:mod:'enum' --- Support for enumerations

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

Unknown interpreted text role "mod".

Unknown directive type "module".

. module:: enum
 :synopsis: Implementation of an enumeration class.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 7)

Unknown directive type "moduleauthor".

.. moduleauthor:: Ethan Furman <ethan@stoneleaf.us>

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

Unknown directive type "sectionauthor".

.. sectionauthor:: Barry Warsaw <barry@python.org>

System Message: ERROR/3 (p:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 9)

Unknown directive type "sectionauthor".

.. sectionauthor:: Eli Bendersky <eliben@gmail.com>

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Unknown directive type "sectionauthor".

.. sectionauthor:: Ethan Furman <ethan@stoneleaf.us>

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Unknown directive type "versionadded".

.. versionadded:: 3.4

Source code: :source:`Lib/enumpy

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Important

This page contains the API reference information. For tutorial information and discussion of more advanced topics, see

 ref. Basic Tutorial <enum-basictutorial>`

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resources\cpython main\Doc\library\ [cpython-

main] [Doc]
[library]enum.rst
line 21);
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 ref: Advanced Tutorial <enumadvanced-tutorial>`

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line 22); backlink

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 ref: Enum Cookbook <enumcookbook>`

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(D: \timesonboardingresources\sampleonboardingresources\cpythonmain| [Doc]
[1ibrary|enum.rst,
line 23);
backlink

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An enumeration:

- is a set of symbolic names (members) bound to unique values
- can be iterated over to return its members in definition order
- · uses call syntax to return members by value
- · uses index syntax to return members by name

Enumerations are created either by using :keyword: 'class' syntax, or by using function-call syntax:

 $System Message: ERROR/3 \ (D:\onboarding-resources\ sample-onboarding-resources\ cpython main\ Doc\library\ [cpython-main]\ [Doc]\ [library]\ enum.\ rst,\ line\ 34); \ backlink$

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Even though we can use 'keyword' class' syntax to create Enums, Enums are not normal Python classes. See ref. How are Enums different? <enum-class-differences> for more details.

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 $System Message: ERROR/3 (p:\onboarding-resources\sumple-onboarding-resources\cpython-main\cpython-main] [Doc] [library] enum.rst, line 48); \\backlink$

Unknown interpreted text role "ref".

Note

Nomenclature

• The class :Color` is an enumeration (or enum)

```
System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 54); backlink
Unknown interpreted text role "class".
```

The attributes attr: 'Color.RED', attr: 'Color.GREEN', etc., are enumeration members (or members) and are functionally constants.

```
System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc] [library]enum.rst, line 55); backlink
Unknown interpreted text role "attr".
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library] enum.rst, line 55); backlink
Unknown interpreted text role "attr".

The enum members have names and values (the name of attr: 'Color.RED' is RED, the value of attr: 'Color.BLUE' is 3, etc.)

```
System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 57); backlink
Unknown interpreted text role "attr".
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library] enum.rst, line 57); backlink
Unknown interpreted text role "attr".

Module Contents

:class:`EnumType`

```
System Message: ERROR/3 (D:\onboarding-resources\sumple-onboarding-resources\cpython-main\doc\library\cpython-main\doc\library\enum.rst, line 66); $backlink$
```

Unknown interpreted text role "class".

The ${\tt type}$ for Enum and its subclasses.

:class:'Enum'

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Unknown interpreted text role "class".

Base class for creating enumerated constants.

:class:'IntFnum'

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Unknown interpreted text role "class".

Base class for creating enumerated constants that are also subclasses of :class:'int'. (Notes)

 $System Message: ERROR/3 (p:\onboarding-resources\ample-onboarding-resources\cpython-main\doc\library\cpython-main] [Doc] [library] enum.rst, line 76); \\bucklink$

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:class:\StrEnum\

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]enum.rst, line 79); backlink

Unknown interpreted text role "class".

Base class for creating enumerated constants that are also subclasses of :class:'str'. (Notes)

 $System Message: ERROR/3 \ (D:\onboarding-resources\ sample-onboarding-resources\ (python-main) \ [Doc] \ [library] \ enum. \ rst, line 81); \ backlink$

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:class:`Flag`

 $System Message: ERROR/3 (D:\onboarding-resources\sumple-onboarding-resources\cpython-main\coclibrary\cpython-main\clibrary\clib$

Unknown interpreted text role "class".

