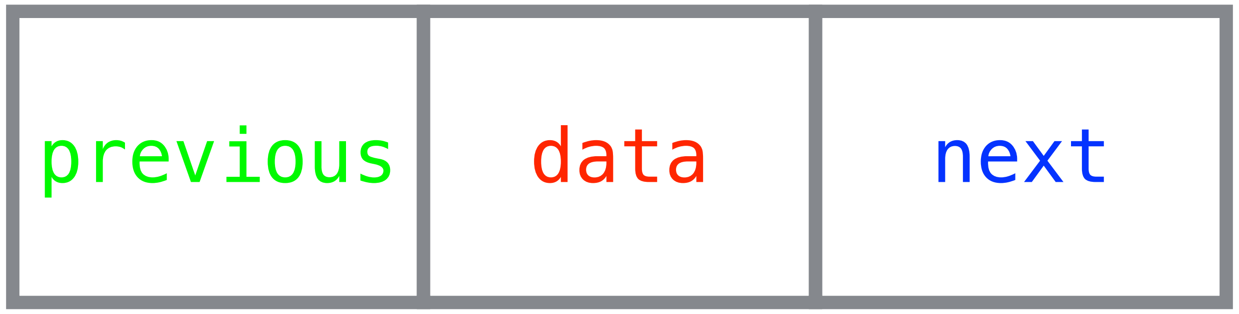
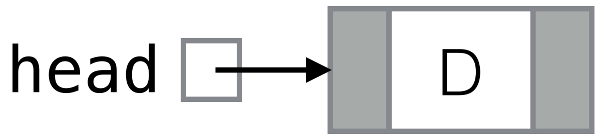
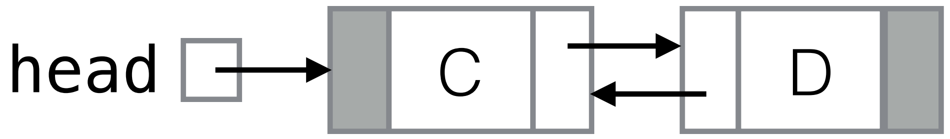
`Collection<E>` Doubly-Linked Implementation

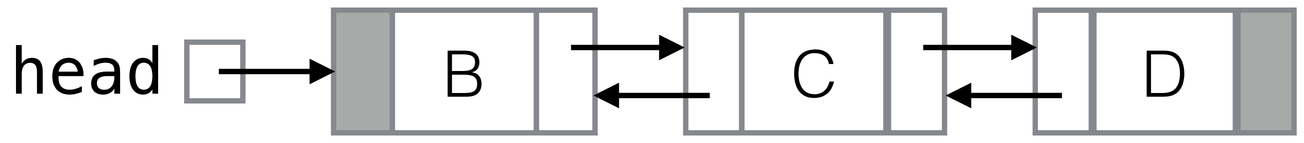
```
private class Node
{
  public E data;
  public Node next;
  public Node previous;

  public Node(E data, Node next, Node previous)
  {
    this.data = data;
    this.next = next;
    this.previous = previous;
  }
}
```

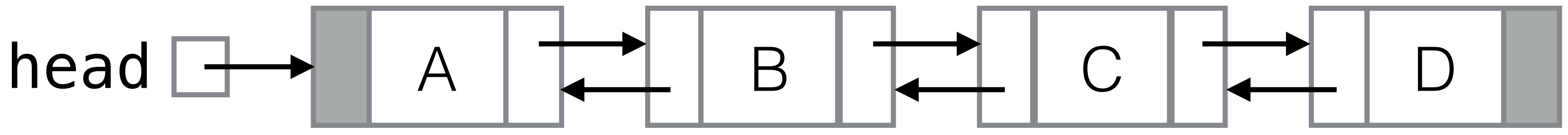


head ■


head
D

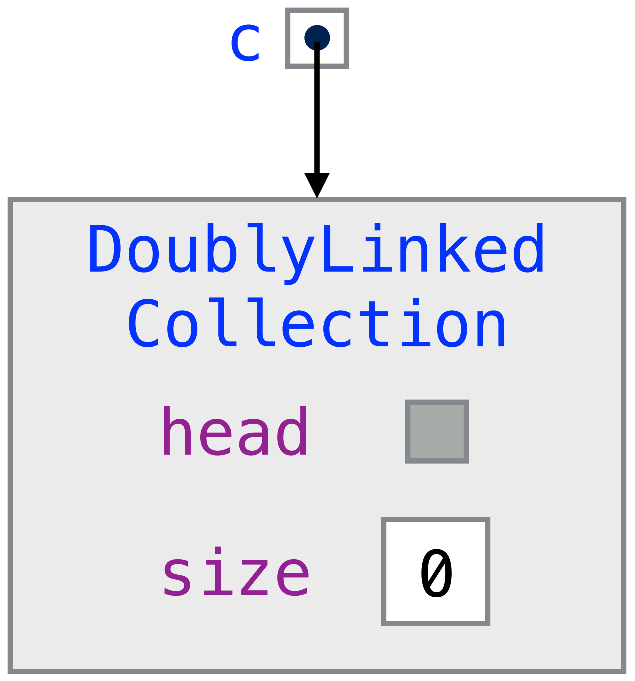

head
C
D


head
B
C
D

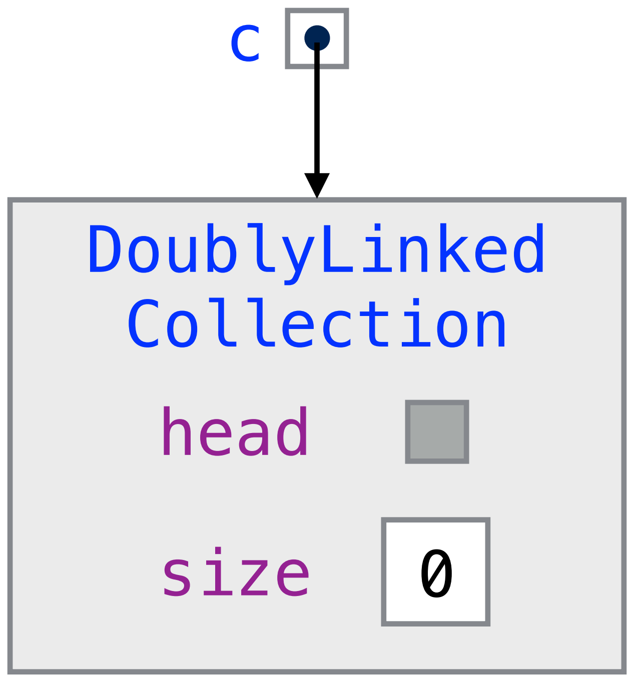

head
A
B
C
D

`DoublyLinkedCollection<E>`

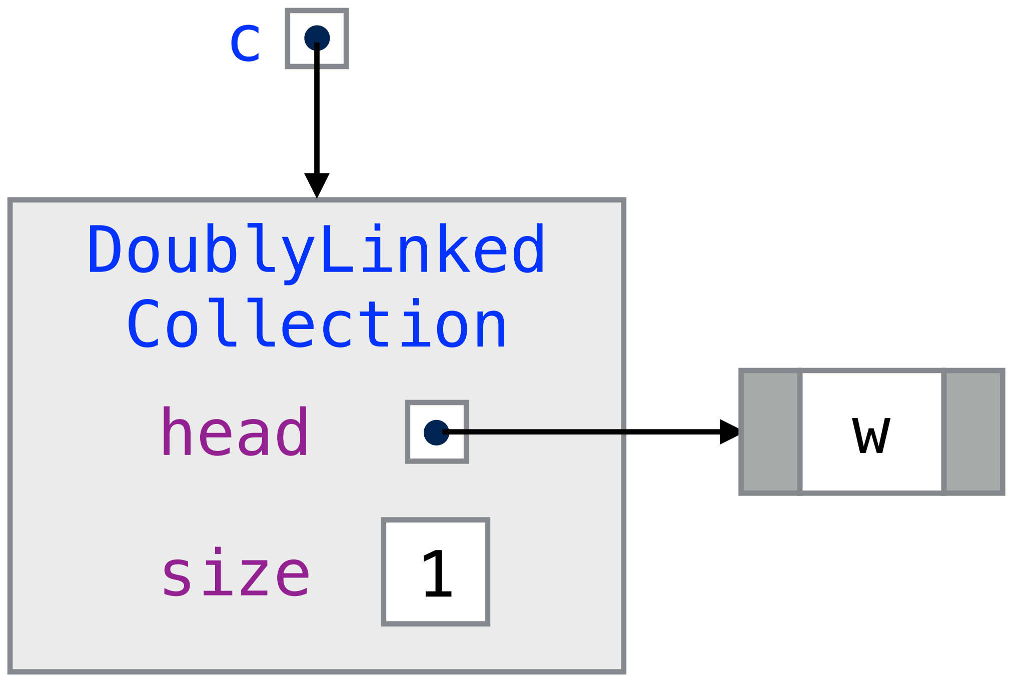
```
Collection<String> c =
    new DoublyLinkedCollection<String>
```

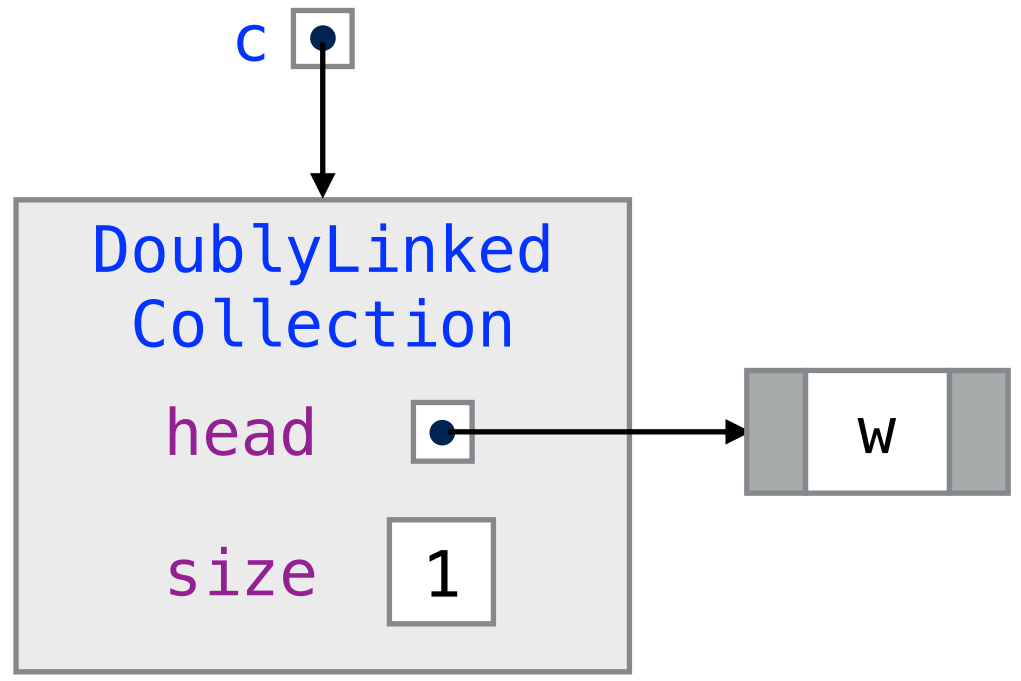


```
Collection<String> c =
    new DoublyLinkedCollection<String>
```

