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**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.

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```
class prioq.base.PriorityQueue(*values: Value, key: Optional[Callable[[Value], 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](https://en.wikipedia.org/wiki/Priority_queue)

**\_\_init\_\_(\*)** → None

Initializes queue.

Complexity: O(log len(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 the 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: Self)** → bool

**\_\_eq\_\_(other: Any)** → Any

Checks if the queue is equal to the given one.

Complexity: O(len(self) \* log len(self) + len(other) \* log len(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()** → 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()** → 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)
```

**\_\_hash\_\_ = None**

**push(*value: 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)
```

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

**remove(*value*: Value) → None**

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

Complexity: O(len(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)
```

**values() → List[Value]**

Returns elements of the queue.

Complexity: O(len(self) \* log len(self)).

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



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