Base class for creating enumerated constants that can be combined using the bitwise operations without losing their class; Flag' membership.

 $System Message: ERROR/3 \ (D:\onboarding-resources\ sample-onboarding-resources\ (python-main) \ [Doc] \ [library] \ enum.rst, line 86); backlink$

Unknown interpreted text role "class".

:class:`IntFlag`

System Message: ERROR/3 (p:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library] enum.rst, line 89); backlink

Unknown interpreted text role "class".

Base class for creating enumerated constants that can be combined using the bitwise operators without losing their class: IntFlag' membership, class: IntFlag' members are also subclasses of class: int'. (Notes)

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Unknown interpreted text role "class".

 $System\ Message: ERROR/3\ (D:\onboarding-resources) sample-onboarding-resources (python-main) [Doc] [library] enum. rst, line 91); backlink$

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System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library] enum.rst, line 91); backlink

Unknown interpreted text role "class".

:class:`EnumCheck`

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]enum.rst, line 95); backlink

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An enumeration with the values CONTINUOUS, NAMED_FLAGS, and UNIQUE, for use with finc: verify to ensure various constraints are met by a given enumeration.

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:class:`FlagBoundary`

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]enum.rst, line 101); backlink

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An enumeration with the values STRICT, CONFORM, EJECT, and KEEP which allows for more fine-grained control over how invalid values are dealt with in an enumeration.

:class:`auto

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

Unknown interpreted text role "class".

Instances are replaced with an appropriate value for Enum members. ${\it class: StrEnum'}$ defaults to the lower-cased version of the member name, while other Enums default to 1 and increase from there.

 $System Message: ERROR/3 (D:\onboarding-resources\ample-onboarding-resources\cpython-main\Doc\library\cpython-main] [Doc] [library] enum.rst, line 109); backlink$

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:func:`~enum.property`

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]enum.rst, line 113); backlink

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Allows :class: 'Enum' members to have attributes without conflicting with member names.

 $System Message: ERROR/3 (p:\onboarding-resources\ample-onboarding-resources\cpython-main\Doc\library\cpython-main] [Doc] [library] enum.rst, line 115); backlink$

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:func:`unique

 $System Message: ERROR/3 (D: \onboarding-resources \ample-onboarding-resources \cpython-main) [Doc] [library] enum.rst, line 118); \\ backlink$

Unknown interpreted text role "func".

Enum class decorator that ensures only one name is bound to any one value.

:func:`verify

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 122); backlink

Unknown interpreted text role "func".

Enum class decorator that checks user-selectable constraints on an enumeration.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 128)

Unknown directive type "versionadded".

.. versionadded:: 3.6 ``Flag``, ``IntFlag``, ``auto``

 $System \, Message: ERROR/3 \, (D: \onboarding-resources \ample-onboarding-resources \cpython \, main\Doc\library\cpython-main\cite[Doc][library]enum.rst, \, line \, 129)$

Unknown directive type "versionadded".

.. versionadded:: 3.11 ``StrEnum``, ``EnumCheck``, ``FlagBoundary``, ``property``

Data Types

EmumType is the .term' metaclass' for emum enumerations. It is possible to subclass EmumType -- see ref: Subclassing EnumType <- see

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]enum.rst, line 139); backlink

Unknown interpreted text role "term".

System Message: ERROR/3 (p:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 139); backlink

Unknown interpreted text role "ref".

EnumType is responsible for setting the correct :meth: __repr__', :meth: __str_ ', meth:' format ', and meth:' reduce methods on the final *enum*, as well as creating the enum members, properly handling duplicates, providing iteration over the enum class, etc.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboardin main\Doc\library\[cpython-main][Doc][library]enum.rst, line 143); backlink

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System Message: ERROR/3 (p:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 143); backlink

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ain\Doc\library\[cpython-main][Doc][library]enum.rst, line 143); backlink

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Unknown directive type "method".

```
.. method:: EnumType.__contains__(cls, member)
   Returns ``True`` if member belongs to the ``cls``::
      >>> some var = Color.RED
       >>> some_var in Color
        In Python 3.12 it will be possible to check for member values and not just members; until then, a ``TypeError`` will be raised if a non-Enum-member is used in a containment check.
```