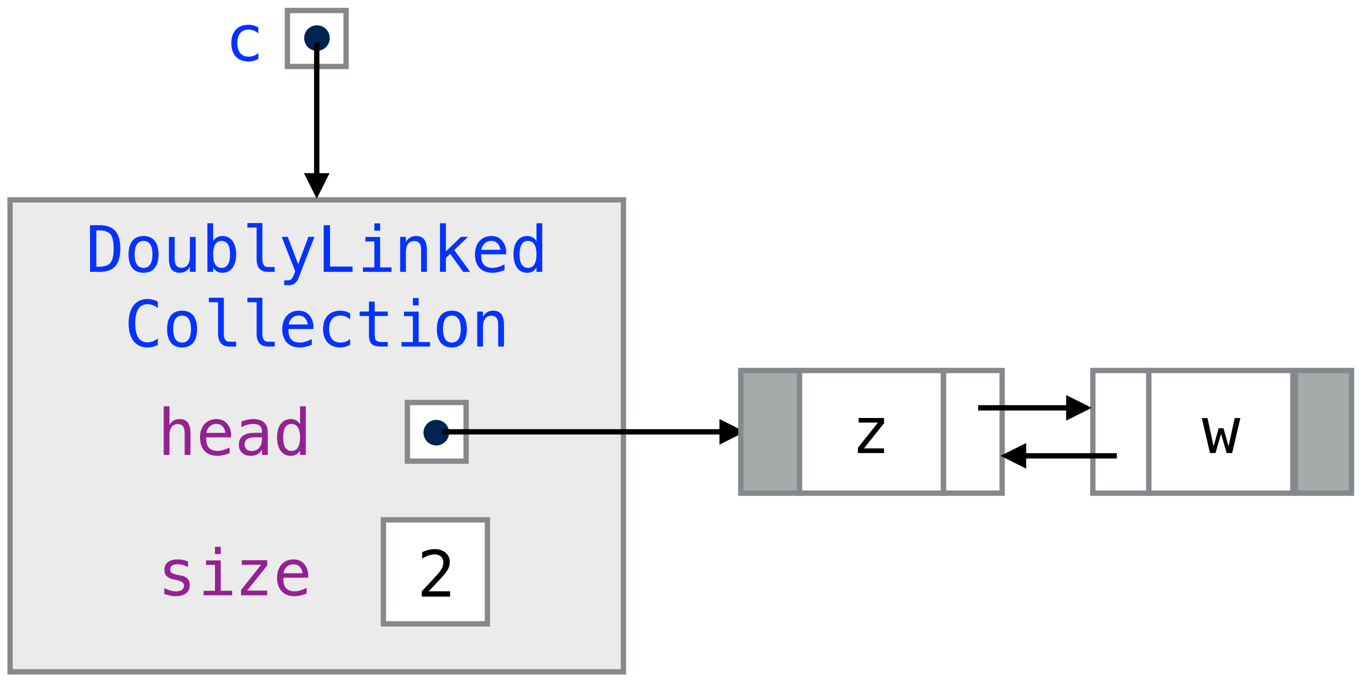


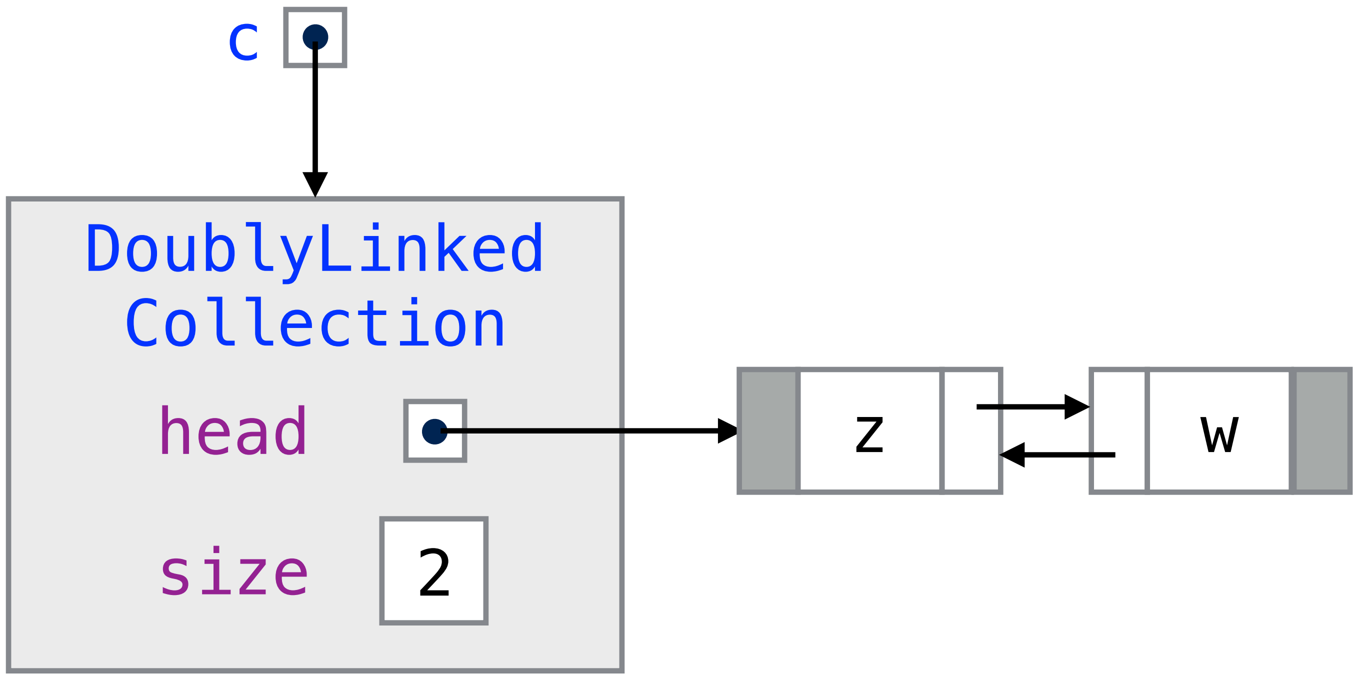
c.add(“w”)


c
DoublyLinked
Collection
head
size
1
w

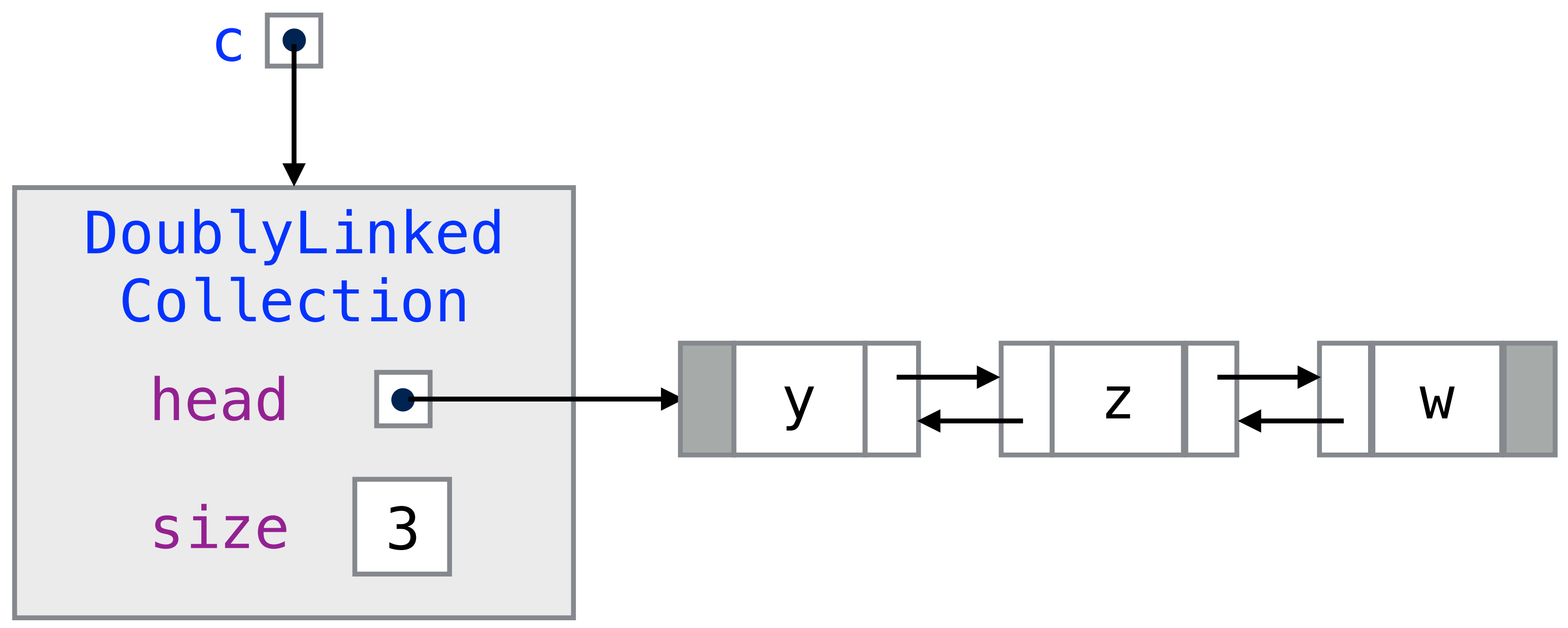


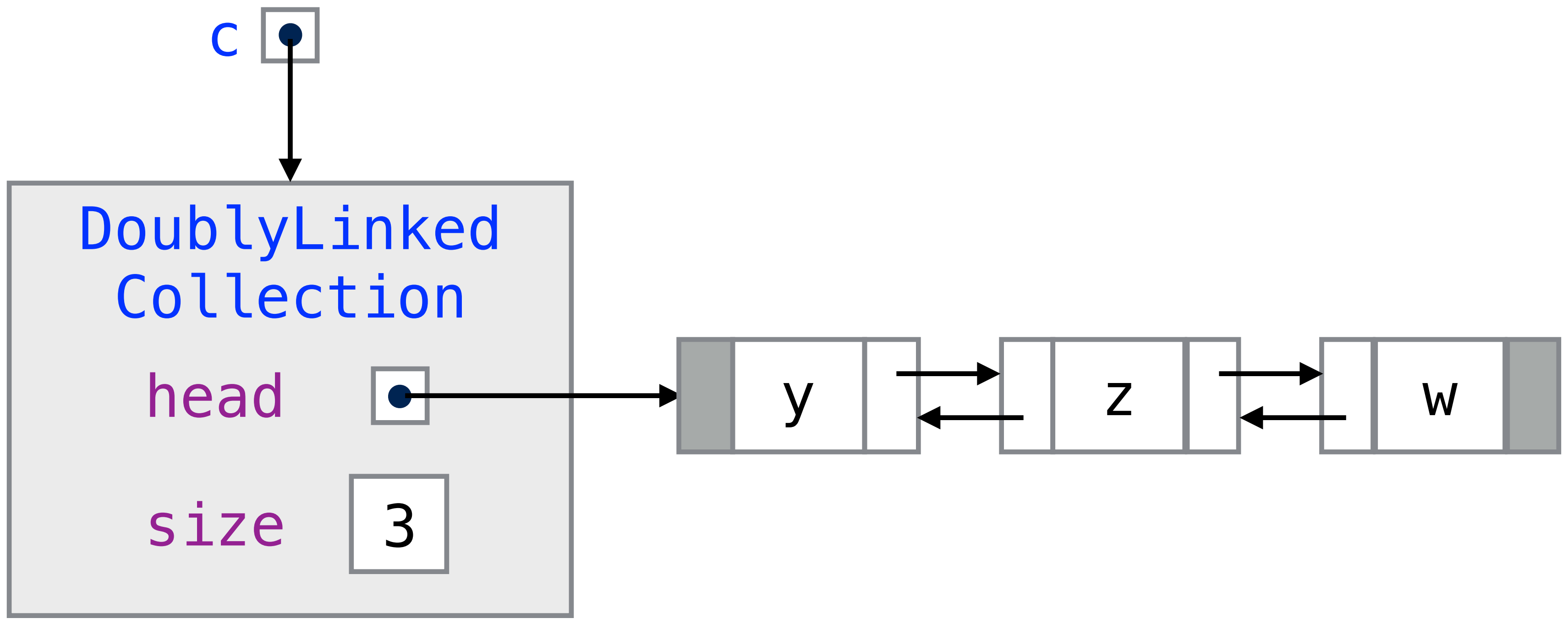
c.add(“z”)


c
DoublyLinked
Collection
head
size
2
z
w

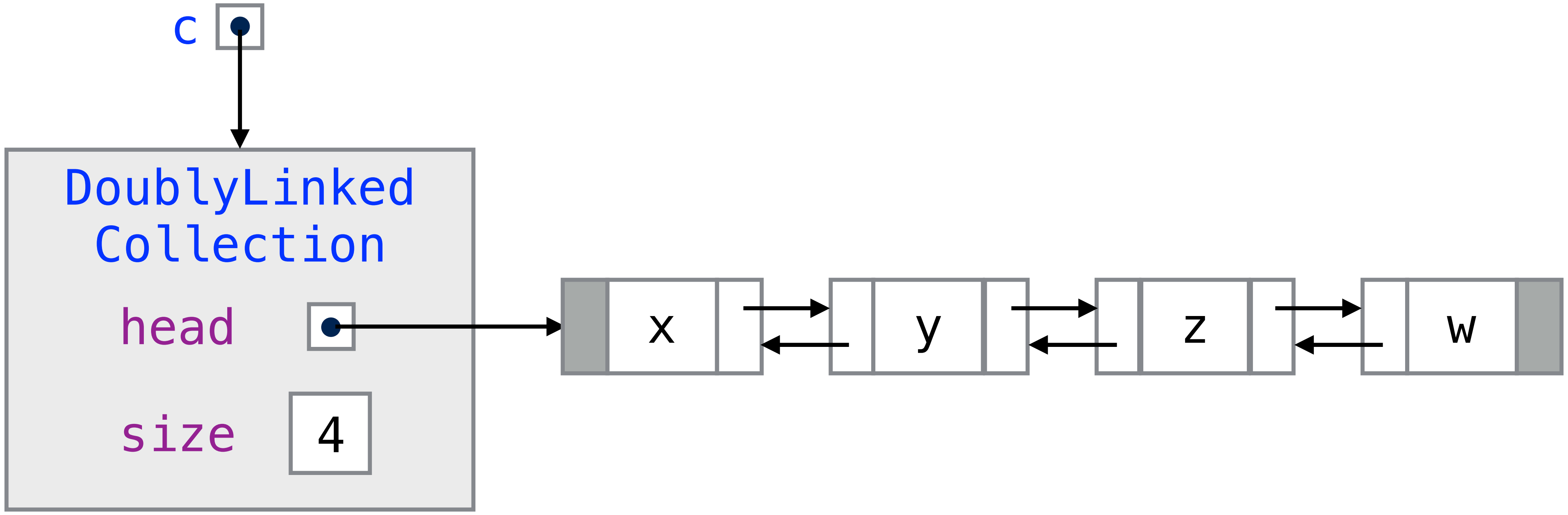


c.add(“y”)

