Reference Counting

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

Unknown directive type "highlight".

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

The macros in this section are used for managing reference counts of Python objects.

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Unknown directive type "c:function".

```
.. c:function:: void Py_INCREF(PyObject *o)

   Increment the reference count for object *o*.

   This function is usually used to convert a :term:`borrowed reference` to a
   :term:`strong reference` in-place. The :c:func:`Py_NewRef` function can be
   used to create a new :term:`strong reference`.

   The object must not be ``NULL``; if you aren't sure that it isn't
   ``NULL``, use :c:func:`Py_XINCREF`.
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\c-api\[cpython-main][Doc][c-api]refcounting.rst, line 26)

Unknown directive type "c:function".

```
.. c:function:: void Py_XINCREF(PyObject *o)

   Increment the reference count for object *o*.  The object may be ``NULL``, in
   which case the macro has no effect.

   See also :c:func:`Py_XNewRef`.
```

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Unknown directive type "c:function".

```
.. c:function:: PyObject* Py_NewRef(PyObject *o)

   Create a new :term:`strong reference` to an object: increment the reference
   count of the object *o* and return the object *o*.

   When the :term:`strong reference` is no longer needed, :c:func:`Py_DECREF`
   should be called on it to decrement the object reference count.

   The object *o* must not be ``NULL``; use :c:func:`Py_XNewRef` if *o* can be
   ``NULL``.

   For example::

       Py_INCREF(obj);
       self->attr = obj;

   can be written as::

       self->attr = Py_NewRef(obj);

   See also :c:func:`Py_INCREF`.

   .. versionadded:: 3.10
```

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Unknown directive type "c:function".

```
.. c:function:: PyObject* Py_XNewRef(PyObject *o)

   Similar to :c:func:`Py_NewRef`, but the object *o* can be NULL.

   If the object *o* is ``NULL``, the function just returns ``NULL``.

   .. versionadded:: 3.10
```

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Unknown directive type "c:function".

```
.. c:function:: void Py_DECREF(PyObject *o)

   Decrement the reference count for object *o*.

   If the reference count reaches zero, the object's type's deallocation
   function (which must not be ``NULL``) is invoked.

   This function is usually used to delete a :term:`strong reference` before
   exiting its scope.

   The object must not be ``NULL``; if you aren't sure that it isn't ``NULL``,
   use :c:func:`Py_XDECREF`.

   .. warning::

      The deallocation function can cause arbitrary Python code to be invoked (e.g.
      when a class instance with a :meth:`__del__` method is deallocated).  While
      exceptions in such code are not propagated, the executed code has free access to
      all Python global variables.  This means that any object that is reachable from
      a global variable should be in a consistent state before :c:func:`Py_DECREF` is
      invoked.  For example, code to delete an object from a list should copy a
      reference to the deleted object in a temporary variable, update the list data
      structure, and then call :c:func:`Py_DECREF` for the temporary variable.
```

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Unknown directive type "c:function".

```
.. c:function:: void Py_XDECREF(PyObject *o)

   Decrement the reference count for object *o*.  The object may be ``NULL``, in
   which case the macro has no effect; otherwise the effect is the same as for
   :c:func:`Py_DECREF`, and the same warning applies.
```

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Unknown directive type "c:function".

```
.. c:function:: void Py_CLEAR(PyObject *o)

   Decrement the reference count for object *o*.  The object may be ``NULL``, in
   which case the macro has no effect; otherwise the effect is the same as for
   :c:func:`Py_DECREF`, except that the argument is also set to ``NULL``.  The warning
   for :c:func:`Py_DECREF` does not apply with respect to the object passed because
   the macro carefully uses a temporary variable and sets the argument to ``NULL``
   before decrementing its reference count.

   It is a good idea to use this macro whenever decrementing the reference
   count of an object that might be traversed during garbage collection.
```

The following functions are for runtime dynamic embedding of Python: `Py_IncRef(PyObject *o)`, `Py_DecRef(PyObject *o)`. They are simply exported function versions of :c:func:`Py_XINCREF` and :c:func:`Py_XDECREF`, respectively.

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Unknown interpreted text role "c:func".

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The following functions or macros are only for use within the interpreter core: :c:func:`_Py_Dealloc`, :c:func:`_Py_ForgetReference`, :c:func:`_Py_NewReference`, as well as the global variable :c:data:`_Py_RefTotal`.

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Unknown interpreted text role "c:func".

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Unknown interpreted text role "c:func".

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Unknown interpreted text role "c:func".

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Unknown interpreted text role "c:data".