 $System\,Message:\,ERROR/3\,(\texttt{D:} \\ \texttt{\conboarding-resources} \\ \texttt{\conboarding-resourc$ \Doc\library\[cpythonain] [Doc] [library] enum.rst, line 162)

Unknown directive type "method".

```
.. method:: EnumType.__dir__(cls)
  Returns ``['_class_', '_doc_', '_members_', '_module_']`` and the names of the members in *cls*::
     >>> dir(Color)
     ['BLUE', 'GREEN', 'RED', '_class_', '_contains_', '_doc_', '_getitem_', '_init_subclass_', '_iter_', '_len_', '
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpythonin\Doc\library\[cpython-main][Doc][library]enum.rst, line 170)

Unknown directive type "method".

```
.. method:: EnumType.__getattr__(cls, name)
   Returns the Enum member in *cls* matching *name*, or raises an :exc:`AttributeError ::
     >>> Color.GREEN
     <Color.GREEN: 2>
```

System Message: ERROR/3 (D:\onboarding-resources\sample-c arding-resources\cpythonmain] [Doc] [library] enum.rst, line 177) \Doc\library\[cpython

Unknown directive type "method".

```
.. method:: EnumType.__getitem__(cls, name)
  Returns the Enum member in *cls* matching *name*, or raises an :exc:`KeyError`::
     >>> Color['BLUE']
    <Color.BLUE: 3>
```

System Message: ERROR/3 (D:\onboarding-resources\sample-o in\Doc\library\[cpython= main] [Doc] [library] enum.rst, line 184)

Unknown directive type "method".

```
.. method:: EnumType.__iter__(cls)
   Returns each member in *cls* in definition order::
     >>> list(Color)
     [<Color.RED: 1>, <Color.GREEN: 2>, <Color.BLUE: 3>]
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpythonin\Doc\library\[cpython-main][Doc][library]enum.rst, line 191)

Unknown directive type "method".

```
.. method:: EnumType.__len__(cls)
  Returns the number of member in *cls*::
     >>> len(Color)
```

n\Doc\library\[cpython-main][Doc][library]enum.rst, line 198)

Unknown directive type "method".

```
.. method:: EnumType.__reversed__(cls)
  Returns each member in *cls* in reverse definition order::
```

```
>>> list(reversed(Color))
[<Color.BLUE: 3>, <Color.GREEN: 2>, <Color.RED: 1>]
```

```
Enum is the base class for all enum enumerations.
        System\ Message:\ ERROR/3\ (\texttt{D:\lambda} resources \ \ \ sample-onbounding-resources)
                                                                                                 oarding-resources\cpython-
             in\Doc\library\[cpython-main][Doc][library]enum.rst, line 210)
        Unknown directive type "attribute".
              .. attribute:: Enum.name
                  The name used to define the ``Enum`` member::
                     >>> Color.BLUE.name
        System Message: ERROR/3 (D:\onboarding-res
                                                                                                    rding-resources\cpython-
           ain\Doc\library\[cpython-main][Doc][library]enum.rst, line 217)
        Unknown directive type "attribute".
             .. attribute:: Enum.value
                  The value given to the ``Enum`` member::
                  .. note:: Enum member values
                     Member values can be anything: :class:`int`, :class:`str`, etc.. If the exact value is unimportant you may use :class:`auto` instances and an appropriate value will be chosen for you. Care must be taken if you mix :class:`auto` with other values.
        System Message: ERROR/3 (D:\onboarding-resources\sample-onbo
           ain\Doc\library\[cpython-main][Doc][library]enum.rst, line 231)
        Unknown directive type "attribute".
             .. attribute:: Enum. ignore
                    '_ignore_'' is only used during creation and is removed from the numeration once creation is complete.
                  ``_ignore_`` is a list of names that will not become members, and whose names will also be removed from the completed enumeration. See :ref:`TimePeriod <enum-time-period>` for an example.
        System Message: ERROR/3 (D:\onboarding-resources\sample-c
                                                                                                   arding-resources\cpython-
            in\Doc\library\[cpython-main][Doc][library]enum.rst, line 240)
        Unknown directive type "method".
             .. method:: Enum.__call__(cls, value, names=None, \*, module=None, qualname=None, type=None, start=1, boundary=None)
                 This method is called in two different ways:
                 * to look up an existing member:
                      :cls: The enum class being called. :value: The value to lookup.
                  * to use the ``cls`` enum to create a new enum:
                      :cls: The enum class being called.
:value: The name of the new Enum to create.
:names: The names/values of the members for the new Enum.
:module: The name of the module the new Enum is created in.
:qualname: The actual location in the module where this Enum can be found.
:type: A mix-in type for the new Enum.
:start: The first integer value for the Enum (used by :class:`auto`)
:boundary: How to handle out-of-range values from bit operations (:class:`Flag`
         System Message: ERROR/3 (b:\onboarding-resources\sample-onboarding-resources\cpython
            in\Doc\library\[cpython-main][Doc][library]enum.rst, line 260)
        Unknown directive type "method".
             .. method:: Enum. dir (self)
                  Returns ``['_class_', '_doc_', '_module_', 'name', 'value']`` and any public methods defined on *self._class_*::
                     >>> from datetime import date
>>> class Weekday(Enum):
... MONDAY = 1
... TUESDAY = 2
                                  WEDNESDAY = 3
                                 WEDNESDAY = 3
THURSDAY = 4
FRIDAY = 5
SATURDAY = 6
SUNDAY = 7
@classmethod
                      ... def today(cls):
... print('today is %s' % cls(date.today().isoweekday()).name)
>>> dir(Weekday.SATURDAY)
['_class_', '_doc_', '_eq_', '_hash_', '_module_', 'name', 'today', 'value']
        nin\Doc\library\[cpython-main][Doc][library]enum.rst, line 280)
        Unknown directive type "method".
              .. method:: Enum._generate_next_value_(name, start, count, last_values)
```