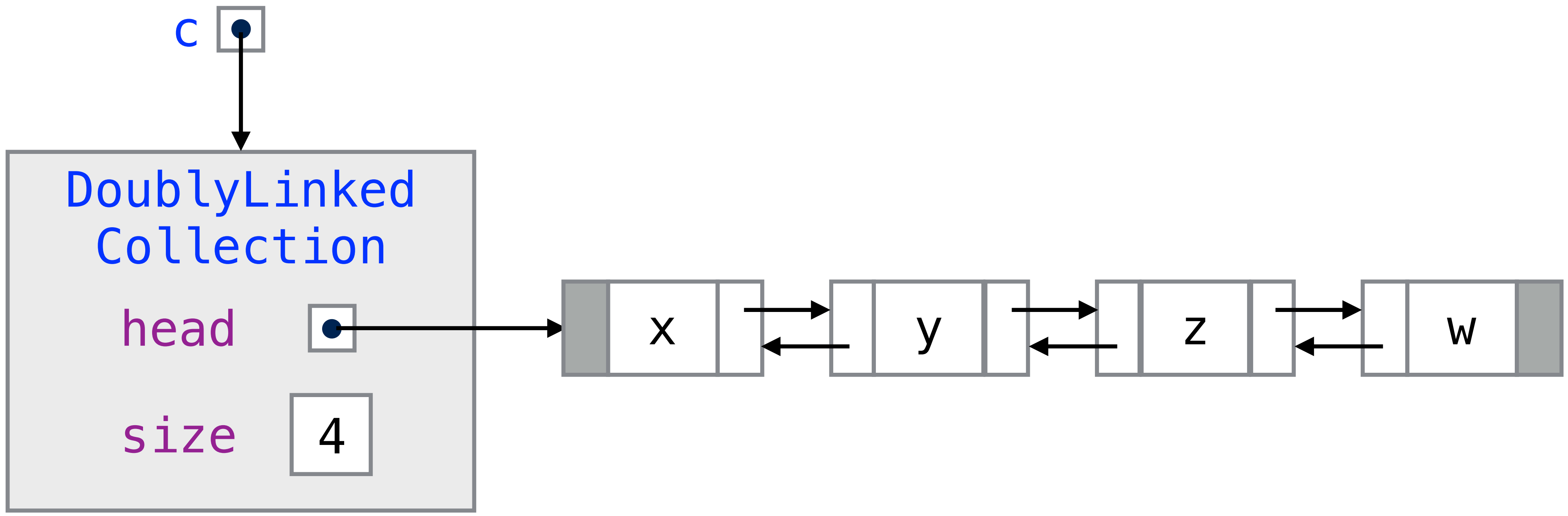

c
DoublyLinked
Collection
head
size
3
y
z
w

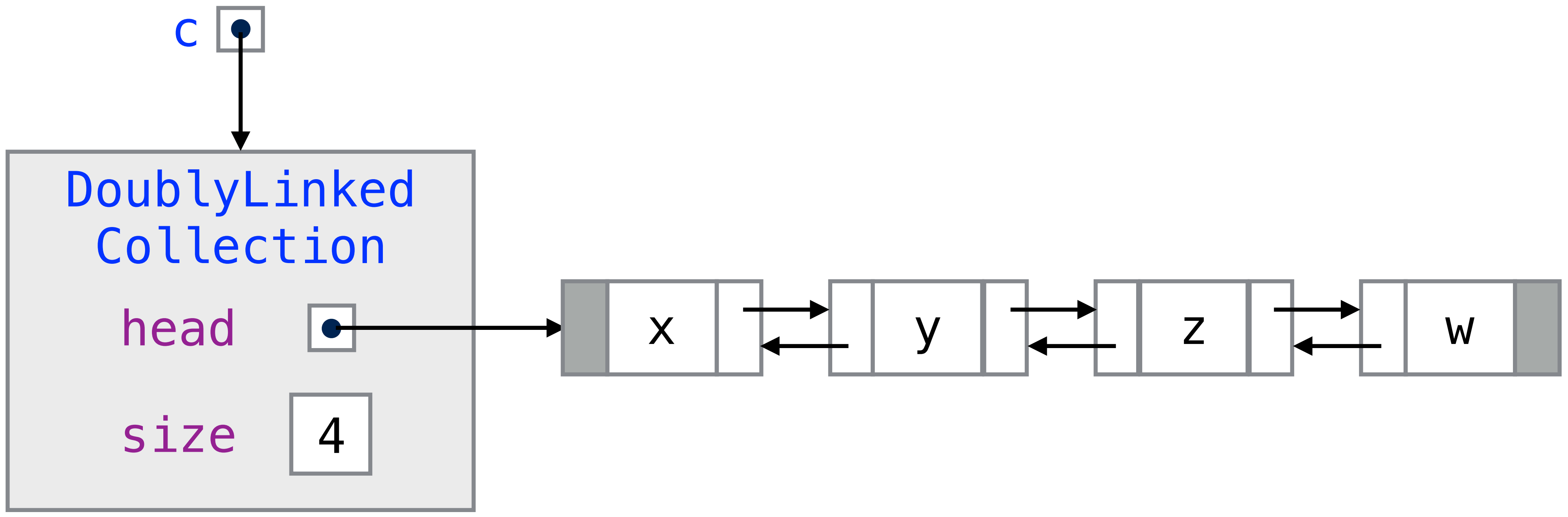


c.add(“x”)

