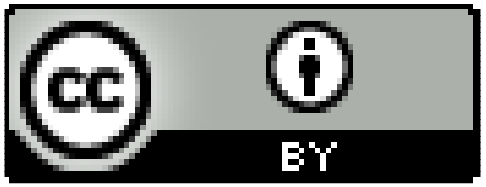
Python

Slicing



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>>>
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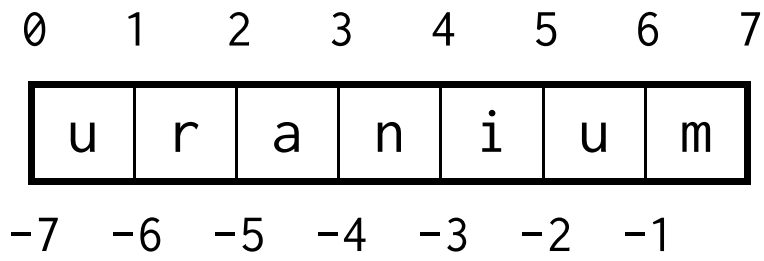

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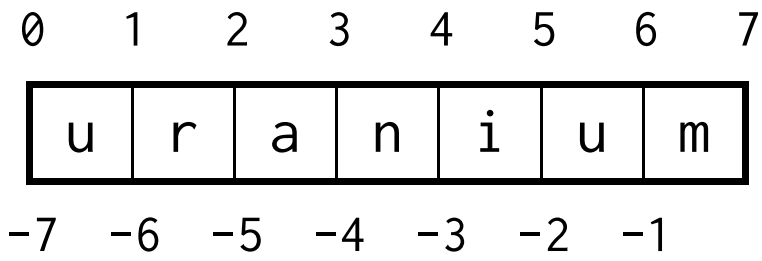
Can also be *sliced* using a range of indices

```
>>> element = 'uranium'
>>> print element[1:4]
ran
>>>
```



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>>> print element[1:4]
ran
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uran
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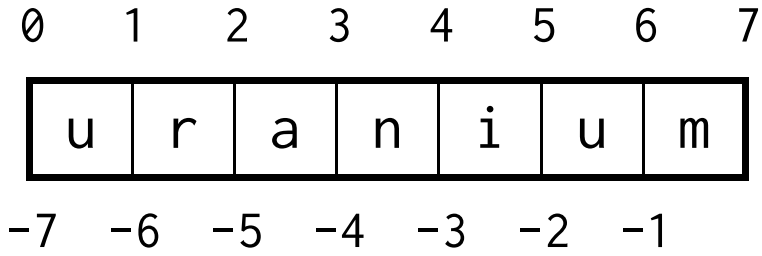

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>>> element = 'uranium'
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>>> print element[:4]
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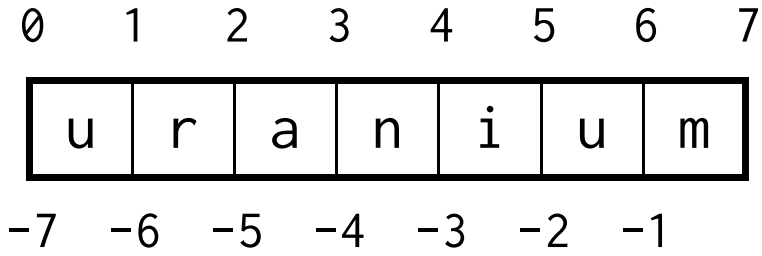
>>> print element[4:]
ium
>>>
```



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>>> print element[:4]
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>>> print element[4:]
ium
>>> print element[-4:]
nium
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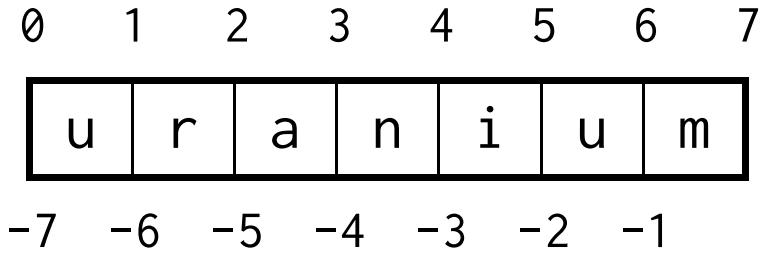
```