:name: The name of the member being defined (e.g. 'RED'). :start: The start value for the Enum; the default is 1. :count: The number of members currently defined, not including this one. :last_values: A list of the previous values. A *staticmethod* that is used to determine the next value returned by :class:`auto`:: >>> from enum import auto >>> class PowersOfThree(Enum):

```
... @staticmethod
... def _generate_next_value_(name, start, count, last_values):
... return (count + 1) * 3
... FIRST = auto()
... SECOND = auto()
>>> PowersOfThree.SECOND.value
6
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]enum.rst, line 300)

Unknown directive type "method".

```
.. method:: Enum.__init_subclass__(cls, \**kwds)

A *classmethod* that is used to further configure subsequent subclasses.
By default, does nothing.
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython main\Doc\library\[cpython-main] [Doc] [library] enum.rst, line 305)

Unknown directive type "method".

```
.. method:: Enum._missing_(cls, value)

A *classmethod* for looking up values not found in *cls*. By default it does nothing, but can be overridden to implement custom search behavior::
```

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Unknown directive type "method".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 341)

Unknown directive type "method".

```
...method:: Enum._str_(self)
Returns the string used for *str()* calls. By default, returns the
*Enum* name and member name, but can be overridden::

>>> class OtherStyle(Enum):
... ALTERNATE = auto()
... OTHER = auto()
... SOMETHING ELSE = auto()
... def _str_(self):
... return f'(self.name)'
>>> OtherStyle.ALTERNATE; str(OtherStyle.ALTERNATE), f"{OtherStyle.ALTERNATE}"
(<OtherStyle.ALTERNATE: 1>, 'ALTERNATE', 'ALTERNATE')
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 355)

Unknown directive type "method".

Note

Using :class: `auto` with :class: `Enum` results in integers of increasing value, starting with 1.

```
System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 371); backlink
```

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, lin 371); backlink

Unknown interpreted text role "class".

IntEnum is the same as Enum, but its members are also integers and can be used anywhere that an integer can be used. If any integer operation is performed with an IntEnum member, the resulting value loses its enumeration status.

Note

Using :class:'auto' with :class:'IntEnum' results in integers of increasing value, starting with 1.

System Message: ERROR/3 (p:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 397); backlink

Unknown interpreted text role "class".

System Message: ERROR/3 (p:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library] enum.rst, line 397); backlink

Unknown interpreted text role "class".