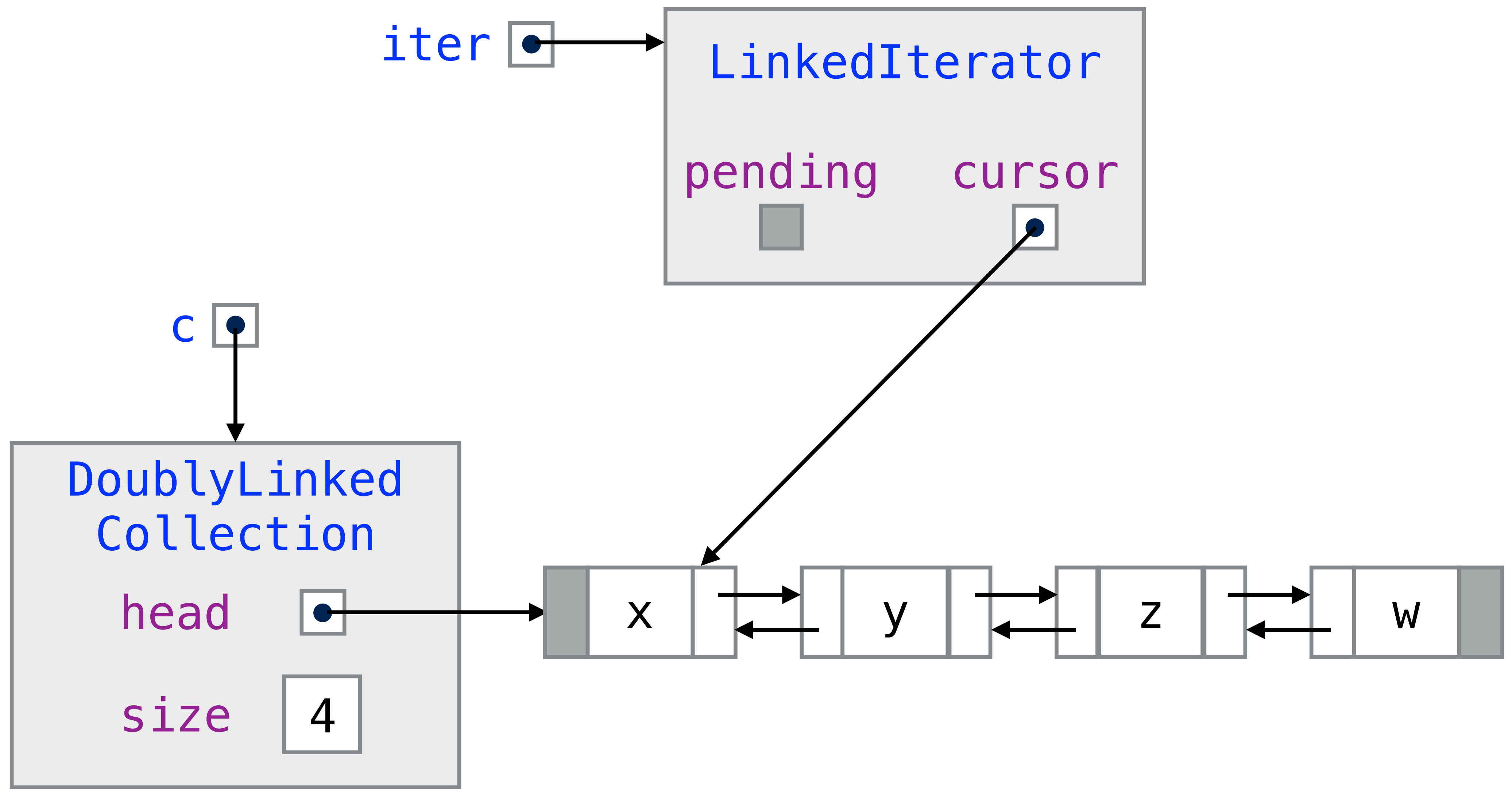

c
DoublyLinked
Collection
head
size
4
x
y
z
w

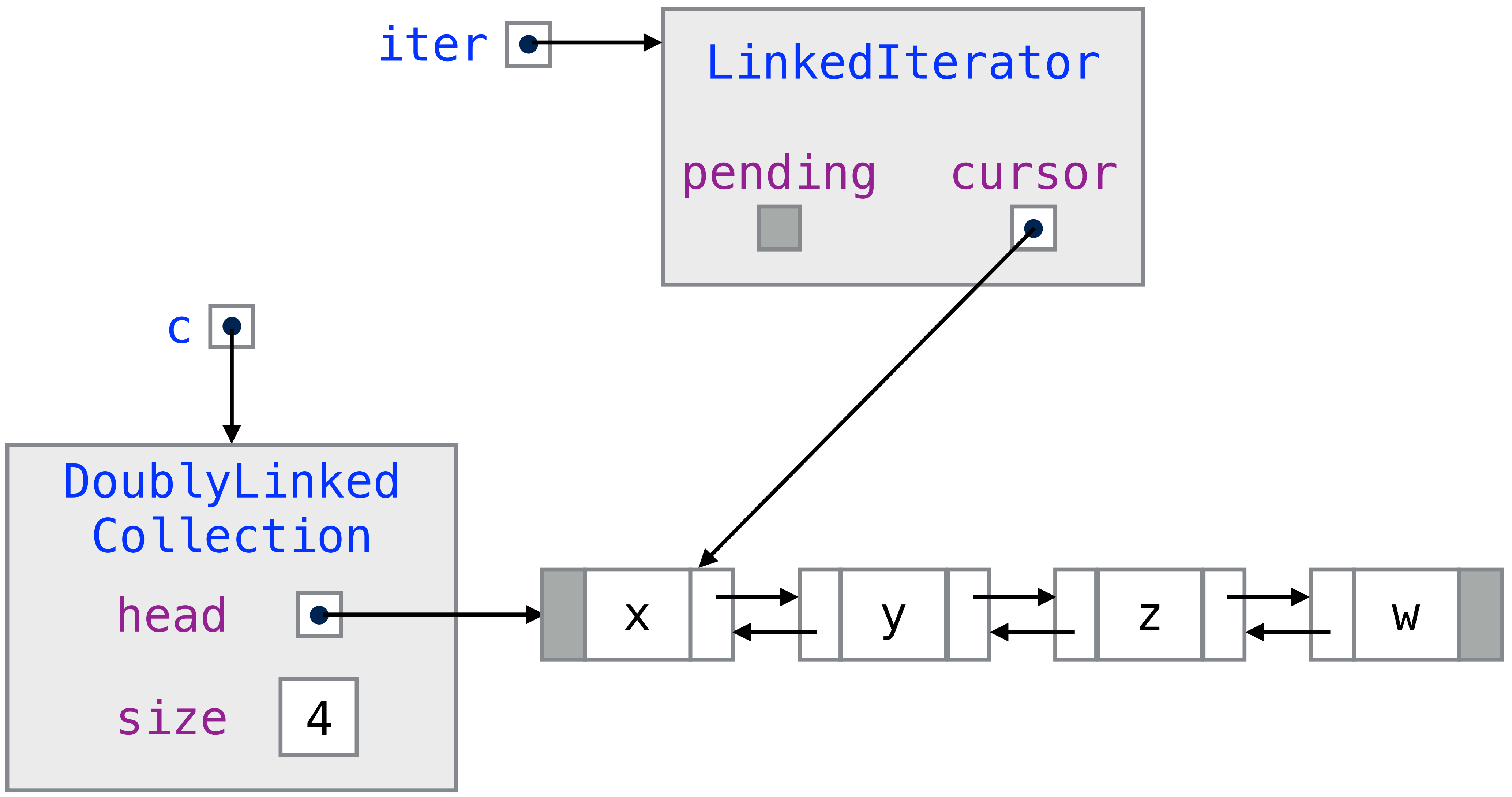
Iterators


c
DoublyLinked
Collection
head
size
4
x
y
z
w

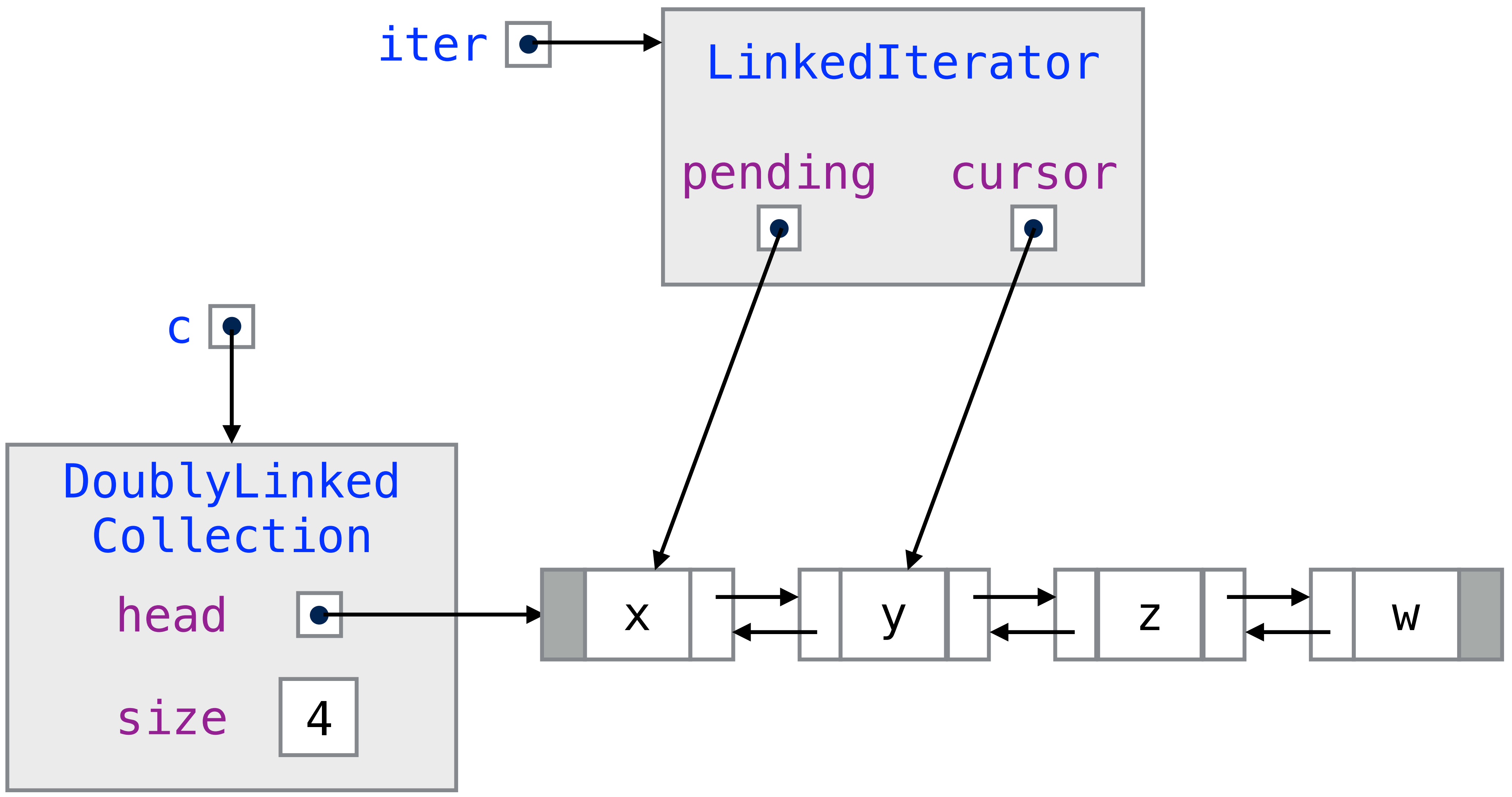


```
Iterator<String> iter = c.iterator()
```


iter
LinkedIterator
pending
cursor
c
DoublyLinked
Collection
head
size
4
x
y
z
w


iter
LinkedIterator
pending
cursor
c
DoublyLinked Collection
head
size
4
x
y
z
w

`iter.next()`


iter
LinkedIterator
pending
cursor
c
DoublyLinked Collection
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size
4
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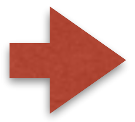
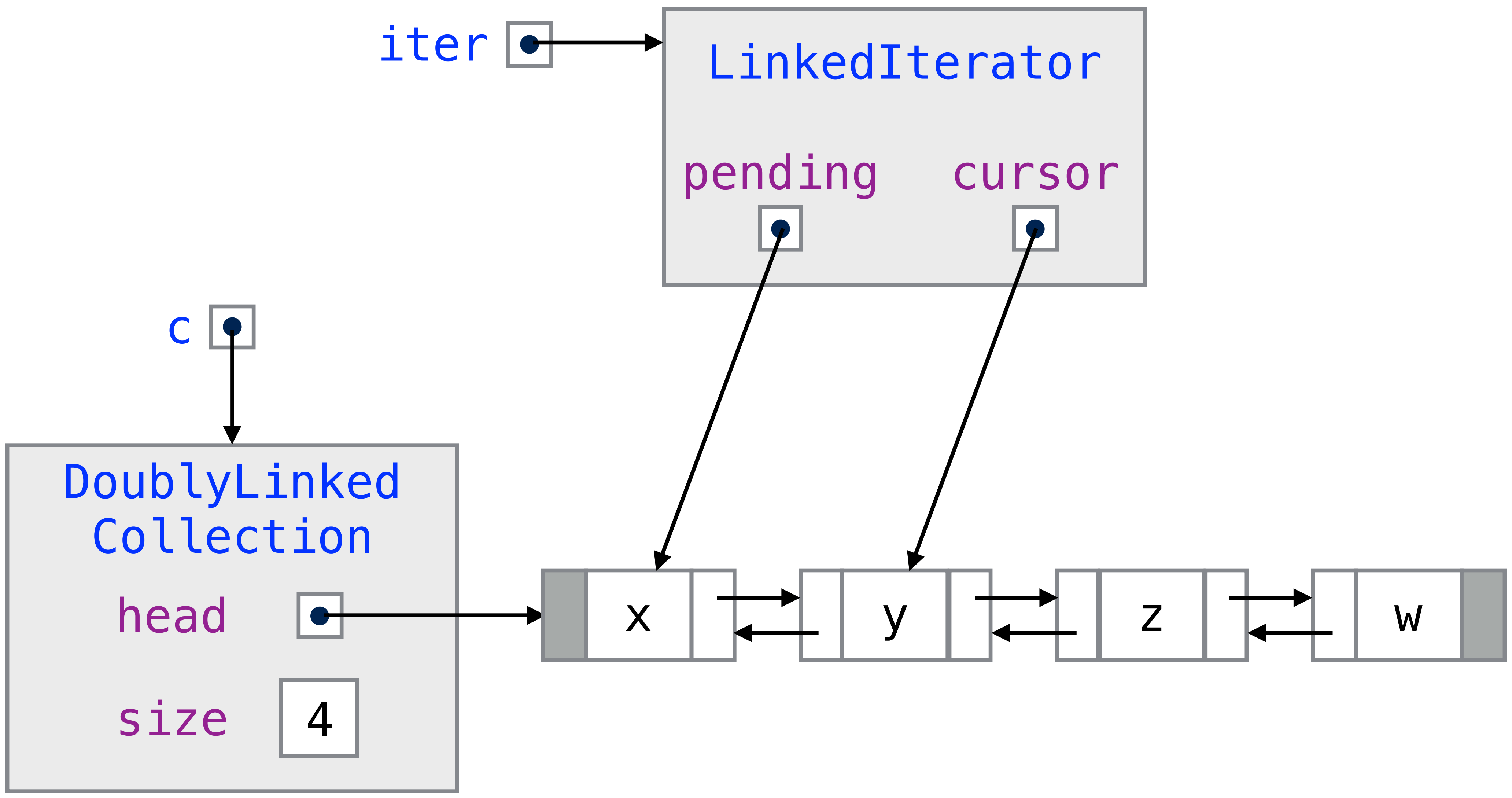
 x