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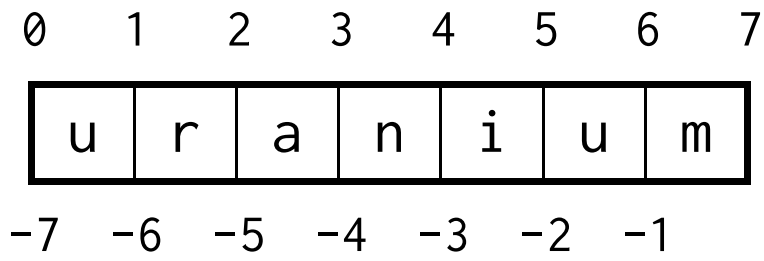

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```
>>> element = 'uranium'
>>> print element[400]
IndexError: string index out of range
>>>
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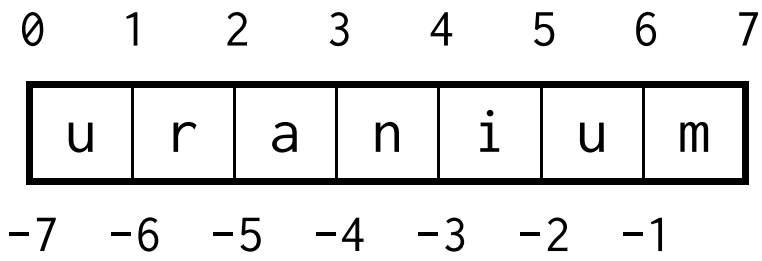

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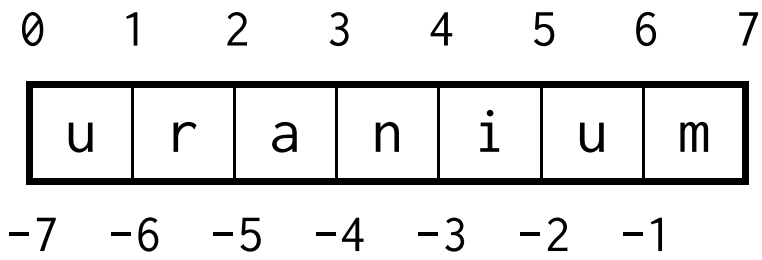

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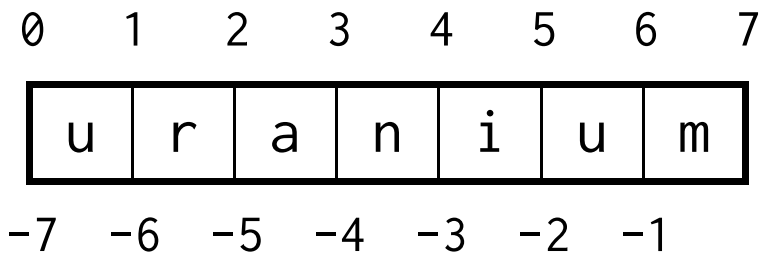

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— *Ralph Waldo Emerson*

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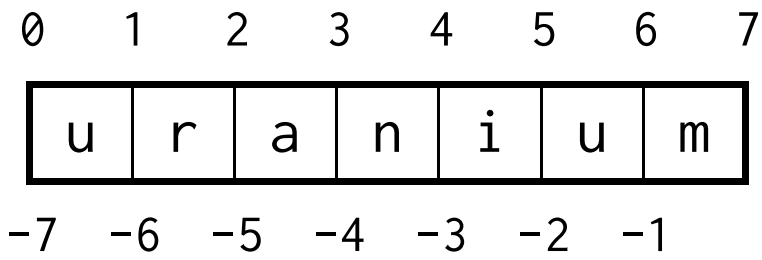

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"Aw, you're kidding me!"