```
System Message: ERROR/3 (b:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\(cpython-main\Doc\library\enum.rst, line 400\)

Unknown directive type "Versionchanged".

... versionchanged:: 3.11 :meth: _ str__ is now :func: int._ str__ to better support the *replacement of existing constants* use-case. :meth: _ format_ ` was already :func: int._ format_ ` for that same reason.
```

StrEnum is the same as Enum, but its members are also strings and can be used in most of the same places that a string can be used. The result of any string operation performed on or with a StrEnum member is not part of the enumeration.

Note

There are places in the stdlib that check for an exact <code>class:'str'</code> instead of a <code>class:'str'</code> subclass (i.e. <code>type(unknown) == str instead of isinstance(str, unknown)), and in those locations you will need to use <code>str(StrEnum.member)</code>.</code>

 $System Message: ERROR/3 (p:\onboarding-resources\symple-onboarding-resources\cpython-main] [Doc] [library] enum.rst, line 411); backlink$

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library] enum. rst, line 411); backlink

Unknown interpreted text role "class".

Note

Using class: auto' with class: StrEnum' results in the lower-cased member name as the value.

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Unknown interpreted text role "class".

 $System Message: ERROR/3 (p:\onboarding-resources\sample-onboarding-resources\cpython-main\doc\library\cpython-main] [Doc] [library] enum.rst, line 418); backlink$

Unknown interpreted text role "class".

Note

meth'_str_\' is :flinc'str_str_\' to better support the *replacement of existing constants* use-case. meth'_format_\' is likewise :flinc'str_format_\' for that same reason.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 421); backlink

Unknown interpreted text role "meth".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 421); backlink

Unknown interpreted text role "func".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 421); backlink

Unknown interpreted text role "meth".

System Message: ERROR/3 (p:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library] enum.rst, line 421); backlink

Unknown interpreted text role "func".

```
System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 425)
Unknown directive type "versionadded".
.. versionadded:: 3.11
```

Flag members support the bitwise operators ε (AND), + (OR), $^{\wedge}$ (XOR), and $^{\sim}$ (INVERT); the results of those operators are members of the enumeration.

```
System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 433)

Unknown directive type "method".

.. method:: __contains__(self, value)

Returns *True* if value is in self::

>>> from enum import Flag, auto
>>> class Color(Flag):
... RED = auto()
... GREEN = auto()
... BLUE = auto()
>>> purple = Color.RED | Color.BLUE
>>> white = Color.RED | Color.GREEN | Color.BLUE
>>> color.GREEN in purple
False
>>> Color.GREEN in white
True
>>> purple in white
True
>>> white in purple
False
```

 $System \, Message: ERROR/3 \, (b:\onboarding-resources\ample-onboarding-resources\cpython-main\doc\library\cpython-main\doc\library\end{2.5} for line 453)$

Unknown directive type "method".

```
.. method:: __iter__(self):

Returns all contained members::

>>> list(Color.RED)
[<Color.RED: 1>]
>>> list(purple)
[<Color.RED: 1>, <Color.BLUE: 4>]
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 462)

Unknown directive type "method".

```
.. method:: _len__(self):
Returns number of members in flag::
    >>> len(Color.GREEN)
1
    >>> len(white)
3
```

System Message: ERROR/3 (p:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 471)

Unknown directive type "method".

```
.. method:: _bool__(self):
Returns *True* if any members in flag, *False* otherwise::

>>> bool(Color.GREEN)
True
>>> bool (white)
True
>>> black = Color(0)
>>> bool(black)
False
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 483)

Unknown directive type "method".

