
prioq
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Note: If object is not listed in documentation it should be considered as implementation detail that can change and should not be relied upon.

```
class prioq.base.PriorityQueue(*values: prioq.core.hints.Value, key:
                               Optional[Callable[[prioq.core.hints.Value], prioq.core.hints.Key]] = None,
                               reverse: bool = False)
```

A priority queue is a mutable container that provides constant time lookup of the smallest (by default) element.

Reference: https://en.wikipedia.org/wiki/Priority_queue

```
__init__(*values: prioq.core.hints.Value, key: Optional[Callable[[prioq.core.hints.Value],
prioq.core.hints.Key]] = None, reverse: bool = False) → None
```

Initializes queue.

Complexity: $O(\log \text{len}(\text{values}))$.

Parameters

- **values** – initial values
- **key** – function of one argument to calculate priority.
- **reverse** – flag, if set to *True* specifies that values should be processed in descending order (from highest priority to lowest).

```
>>> from prioq.base import PriorityQueue
>>> values = range(-5, 5)
>>> queue = PriorityQueue(*values, key=abs, reverse=True)
>>> len(queue) == len(values)
True
>>> queue.key is abs
True
>>> queue.reverse
True
```

```
__repr__() → str
```

Return repr(self).

```
__eq__(other: PriorityQueue[_Value]) → bool
```

```
__eq__(other: Any) → Any
```

Checks if the queue is equal to the given one.

Complexity: $O(\text{len}(\text{self}) * \log \text{len}(\text{self}) + \text{len}(\text{other}) * \log \text{len}(\text{other}))$.

```
>>> queue = PriorityQueue(*range(10))
>>> queue == PriorityQueue(*range(10))
True
>>> queue == PriorityQueue(*range(10), reverse=True)
False
>>> queue == PriorityQueue(*range(20))
False
>>> queue == PriorityQueue(*range(5))
False
```

__len__() → int

Returns number of elements in the queue.

Complexity: O(1).

```
>>> queue = PriorityQueue(*range(5))
>>> len(queue)
5
```

clear() → None

Removes all values from the queue.

Complexity: O(1).

```
>>> queue = PriorityQueue(*range(5))
>>> queue.clear()
>>> queue
PriorityQueue(key=None, reverse=False)
```

peek() → prioq.core.hints.Value

Returns front value of the queue.

Complexity: O(1).

```
>>> queue = PriorityQueue(*range(5))
>>> queue.peek()
0
>>> queue.push(-1)
>>> queue.peek()
-1
>>> queue.push(0)
>>> queue.peek()
-1
```

pop() → prioq.core.hints.Value

Pops front value from the queue.

Complexity: O(1).

```
>>> queue = PriorityQueue(*range(5))
>>> queue.pop()
0
>>> queue
PriorityQueue(1, 2, 3, 4, key=None, reverse=False)
>>> queue.pop()
1
>>> queue
PriorityQueue(2, 3, 4, key=None, reverse=False)
```

push(value: prioq.core.hints.Value) → None

Adds value to the queue.

Complexity: O(log len(self)).

```

>>> queue = PriorityQueue(*range(5))
>>> queue.push(-1)
>>> queue
PriorityQueue(-1, 0, 1, 2, 3, 4, key=None, reverse=False)
>>> queue.push(10)
>>> queue
PriorityQueue(-1, 0, 1, 2, 3, 4, 10, key=None, reverse=False)

```

remove(*value: prioq.core.hints.Value*) → None

Removes value from the queue and if absent raises *ValueError*.

Complexity: $O(\text{len}(\text{self}))$.

```

>>> queue = PriorityQueue(*range(5))
>>> queue.remove(0)
>>> queue
PriorityQueue(1, 2, 3, 4, key=None, reverse=False)
>>> queue.remove(4)
>>> queue
PriorityQueue(1, 2, 3, key=None, reverse=False)

```

__hash__ = None

values() → List[prioq.core.hints.Value]

Returns elements of the queue.

Complexity: $O(\text{len}(\text{self}) * \log \text{len}(\text{self}))$.

```

>>> queue = PriorityQueue(*range(5))
>>> queue.values()
[0, 1, 2, 3, 4]

```


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