iter
LinkedIterator
pending
cursor
c
DoublyLinked
Collection
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4
x
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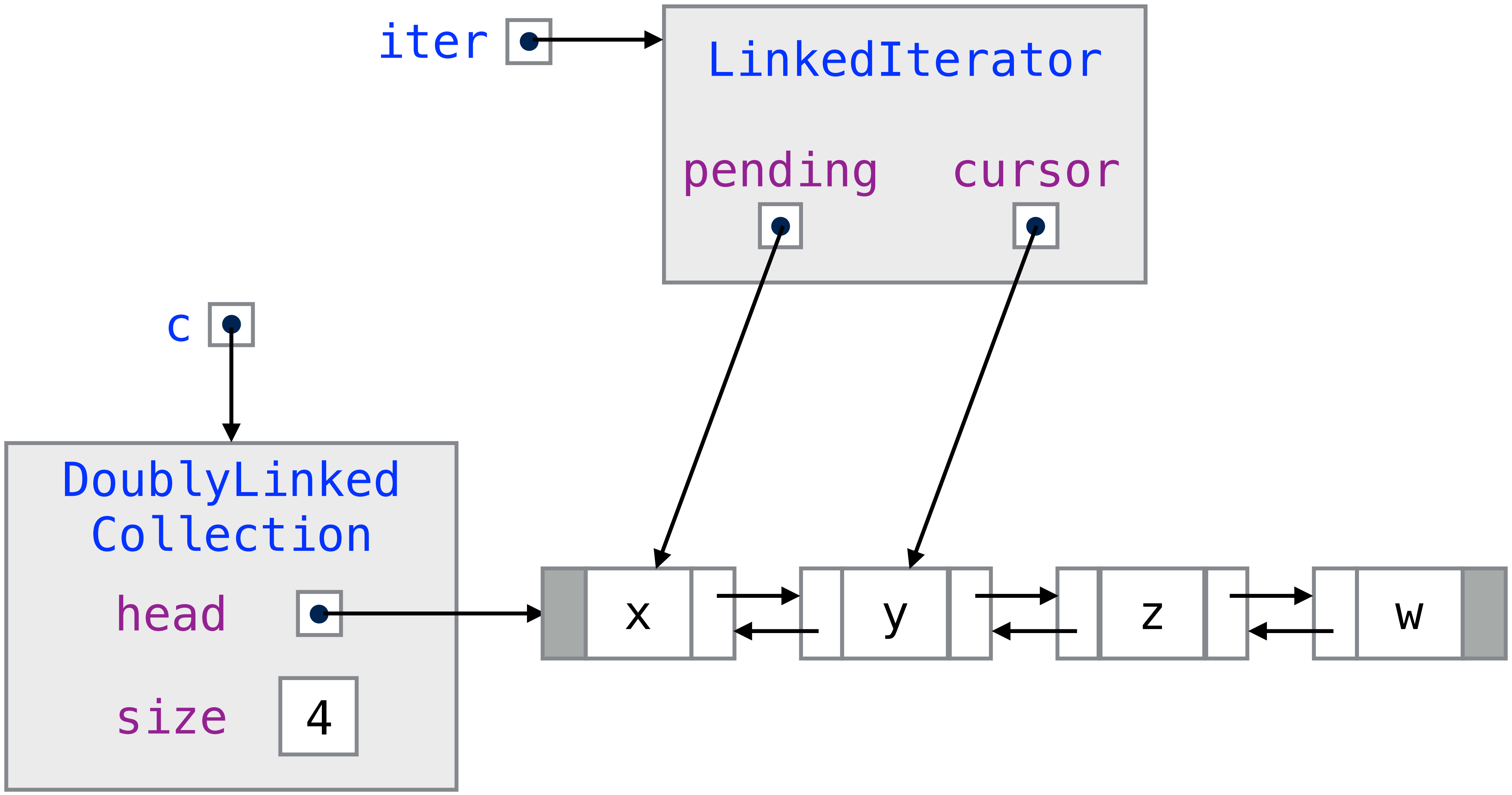
iter
LinkedIterator
pending
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c
DoublyLinked
Collection
head
size
4
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y
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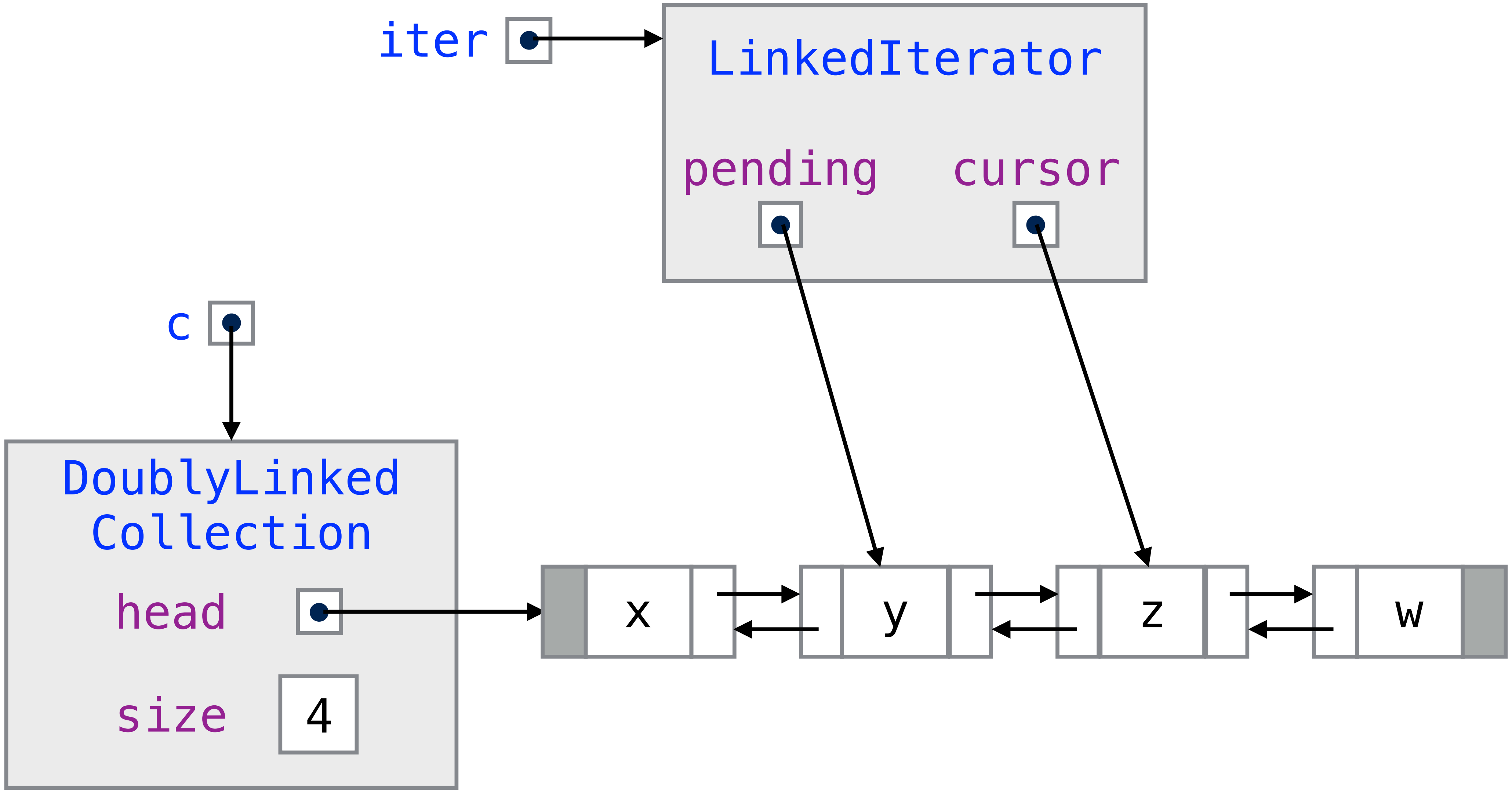
w

`iter.next()`


iter
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DoublyLinked Collection
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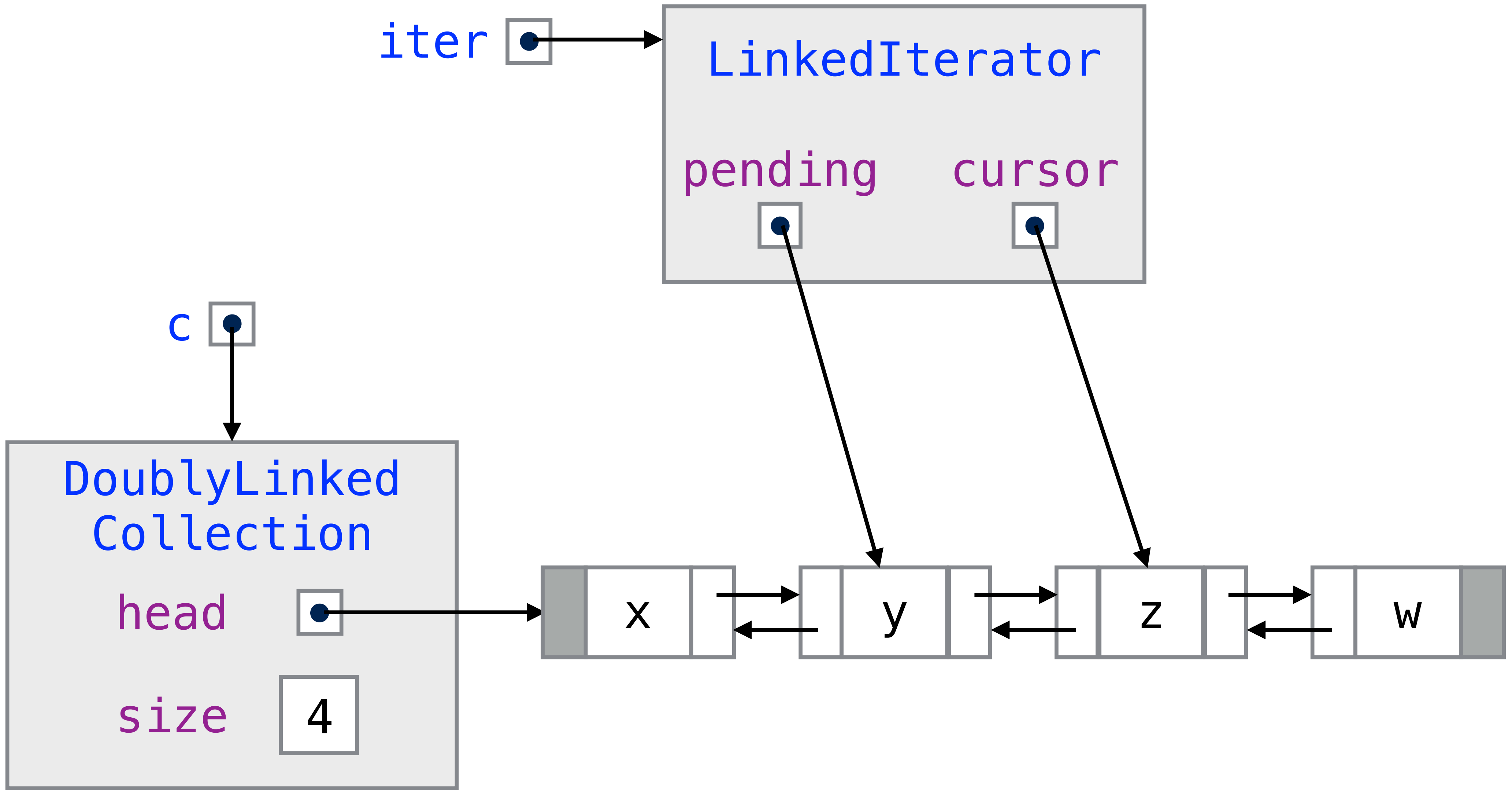
➡ y


iter
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DoublyLinked Collection
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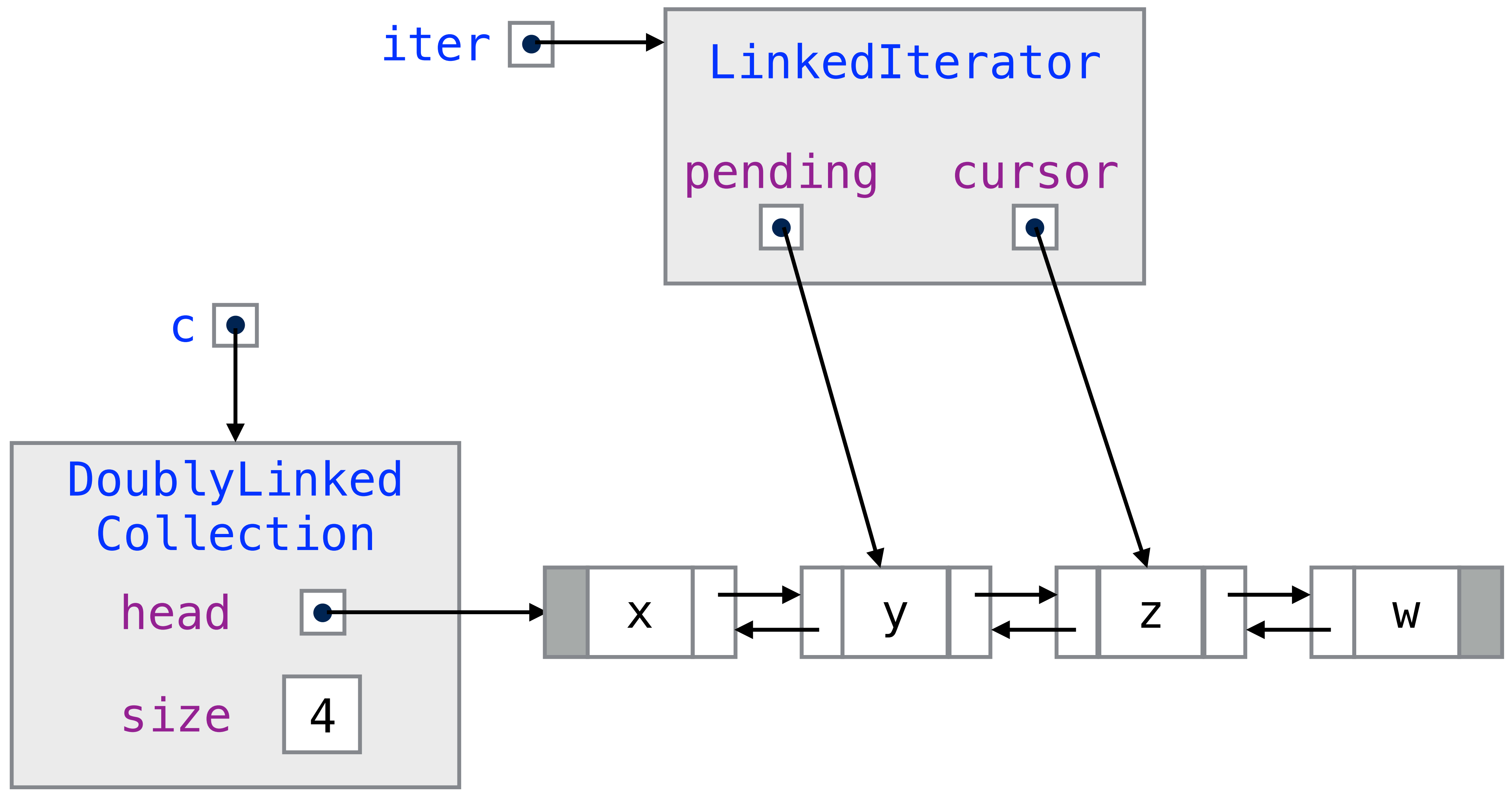
iter
LinkedIterator
pending
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DoublyLinked Collection
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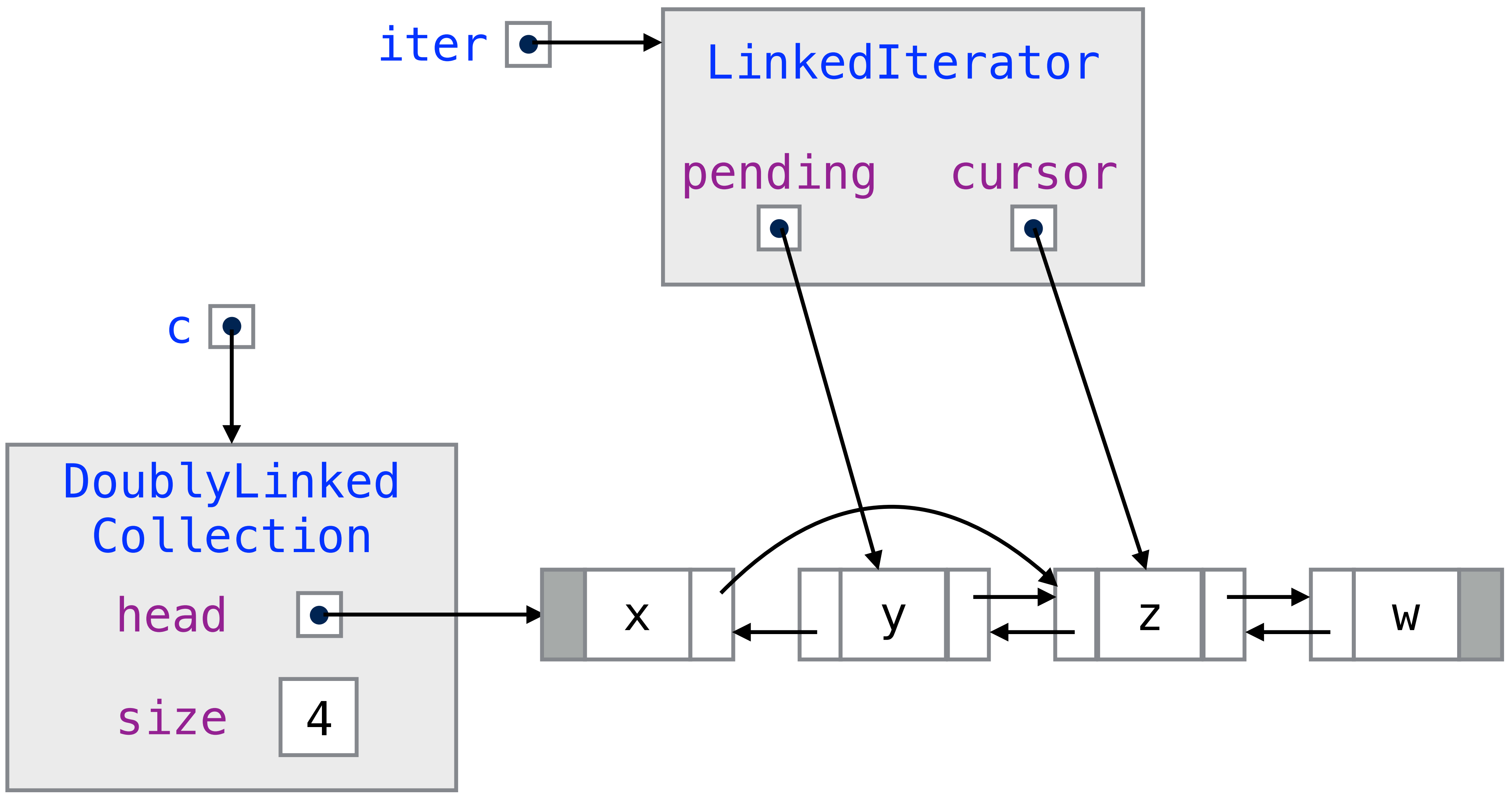
`iter.remove()`


