) (library) resource.rst, line 274)

Unknown directive type "function".

```
.. function:: getrusage(who)
```

This function returns an object that describes the resources consumed by either the current process or its children, as specified by the **who** parameter. The **who** parameter should be specified using one of the :const:`RUSAGE_` constants described below.

A simple example::

```
from resource import *
import time

# a non CPU-bound task
time.sleep(3)
print(getrusage(RUSAGE_SELF))

# a CPU-bound task
for i in range(10 ** 8):
    _ = 1 + 1
print(getrusage(RUSAGE_SELF))
```

The fields of the return value each describe how a particular system resource has been used, e.g. amount of time spent running in user mode or number of times the process was swapped out of main memory. Some values are dependent on the clock tick interval, e.g. the amount of memory the process is using.

For backward compatibility, the return value is also accessible as a tuple of 16 elements.

The fields :attr:`ru_utime` and :attr:`ru_stime` of the return value are floating point values representing the amount of time spent executing in user mode and the amount of time spent executing in system mode, respectively. The remaining values are integers. Consult the :manpage:`getrusage(2)` man page for detailed information about these values. A brief summary is presented here:

Index	Field	Resource
0	:attr:`ru_utime`	time in user mode (float seconds)
1	:attr:`ru_stime`	time in system mode (float seconds)
2	:attr:`ru_maxrss`	maximum resident set size
3	:attr:`ru_ixrss`	shared memory size
4	:attr:`ru_idrss`	unshared memory size
5	:attr:`ru_isrss`	unshared stack size
6	:attr:`ru_minflt`	page faults not requiring I/O
7	:attr:`ru_majflt`	page faults requiring I/O

This function will raise a `:exc:`ValueError`` if an invalid `*who*` parameter is specified. It may also raise `:exc:`error`` exception in unusual circumstances.

Unknown directive type "function".

Returns the number of bytes in a system page. (This need not be the same as the hardware page size.)

Unknown interpreted text role "const".

Unknown interpreted text role "func".

Unknown directive type "data".

Pass to `:func:`getrusage`` to request resources consumed by the calling process, which is the sum of resources used by all threads in the process.

Unknown directive type "data".

Pass to `:func:`getrusage`` to request resources consumed by child processes of the calling process which have been terminated and waited for.

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Unknown directive type "data".

```
.. data:: RUSAGE_BOTH
```

Pass to :func:`getrusage` to request resources consumed by both the current process and child processes. May not be available on all systems.

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Unknown directive type "data".

```
.. data:: RUSAGE_THREAD
```

Pass to :func:`getrusage` to request resources consumed by the current thread. May not be available on all systems.

```
.. versionadded:: 3.2
```