— *programmers*

So `text[1:3]` is 0, 1, or 2 characters long

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`''`	`''`
`'a'`	`''`
`'ab'`	`'b'`
`'abc'`	`'bc'`
`'abcdef'`	`'bc'`

For consistency, `text[1:1]` is the empty string

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- From index 1 up to (but not including) index 1

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- From index 1 up to (but not including) index 1

And `text[3:1]` is always the empty string

- *Not* the reverse of `text[1:3]`

But `text[1:-1]` is everything except the first and last characters

Slicing always creates a new collection

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Beware of aliasing

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```
>>> points = [[10, 10], [20, 20], [30, 30], [40, 40]]
>>>
```

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```
>>> points = [[10, 10], [20, 20], [30, 30], [40, 40]]
>>> middle = points[1:-1]
>>>
```

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```
>>> points = [[10, 10], [20, 20], [30, 30], [40, 40]]
>>> middle = points[1:-1]
>>> middle[0][0] = 'whoops'
>>>
```

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```
>>> points = [[10, 10], [20, 20], [30, 30], [40, 40]]
>>> middle = points[1:-1]
>>> middle[0][0] = 'whoops'
>>> middle[1][0] = 'aliasing'
>>>
```

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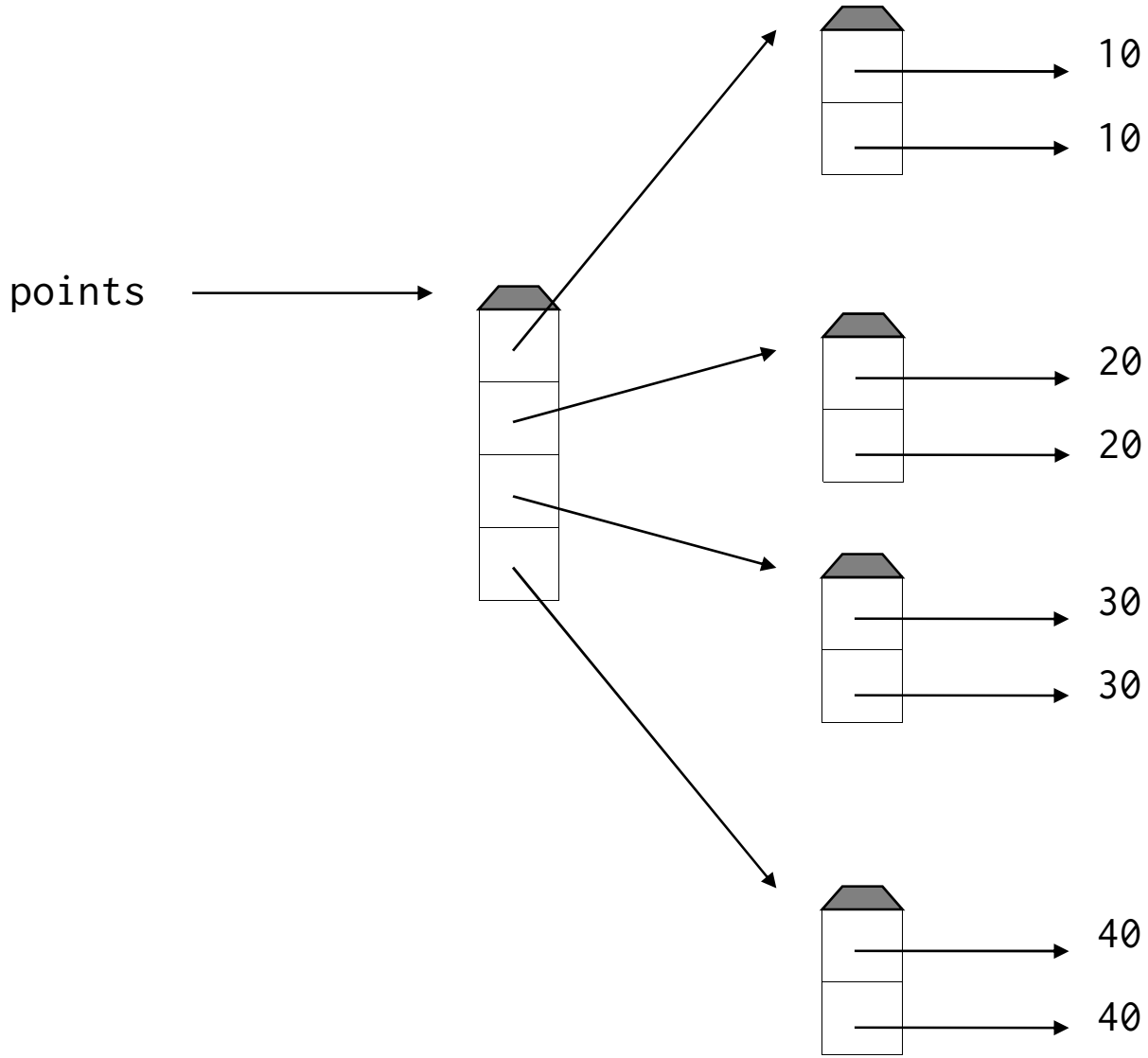
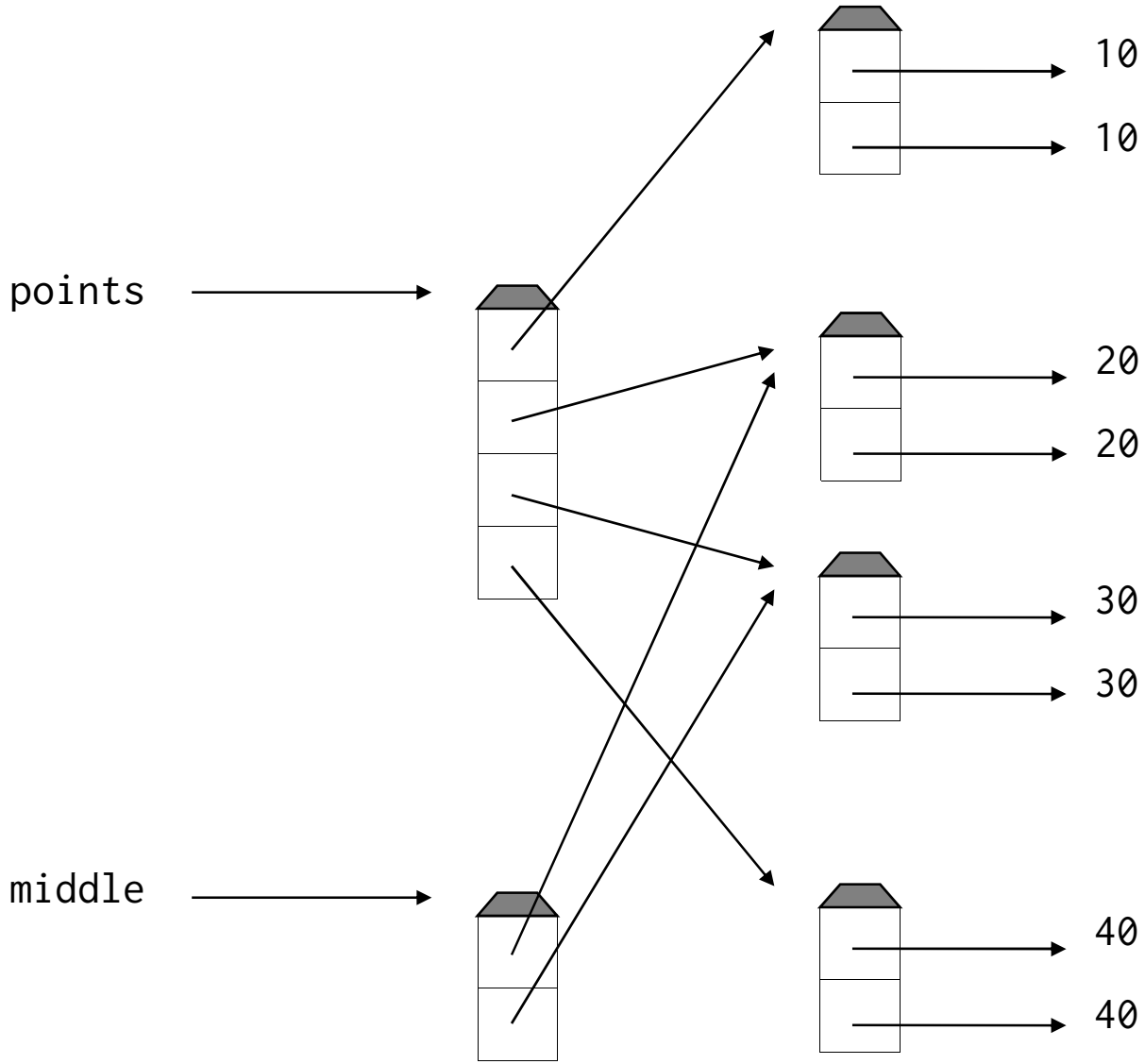
```
>>> points = [[10, 10], [20, 20], [30, 30], [40, 40]]
>>> middle = points[1:-1]
>>> middle[0][0] = 'whoops'
>>> middle[1][0] = 'aliasing'
>>> print middle
[['whoops', 20], ['aliasing', 30]]
>>>
```