```
.. method:: _or_(self, other)
Returns current flag binary or'ed with other::
>>> Color.RED | Color.GREEN
<Color.RED|GREEN: 3>
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 490)

Unknown directive type "method".

```
.. method:: _and_(self, other)

Returns current flag binary and'ed with other::

>>> purple & white

<Color.RED|BLUE: 5>

>>> purple & Color.GREEN

<Color: 0>
```

System Message: ERROR/3 (D:\onboarding-resources\sa in\Doc\library\[cpython-main][Doc][library]enum.rst, line 499)

Unknown directive type "method".

```
.. method:: __xor__(self, other)
    Returns current flag binary xor'ed with other::
         >>> purple ^ white

<Color.GREEN: 2>

>>> purple ^ Color.GREEN

<Color.RED|GREEN|BLUE: 7
```

 $System\,Message:\,ERROR/3\, (\texttt{D:} \verb|\conting-resources| sample-onboarding-resources| conting-resources| cont$ main\Doc\library\[cpython-main][Doc][library]enum.rst, line 508)

Unknown directive type "method".

```
.. method:: __invert__(self):
   Returns all the flags in *type(self)* that are not in self::
       >>> ~white
       <Color: 0>
       >>> ~purple

<Color.GREEN: 2>

>>> ~Color.RED
       <Color.GREEN|BLUE: 6>
```

System Message: ERROR/3 (D:\onboarding-resources\sample-on oarding-resources\cpythonin\Doc\library\[cpython-main][Doc][library]enum.rst, line 519)

Unknown directive type "method".

```
.. method:: _numeric_repr_
    Function used to format any remaining unnamed numeric values. Default is the value's repr; common choices are :func:`hex` and :func:`oct`.
```

Using $\mbox{{\it class:}}\mbox{{\it 'auto'}}$ with $\mbox{{\it class:}}\mbox{{\it Flag'}}$ results in integers that are powers of two, starting with 1.

 $System\,Message:\,ERROR/3\,(\text{D:}\label{localing-resources}) sample-onboarding-resources and the sample-onboarding-resources are supplied to the sample of th$ ources\cpython-main\Doc\library\[cpython-main][Doc][library]enum.rst, line 526); backlink

Unknown interpreted text role "class".

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Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-reso in\Doc\library\[cpython-main][Doc][library]enum.rst, line 529)

Unknown directive type "versionchanged".

```
.. versionchanged:: 3.11 The *repr()* of zero-valued flags has changed. It is now::
       >>> Color(0) # doctest: +SKIP
      <Color: 0>
```

IntFlag is the same as Flag, but its members are also integers and can be used anywhere that an integer can be used.

```
>>> from enum import IntFlag, auto
>>> class Color(IntFlag):
...     RED = auto()
...     GREEN = auto()
 ... BLUE = auto()
>>> Color.RED & 2
<Color: 0>
>>> Color.RED | 2
<Color.RED|GREEN: 3>
```

If any integer operation is performed with an IntFlag member, the result is not an IntFlag:

```
>>> Color.RED + 2
```

If a Flag operation is performed with an IntFlag member and:

- the result is a valid IntFlag: an IntFlag is returned
- the result is not a valid IntFlag: the result depends on the FlagBoundary setting

The repr() of unnamed zero-valued flags has changed. It is now:

```
>>> Color(0)
<Color: 0>
```

Using class: auto' with class: IntFlag' results in integers that are powers of two, starting with 1.

 $System\,Message:\,ERROR/3\,(\text{D:}\colored ing-resources}\colored ing-resources)$ ain\Doc\library\[cpython-main][Doc][library]en 568): backlink

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboardinges\cpython-main\Doc\library\[cpython-main][Doc][library]enum.rst, line 568); backlink

Unknown interpreted text role "class".

```
System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main\][Doc] [library]enum.rst, line 571)

Unknown directive type "\ersionchanged".

.. versionchanged:: 3.11 :meth:\_str_\` is now :func:\int._str_\` to better support the *replacement of existing constants* use-case. :meth:\_format_\` was already :func:\int._format_\` for that same reason.
```

EnumCheck contains the options used by the :func: 'verify' decorator to ensure various constraints; failed constraints result in a :exc: 'ValueError'.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library] enum.rst, line 578); backlink
Unknown interpreted text role "func".

System Message: ERROR/3 (p:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library] enum.rst, line 578); backlink
Unknown interpreted text role "exc".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 581)

Unknown directive type "attribute".

.. attribute:: UNIQUE

Ensure that each value has only one name::

>>> from enum import Enum, verify, UNIQUE

>>> @verify(UNIQUE)

... class Color (Enum):

... RED = 1

... GREEN = 2

... BLUE = 3

... CRIMSON = 1

Traceback (most recent call last):

...