iter
LinkedIterator
pending
cursor
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DoublyLinked Collection
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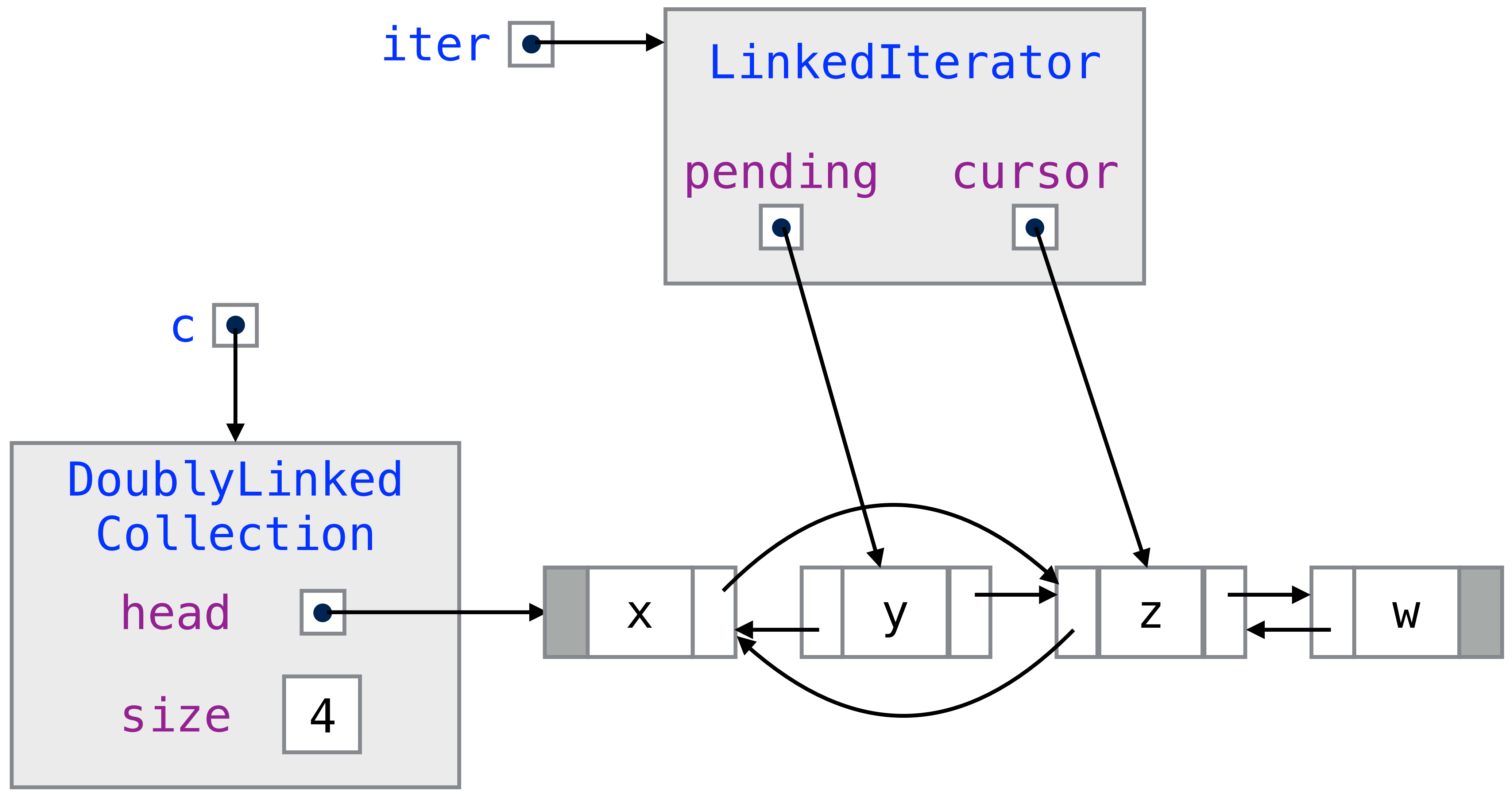
z
w

```
iter.remove()
```


iter
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DoublyLinked Collection
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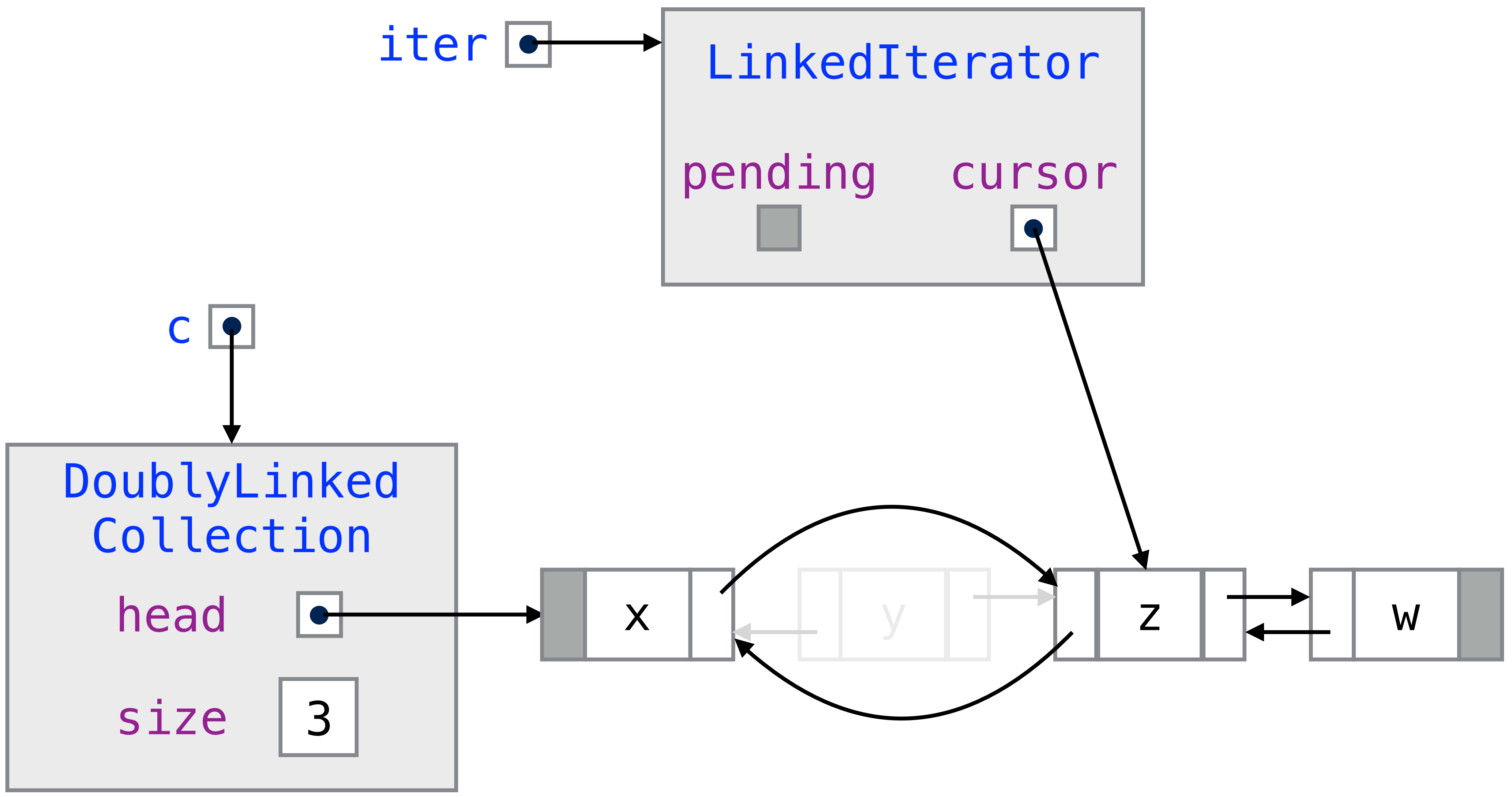
iter.remove()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DoublyLinked Collection
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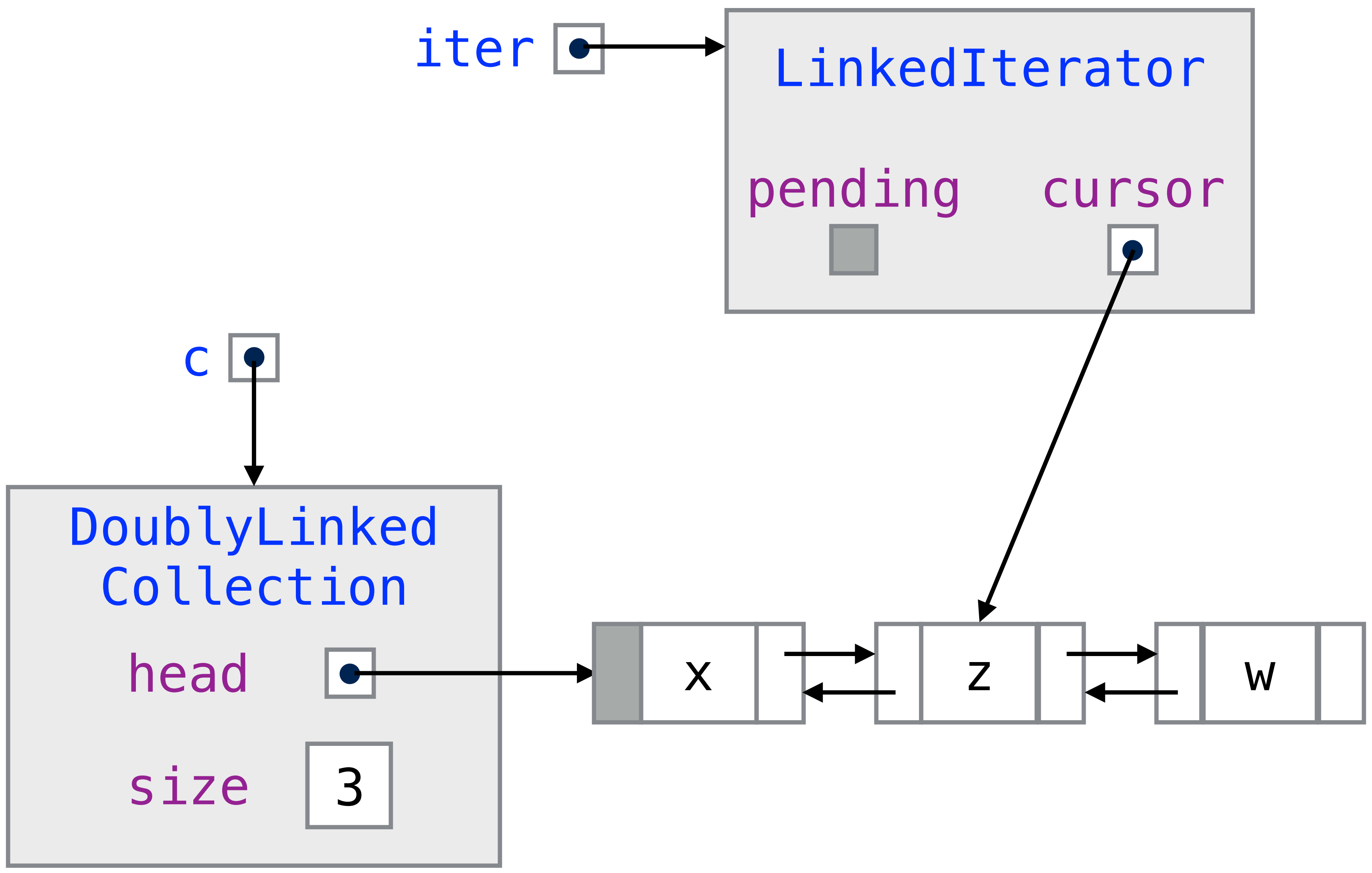
`iter.remove()`


