

Set Objects

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\[cpython-main] [Doc] [c-api] set.rst, line 1)

Unknown directive type "highlight".

```
.. highlight:: c
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\[cpython-main] [Doc] [c-api] set.rst, line 8)

Unknown directive type "sectionauthor".

```
.. sectionauthor:: Raymond D. Hettinger <python@rcn.com>
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\[cpython-main] [Doc] [c-api] set.rst, line 11)

Unknown directive type "index".

```
.. index::
   object: set
   object: frozenset
```

This section details the public API for `:class:`set`` and `:class:`frozenset`` objects. Any functionality not listed below is best accessed using either the abstract object protocol (including `:func:`PyObject_CallMethod``, `:func:`PyObject_RichCompareBool``, `:func:`PyObject_Hash``, `:func:`PyObject_Repr``, `:func:`PyObject_IsTrue``, `:func:`PyObject_Print``, and `:func:`PyObject_GetIter``) or the abstract number protocol (including `:func:`PyNumber_And``, `:func:`PyNumber_Subtract``, `:func:`PyNumber_Or``, `:func:`PyNumber_Xor``, `:func:`PyNumber_InPlaceAnd``, `:func:`PyNumber_InPlaceSubtract``, `:func:`PyNumber_InPlaceOr``, and `:func:`PyNumber_InPlaceXor``).

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\[cpython-main] [Doc] [c-api] set.rst, line 15); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\[cpython-main] [Doc] [c-api] set.rst, line 15); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\[cpython-main] [Doc] [c-api] set.rst, line 15); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\[cpython-main] [Doc] [c-api] set.rst, line 15); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\[cpython-main] [Doc] [c-api] set.rst, line 15); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\[cpython-main] [Doc] [c-api] set.rst, line 15); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\cpython-main [Doc] [c-api] set.rst, line 15); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\cpython-main [Doc] [c-api] set.rst, line 15); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\cpython-main [Doc] [c-api] set.rst, line 15); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\cpython-main [Doc] [c-api] set.rst, line 15); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\cpython-main [Doc] [c-api] set.rst, line 15); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\cpython-main [Doc] [c-api] set.rst, line 15); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\cpython-main [Doc] [c-api] set.rst, line 15); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\cpython-main [Doc] [c-api] set.rst, line 15); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\cpython-main [Doc] [c-api] set.rst, line 15); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\cpython-main [Doc] [c-api] set.rst, line 15); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\cpython-main [Doc] [c-api] set.rst, line 15); [backlink](#)

Unknown interpreted text role "c:func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\cpython-main [Doc] [c-api] set.rst, line 27)

Unknown directive type "c:type".

```
.. c:type:: PySetObject
```

```
This subtype of :c:type:`PyObject` is used to hold the internal data for both
:class:`set` and :class:`frozenset` objects. It is like a :c:type:`PyDictObject`
in that it is a fixed size for small sets (much like tuple storage) and will
point to a separate, variable sized block of memory for medium and large sized
```

sets (much like list storage). None of the fields of this structure should be considered public and all are subject to change. All access should be done through the documented API rather than by manipulating the values in the structure.

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Unknown directive type "c:var".

```
.. c:var:: PyTypeObject PySet_Type
```

This is an instance of :c:type:`PyTypeObject` representing the Python :class:`set` type.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\[cpython-main] [Doc] [c-api] set.rst, line 44)

Unknown directive type "c:var".

```
.. c:var:: PyTypeObject PyFrozenSet_Type
```

This is an instance of :c:type:`PyTypeObject` representing the Python :class:`frozenset` type.

The following type check macros work on pointers to any Python object. Likewise, the constructor functions work with any iterable Python object.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\[cpython-main] [Doc] [c-api] set.rst, line 53)

Unknown directive type "c:function".

```
.. c:function:: int PySet_Check(PyObject *p)
```

Return true if *p* is a :class:`set` object or an instance of a subtype. This function always succeeds.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\[cpython-main] [Doc] [c-api] set.rst, line 58)

Unknown directive type "c:function".

```
.. c:function:: int PyFrozenSet_Check(PyObject *p)
```

Return true if *p* is a :class:`frozenset` object or an instance of a subtype. This function always succeeds.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\[cpython-main] [Doc] [c-api] set.rst, line 63)

Unknown directive type "c:function".

```
.. c:function:: int PyAnySet_Check(PyObject *p)
```

Return true if *p* is a :class:`set` object, a :class:`frozenset` object, or an instance of a subtype. This function always succeeds.

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Unknown directive type "c:function".

```
.. c:function:: int PySet_CheckExact(PyObject *p)
```

Return true if *p* is a :class:`set` object but not an instance of a subtype. This function always succeeds.

