

## 29.11. `gc` — Garbage Collector interface

This module provides an interface to the optional garbage collector. It provides the ability to disable the collector, tune the collection frequency, and set debugging options. It also provides access to unreachable objects that the collector found but cannot free. Since the collector supplements the reference counting already used in Python, you can disable the collector if you are sure your program does not create reference cycles. Automatic collection can be disabled by calling `gc.disable()`. To debug a leaking program call `gc.set_debug(gc.DEBUG_LEAK)`. Notice that this includes `gc.DEBUG_SAVEALL`, causing garbage-collected objects to be saved in `gc.garbage` for inspection.

The `gc` module provides the following functions:

`gc.enable()`

Enable automatic garbage collection.

`gc.disable()`

Disable automatic garbage collection.

`gc.isenabled()`

Returns true if automatic collection is enabled.

`gc.collect(generations=2)`

With no arguments, run a full collection. The optional argument *generation* may be an integer specifying which generation to collect (from 0 to 2). A `ValueError` is raised if the generation number is invalid. The number of unreachable objects found is returned.

The free lists maintained for a number of built-in types are cleared whenever a full collection or collection of the highest generation (2) is run. Not all items in some free lists may be freed due to the particular implementation, in particular `float`.

`gc.set_debug(flags)`

Set the garbage collection debugging flags. Debugging information will be written to `sys.stderr`. See below for a list of debugging flags which can be combined using bit operations to control debugging.

`gc.get_debug()`

Return the debugging flags currently set.

`gc.get_objects()`

Returns a list of all objects tracked by the collector, excluding the list returned.

`gc.get_stats()`

Return a list of three per-generation dictionaries containing collection statistics since

interpreter start. The number of keys may change in the future, but currently each dictionary will contain the following items:

- `collections` is the number of times this generation was collected;
- `collected` is the total number of objects collected inside this generation;
- `uncollectable` is the total number of objects which were found to be uncollectable (and were therefore moved to the [garbage](#) list) inside this generation.

*New in version 3.4.*

`gc.set_threshold(threshold0[, threshold1[, threshold2]])`

Set the garbage collection thresholds (the collection frequency). Setting *threshold0* to zero disables collection.

The GC classifies objects into three generations depending on how many collection sweeps they have survived. New objects are placed in the youngest generation (generation 0). If an object survives a collection it is moved into the next older generation. Since generation 2 is the oldest generation, objects in that generation remain there after a collection. In order to decide when to run, the collector keeps track of the number object allocations and deallocations since the last collection. When the number of allocations minus the number of deallocations exceeds *threshold0*, collection starts. Initially only generation 0 is examined. If generation 0 has been examined more than *threshold1* times since generation 1 has been examined, then generation 1 is examined as well. Similarly, *threshold2* controls the number of collections of generation 1 before collecting generation 2.

`gc.get_count()`

Return the current collection counts as a tuple of (*count0*, *count1*, *count2*).

`gc.get_threshold()`

Return the current collection thresholds as a tuple of (*threshold0*, *threshold1*, *threshold2*).

`gc.get_referrers(*objs)`

Return the list of objects that directly refer to any of *objs*. This function will only locate those containers which su