ValueError: aliases found in <enum 'Color'>: CRIMSON -> RED

.. attribute:: NAMED_FLAGS

Ensure that any flag groups/masks contain only named flags -- useful when values are specified instead of being generated by :func:`auto`

>>> from enum import Flag, verify, NAMED_FLAGS
>>> @verify(NAMED_FLAGS)
... class Color(Flag):
... RED = 1
... GREEN = 2
... BLUE = 4
... WHITE = 15
... NEON = 31
Traceback (most recent call last):
...
ValueError: invalid Flag 'Color': aliases WHITE and NEON are missing combined values of 0x18 [use enum.show_flag_values(value)]

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Note

CONTINUOUS and NAMED_FLAGS are designed to work with integer-valued members.

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

Unknown directive type "attribute".

in\Doc\library\[cpython-main][Doc][library]enum.rst, line 612)

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]enum.rst, line 633)

Unknown directive type "versionadded".

.. versionadded:: 3.11

FlagBoundary controls how out-of-range values are handled in Flag and its subclasses.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]enum.rst, line 640)

Unknown directive type "attribute".

.. attribute:: STRICT

Out-of-range values cause a :exc:`ValueError` to be raised. This is the default for :class:`Flag`::

>>> from enum import Flag, STRICT
>>> class StrictFlag(Flag, boundary=STRICT):
... RED = auto()
... GREEN = auto()
... BLUE = auto()
>>> StrictFlag(2**2 + 2**4)
Traceback (most recent call last):

```
...
ValueError: <flag 'StrictFlag'> invalid value 20
given 0b0 10100
allowed 0b0 00111
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 657)

Unknown directive type "attribute".

```
.. attribute:: CONFORM

Out-of-range values have invalid values removed, leaving a valid *Flag* value::

>>> from enum import Flag, CONFORM
>>> class ConformFlag(Flag, boundary=CONFORM):
... RED = auto()
... GREEN = auto()
... BLUE = auto()
>>> ConformFlag(2**2 + 2**4)
<ConformFlag.BLUE: 4>
```

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Unknown directive type "attribute".

```
.. attribute:: EJECT
Out-of-range values lose their *Flag* membership and revert to :class:`int`.
This is the default for :class:`IntFlag`::

>>> from enum import Flag, EJECT
>>> class EjectFlag(Flag, boundary=EJECT):
... RED = auto()
... GREEN = auto()
... BLUE = auto()
>>> EjectFlag(2**2 + 2**4)
20
```

 $System Message: ERROR/3 \ (D:\nboarding-resources\ sample-onboarding-resources\ python main\ Doc\library\ [cpython-main]\ [Doc]\ [library]\ enum.rst,\ line\ 683)$

Unknown directive type "attribute".

```
.. attribute:: KEEP

Out-of-range values are kept, and the *Flag* membership is kept. This is used for some stdlib flags:

>>> from enum import Flag, KEEP
>>> class KeepFlag(Flag, boundary=KEEP):
... RED = auto()
... GREEN = auto()
... BLUE = auto()
>>> KeepFlag(2**2 + 2**4)
<KeepFlag.BLUE|16: 20>
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 696)

Unknown directive type "versionadded".

```
.. versionadded:: 3.11
```

Supported __dunder__ names

attr: __members__` is a read-only ordered mapping of member_name/member items. It is only available on the class.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 703); backlink

Unknown interpreted text role "attr".

.meth'__new__', if specified, must create and return the enum members; it is also a very good idea to set the member's attr: _value_' appropriately. Once all the members are created it is no longer used.

 $System \, Message: ERROR/3 \, (\texttt{D:\noboarding-resources} \ sample-onboarding-resources \ \ cpython-main\ [Doc][library] \, enum.rst, \, line \, 706); \, \textit{backlink} \,$

Unknown interpreted text role "meth".

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Unknown interpreted text role "attr".

Supported _sunder_ names

- _name_ -- name of the member
- _value_ -- value of the member; can be set / modified in __new__
- _missing_ -- a lookup function used when a value is not found; may be overridden
- _ignore_ -- a list of names, either as a class: list or a class: str', that will not be transformed into members, and will be removed from the final class

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library] enum.rst, line 719); backlink

Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main][Doc][library]enum.rst, line 719); backlink

Unknown interpreted text role "class".