iter
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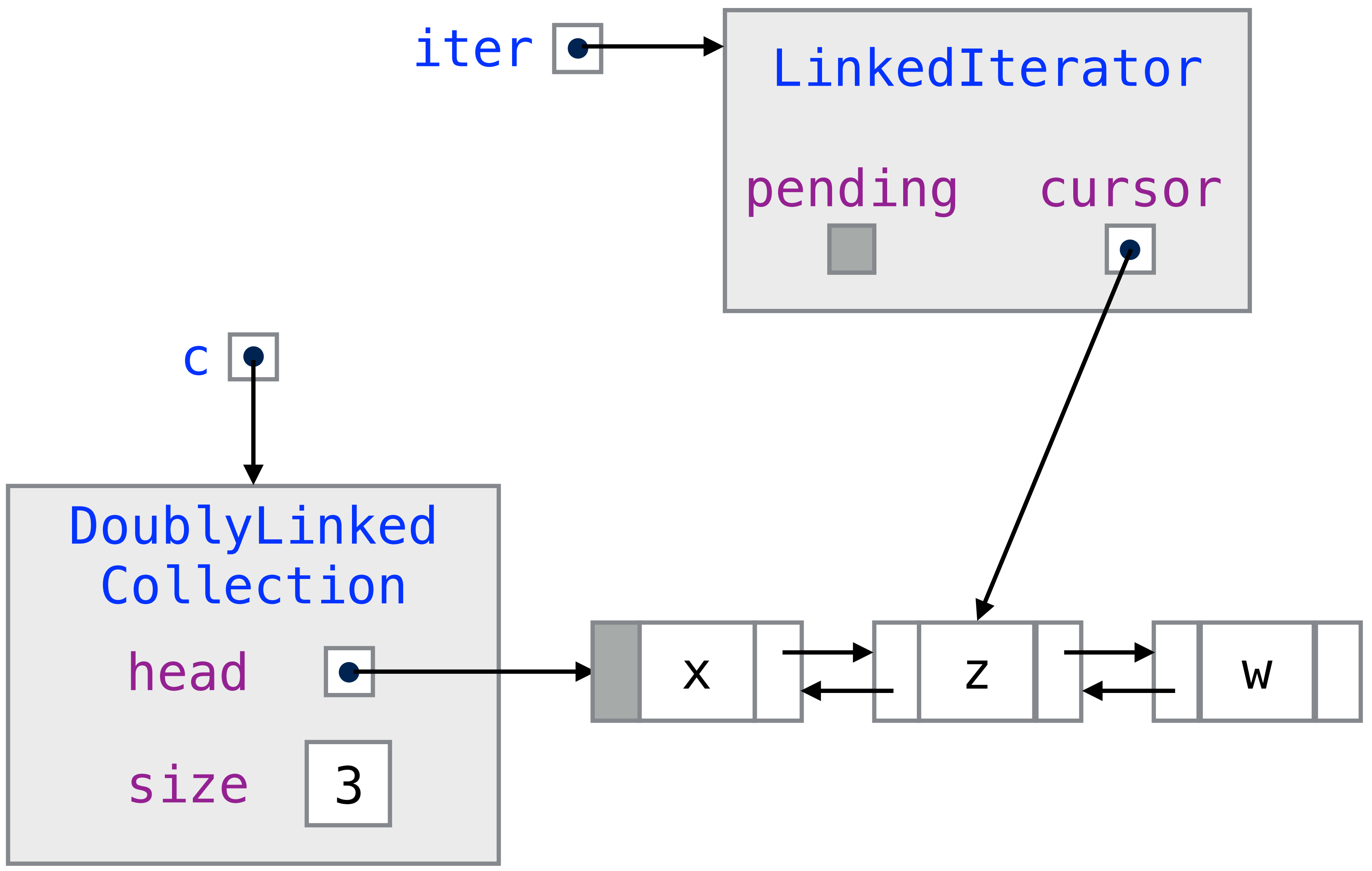
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LinkedIterator
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DoublyLinked Collection
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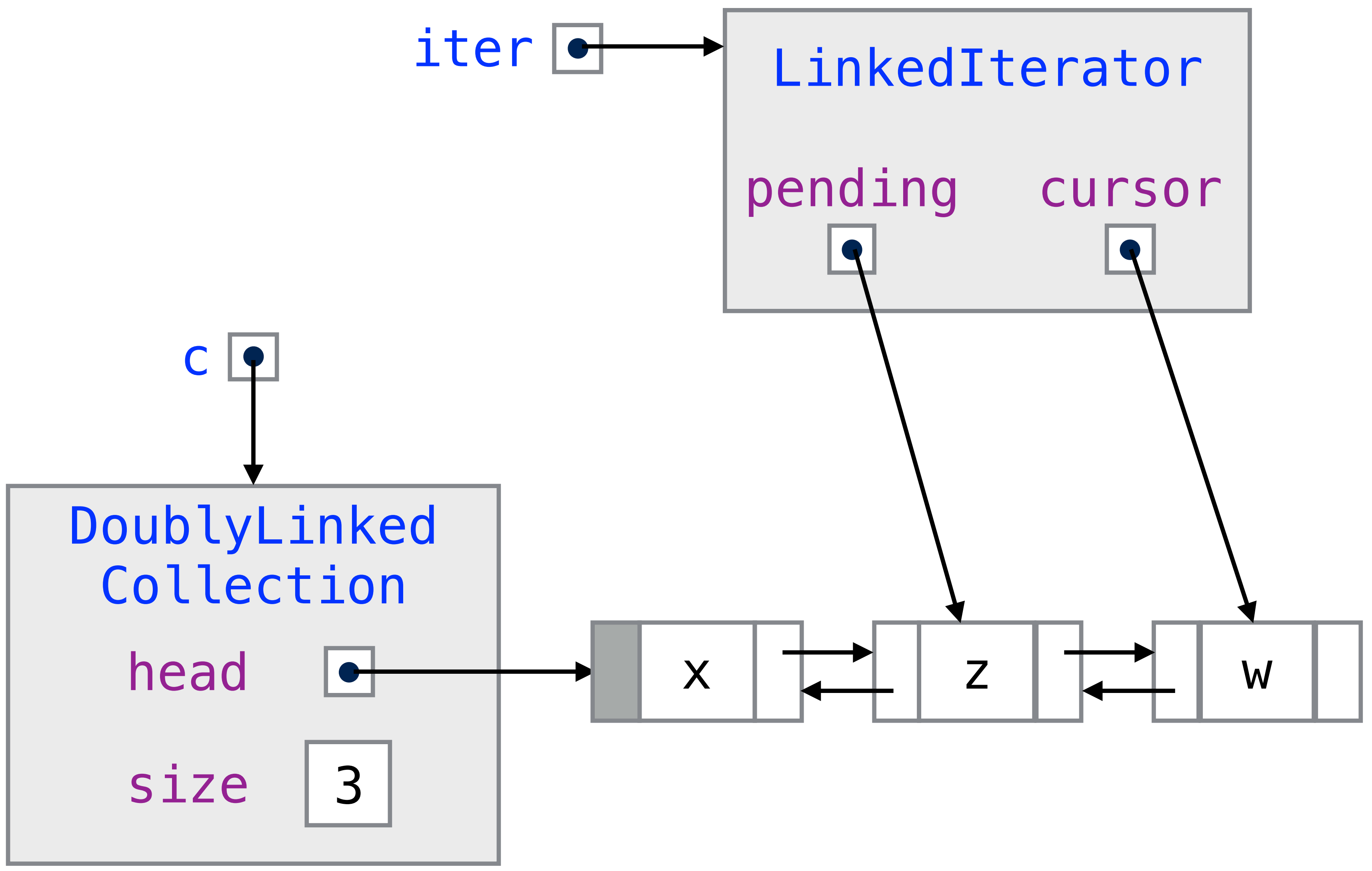
iter.next()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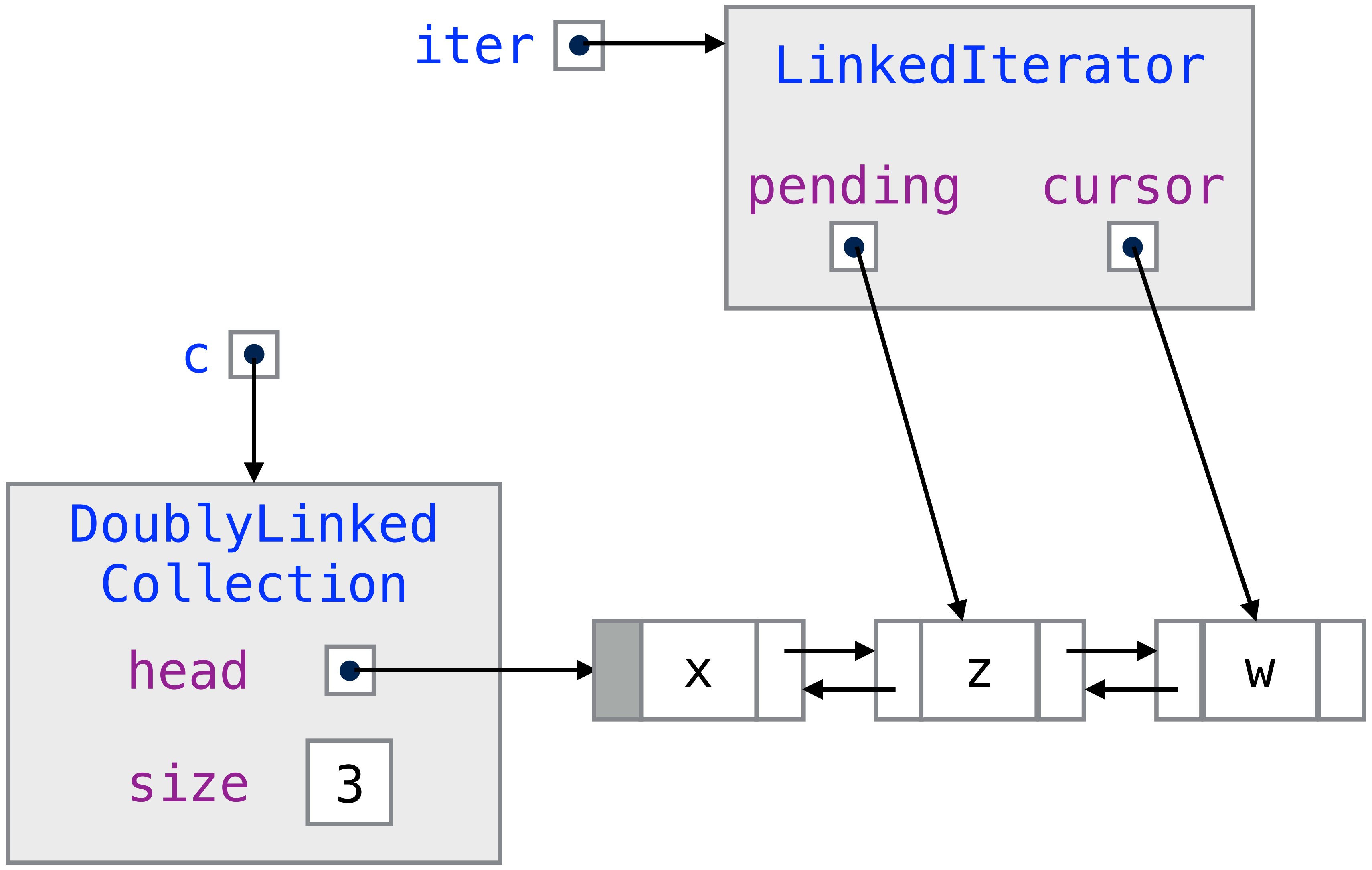
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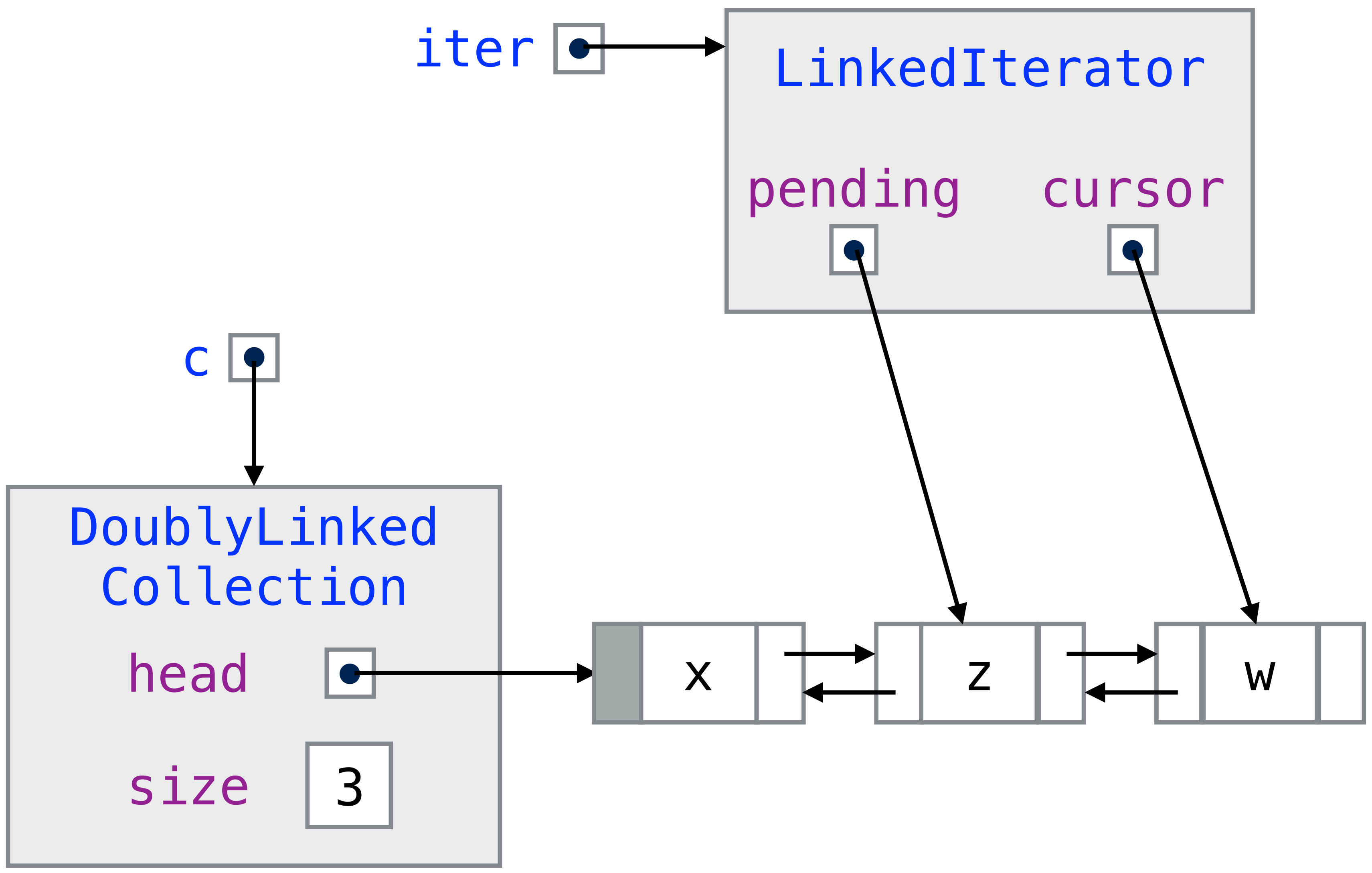
iter
LinkedIterator
pending
cursor
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DoublyLinked
Collection
head
size
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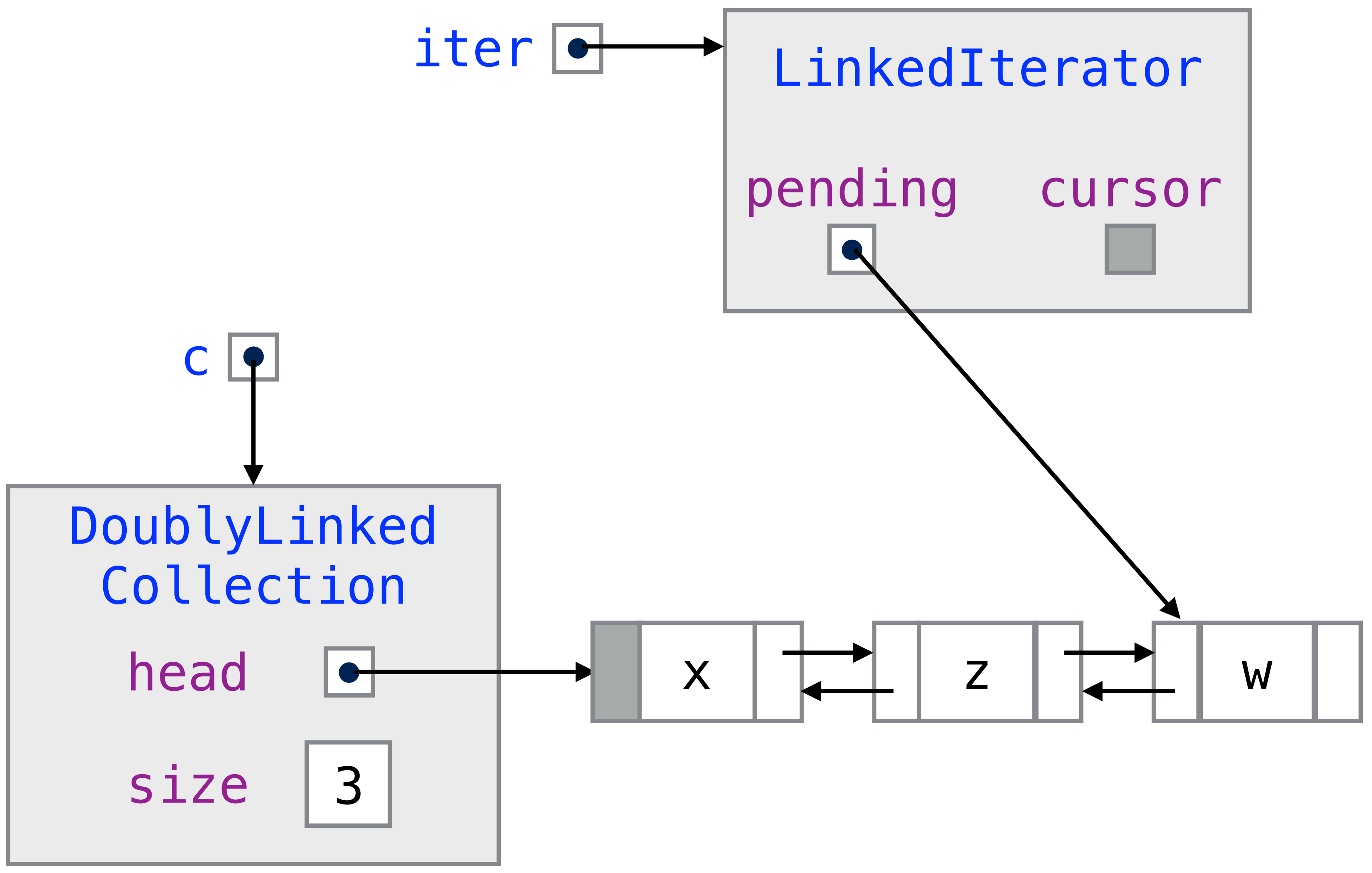
x
z
w

