
Interval Set Documentation

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Contents:

1	Interval set module documentation	3
2	Indices and tables	7
	Python Module Index	9

This library is a simple way to describe and manage closed interval set with native python object: a list of tuple. See the [Interval set module documentation](#) for more details and examples.

This library was made to be simple and reliable. All functions are tested against the examples given in the docstrings. You can run the test with `py.test` like this:

```
py.test -v --doctest-module interval_set
```

Interval set module documentation

Functions to manage and convert intervals set.

An interval is a tuple (begin, end). An interval of 1 element where eID is the element ID is formatted (eID, eID).

An interval set is a list of non overlapping intervals.

`interval_set.interval_set.aggregate(itvs)`
 Aggregate *NOT* overlapping intervals (intersect must be empty) to remove gaps.

```
>>> aggregate([])
[]
>>> aggregate([(1, 2), (3, 4)])
[(1, 4)]
>>> aggregate([(3, 4), (1, 2)])
[(1, 4)]
```

`interval_set.interval_set.difference(itvs_base, itvs2)`
 returns the difference between an interval set and an other

```
>>> difference([], [(1, 1)])
[]
>>> difference([(1, 1), (3, 4)], [(1, 2), (4, 7)])
[(3, 3)]
>>> difference([(1, 12)], [(1, 2), (4, 7)])
[(3, 3), (8, 12)]
```

`interval_set.interval_set.equals(itvs1, itvs2)`

Check for equality between two interval sets

TODO: this version is working bu it is not optimized...

```
>>> equals([], [])
True
>>> equals([(1, 1)], [(1, 2)])
False
>>> equals([(1, 10)], [])
False
>>> equals([(1, 2), (3, 4)], [(1, 4)])
True
>>> equals([(5, 100), (3, 4)], [(3, 4), (5, 100)])
True
```

`interval_set.interval_set.id_list_to_interval_set(ids)`

Convert list of ID (int) to an intervals set

`interval_set.interval_set.intersection(itvs1, itvs2)`

Returns an interval set that is an intersection of `itvs1` and `itvs2`.

```
>>> intersection([(1, 2), (4, 5)], [(1, 3), (5, 7)])
[(1, 2), (5, 5)]
>>> intersection([(2, 3), (5, 7)], [(1, 1), (4, 4)])
[]
>>> intersection([(3, 7)], [(2, 8)])
[(3, 7)]
>>> intersection([(3, 7)], [(2, 6)])
[(3, 6)]
```

`interval_set.interval_set.interval_set_to_id_list(itvs)`

Convert an interval set to a list of ID (int)

`interval_set.interval_set.interval_set_to_set(intervals)`

Convert interval set to python set

```
>>> interval_set_to_set([])
set()
>>> interval_set_to_set([(1, 1), (3, 4)])
{1, 3, 4}
```

`interval_set.interval_set.interval_set_to_string(intervals, separator=' ')`

Convert interval set to strings:

```
>>> interval_set_to_string([(1, 2), (5, 5), (10, 50)])
'1-2 5 10-50'
```

`interval_set.interval_set.set_to_interval_set(s)`

Convert python set to interval set

```
>>> set_to_interval_set(set())
[]
>>> set_to_interval_set({1, 2, 5, 7, 9, 10, 11})
[(1, 2), (5, 5), (7, 7), (9, 11)]
```

`interval_set.interval_set.string_to_interval_set(s, separator=' ')`

Transforms a string interval set representation to interval set

```
>>> string_to_interval_set("1 2 3 7-9 13")
[(1, 1), (2, 2), (3, 3), (7, 9), (13, 13)]
>>> string_to_interval_set("")
[]
>>> string_to_interval_set("(2,3)")
Traceback (most recent call last):
...
ValueError: Bad interval format. Parsed string is: (2,3)
```

`interval_set.interval_set.total(itvs)`

Compute the total number of element by a cumulative sum on the size of all intervals

```
>>> total([])
0
>>> total([(0, 0)])
1
>>> total([(1, 1), (3, 4)])
3
```

`interval_set.interval_set.union(itvs1, itvs2)`

Do the union of two interval sets

TODO: this version is working bu it is not optimized...

```
>>> union([(1, 1), (3, 4)], [(1, 2), (4, 7)])  
[(1, 7)]
```

Indices and tables

- `genindex`
- `modindex`
- `search`

i

`interval_set.interval_set`, 3

A

`aggregate()` (in module `interval_set.interval_set`), 3

D

`difference()` (in module `interval_set.interval_set`), 3

E

`equals()` (in module `interval_set.interval_set`), 3

I

`id_list_to_interval_set()` (in module `interval_set.interval_set`), 3

`intersection()` (in module `interval_set.interval_set`), 3

`interval_set.interval_set` (module), 3

`interval_set_to_id_list()` (in module `interval_set.interval_set`), 4

`interval_set_to_set()` (in module `interval_set.interval_set`), 4

`interval_set_to_string()` (in module `interval_set.interval_set`), 4

S

`set_to_interval_set()` (in module `interval_set.interval_set`), 4

`string_to_interval_set()` (in module `interval_set.interval_set`), 4

T

`total()` (in module `interval_set.interval_set`), 4

U

`union()` (in module `interval_set.interval_set`), 4