- order -- used in Python 2/3 code to ensure member order is consistent (class attribute, removed during class creation)
- generate next value -- used to get an appropriate value for an enum member; may be overridden

For standard "classes: "Enum" classes the next value chosen is the last value seen incremented by one.

System Message: ERROR/3 (D:\onboarding-resources\samplenboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 729); backlink Unknown interpreted text role "class".

For :class: 'Flag' classes the next value chosen will be the next highest power-of-two, regardless of the last value seen.

System Message: ERROR/3 (D:\onboarding-resources\sampleonboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library] enum.rst, line 732); backlink Unknown interpreted text role "class".

System Message: ERROR/3 (D:\onboarding-resources\sa in\Doc\library\[cpython-main][Doc][library]enum.rst, line 735) Unknown directive type "versionadded".

```
.. versionadded:: 3.6 ``_missing_``, ``_order_``, ``_generate_next_value_`
```

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Unknown directive type "versionadded".

```
.. versionadded:: 3.7 ``_ignore_``
```

Utilities and Decorators

auto can be used in place of a value. If used, the Enum machinery will call an Enum's meth: generate next value 'to get an appropriate value. For Enum and IntEnum that appropriate value will be the last value plus one; for Flag and IntFlag it will be the first power-of-two greater than the last value; for StrEnum it will be the lower-cased version of the member's name.

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpython-main\Doc\library\[cpython-main] [Doc] [library]enum.rst, line 745); backlink Unknown interpreted text role "meth".

_generate_next_value_ can be overridden to customize the values used by auto.

System Message: ERROR/3 (D:\onboarding-resources\sample-on in\Doc\library\[cpython-main][Doc][library]enum.rst, line 755)

Unknown directive type "decorator".

.. decorator:: property

A decorator similar to the built-in *property*, but specifically for enumerations. It allows member attributes to have the same names as themselves.

.. note:: the *property* and the member must be defined in separate classes; for example, the *value* and *name* attributes are defined in the *Enum* class, and *Enum* subclasses can define members with the names `value` and `name`.

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Unknown directive type "decorator".

```
.. decorator:: unique
```

A :keyword:`class` decorator specifically for enumerations. It searches an enumeration's :attr:`_members__`, gathering any aliases it finds; if any are found :exc:`ValueError` is raised with the details::

```
>>> from enum import Enum, unique
>>> @unique
... class Mistake(Enum):
    ONE = 1

TWO = 2
Traceback (most recent call last):
ValueError: duplicate values found in <enum 'Mistake'>: FOUR -> THREE
```

System Message: ERROR/3 (D:\onboarding-resources\sample-onboarding-resources\cpythonain\Doc\library\[cpython-main][Doc][library]enum.rst, line 786)

Unknown directive type "decorator".

A :keyword:`class` decorator specifically for enumerations. Members from :class:`EnumCheck` are used to specify which constraints should be checked on the decorated enumeration.

.. versionadded:: 3.11

System Message: ERROR/3 (D:\onb main\Doc\library\[cpython-main][Doc][library]enum.rst, line 799); backlink

Unknown interpreted text role "class".

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Unknown interpreted text role "class".

 $System Message: ERROR/3 (D:\onboarding-resources\ample-onboarding-resources\cpython-main\collibrary\cpython-main\cite{Control} [library] enum.rst, line 799); backlink$

Unknown interpreted text role "class".

These three enum types are designed to be drop-in replacements for existing integer- and string-based values;as such, they have extra limitations:

- __str__ uses the value and not the name of the enum member
 __format__, because it uses __str__, will also use the value of the enum member instead of its name

If you do not need/want those limitations, you can either create your own base class by mixing in the ${\tt int}$ or ${\tt str}$ type yourself:

```
>>> from enum import Enum
>>> class MyIntEnum(int, Enum):
... pass
```

or you can reassign the appropriate :meth:'str', etc., in your enum:

resources\cpython-main\Doc\library\[cpython-main][Doc][library]enum.rst, line 816); backlink

Unknown interpreted text role "meth".

```
>>> from enum import IntEnum
>>> class MyIntEnum(IntEnum):
... __str__ = IntEnum._str__
```