`iter.next()`


iter
LinkedIterator
pending
cursor
c
DoublyLinked Collection
head
size
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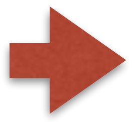
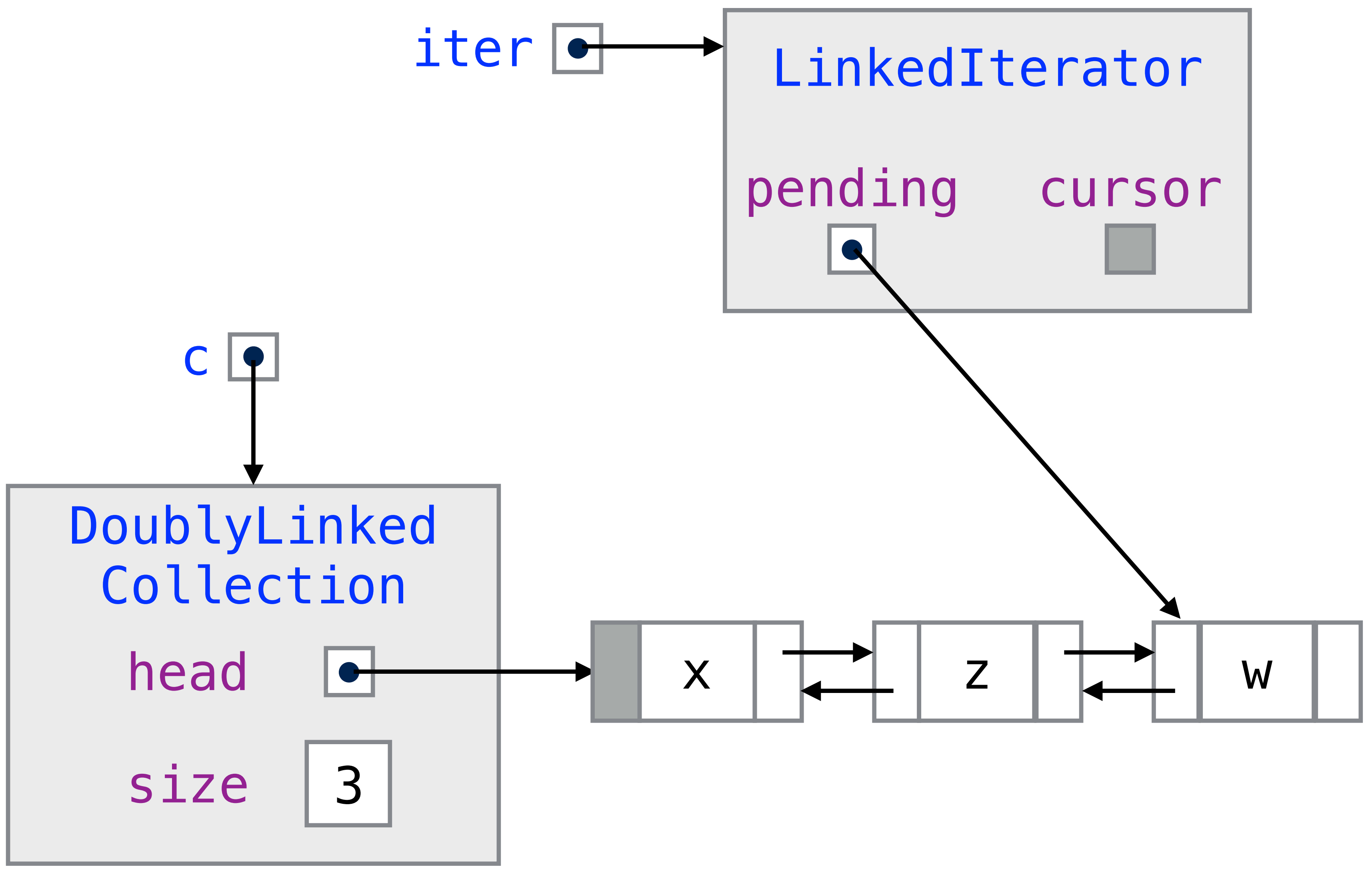
 w



iter.hasNext() == false