.. versionadded:: 3.10

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Unknown directive type "c:function".

```
.. c:function:: int PyAnySet_CheckExact(PyObject *p)
```

Return true if *p* is a :class:`set` object or a :class:`frozenset` object but not an instance of a subtype. This function always succeeds.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\cpython-main [Doc] [c-api] set.rst, line 81)

Unknown directive type "c:function".

```
.. c:function:: int PyFrozenSet_CheckExact(PyObject *p)
```

Return true if *p* is a :class:`frozenset` object but not an instance of a subtype. This function always succeeds.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\cpython-main [Doc] [c-api] set.rst, line 87)

Unknown directive type "c:function".

```
.. c:function:: PyObject* PySet_New(PyObject *iterable)
```

Return a new :class:`set` containing objects returned by the *iterable*. The *iterable* may be ``NULL`` to create a new empty set. Return the new set on success or ``NULL`` on failure. Raise :exc:`TypeError` if *iterable* is not actually iterable. The constructor is also useful for copying a set (`c=set(s)`).

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Unknown directive type "c:function".

```
.. c:function:: PyObject* PyFrozenSet_New(PyObject *iterable)
```

Return a new :class:`frozenset` containing objects returned by the *iterable*. The *iterable* may be ``NULL`` to create a new empty frozenset. Return the new set on success or ``NULL`` on failure. Raise :exc:`TypeError` if *iterable* is not actually iterable.

The following functions and macros are available for instances of :class:`set` or :class:`frozenset` or instances of their subtypes.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\cpython-main [Doc] [c-api] set.rst, line 104); [backlink](#)

Unknown interpreted text role "class".

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Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\cpython-main [Doc] [c-api] set.rst, line 108)

Unknown directive type "c:function".

```
.. c:function:: Py_ssize_t PySet_Size(PyObject *anyset)
```

```
.. index:: builtin: len
```

Return the length of a :class:`set` or :class:`frozenset` object. Equivalent to ``len(anyset)``. Raises a :exc:`PyExc_SystemError` if *anyset* is not a :class:`set`, :class:`frozenset`, or an instance of a subtype.

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Unknown directive type "c:function".

```
.. c:function:: Py_ssize_t PySet_GET_SIZE(PyObject *anyset)
```

Macro form of :c:func:`PySet_Size` without error checking.

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Unknown directive type "c:function".

```
.. c:function:: int PySet_Contains(PyObject *anyset, PyObject *key)
```

Return ``1`` if found, ``0`` if not found, and ``-1`` if an error is encountered. Unlike the Python :meth:`__contains__` method, this function does not automatically convert unhashable sets into temporary frozensets. Raise a :exc:`TypeError` if the *key* is unhashable. Raise :exc:`PyExc_SystemError` if *anyset* is not a :class:`set`, :class:`frozenset`, or an instance of a subtype.

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Unknown directive type "c:function".

```
.. c:function:: int PySet_Add(PyObject *set, PyObject *key)
```

Add *key* to a :class:`set` instance. Also works with :class:`frozenset` instances (like :c:func:`PyTuple_SetItem` it can be used to fill in the values of brand new frozensets before they are exposed to other code). Return ``0`` on success or ``-1`` on failure. Raise a :exc:`TypeError` if the *key* is unhashable. Raise a :exc:`MemoryError` if there is no room to grow. Raise a :exc:`SystemError` if *set* is not an instance of :class:`set` or its subtype.

The following functions are available for instances of :class:`set` or its subtypes but not for instances of :class:`frozenset` or its subtypes.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\cpython-main [Doc] [c-api] set.rst, line 142); [backlink](#)

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\cpython-main [Doc] [c-api] set.rst, line 142); [backlink](#)

Unknown interpreted text role "class".

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Unknown directive type "c:function".

```
.. c:function:: int PySet_Discard(PyObject *set, PyObject *key)
```

Return ``1`` if found and removed, ``0`` if not found (no action taken), and ``-1`` if an

error is encountered. Does not raise :exc:`KeyError` for missing keys. Raise a :exc:`TypeError` if the *key* is unhashable. Unlike the Python :meth:`~set.discard` method, this function does not automatically convert unhashable sets into temporary frozensets. Raise :exc:`PyExc_SystemError` if *set* is not an instance of :class:`set` or its subtype.

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Unknown directive type "c:function".

```
.. c:function:: PyObject* PySet_Pop(PyObject *set)
```

Return a new reference to an arbitrary object in the *set*, and removes the object from the *set*. Return ``NULL`` on failure. Raise :exc:`KeyError` if the set is empty. Raise a :exc:`SystemError` if *set* is not an instance of :class:`set` or its subtype.

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Unknown directive type "c:function".

```
.. c:function:: int PySet_Clear(PyObject *set)
```

Empty an existing set of all elements.