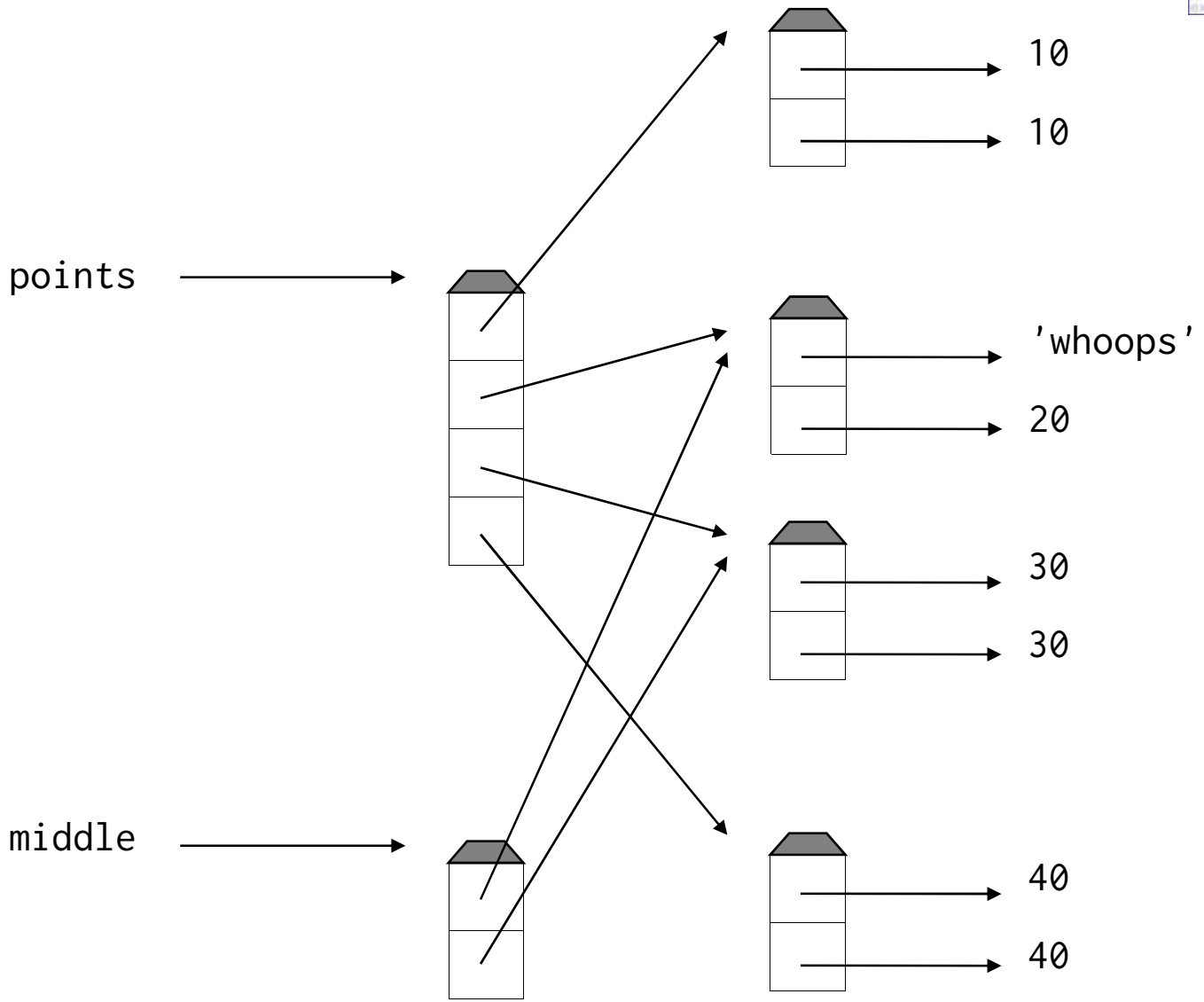
Slicing always creates a new collection

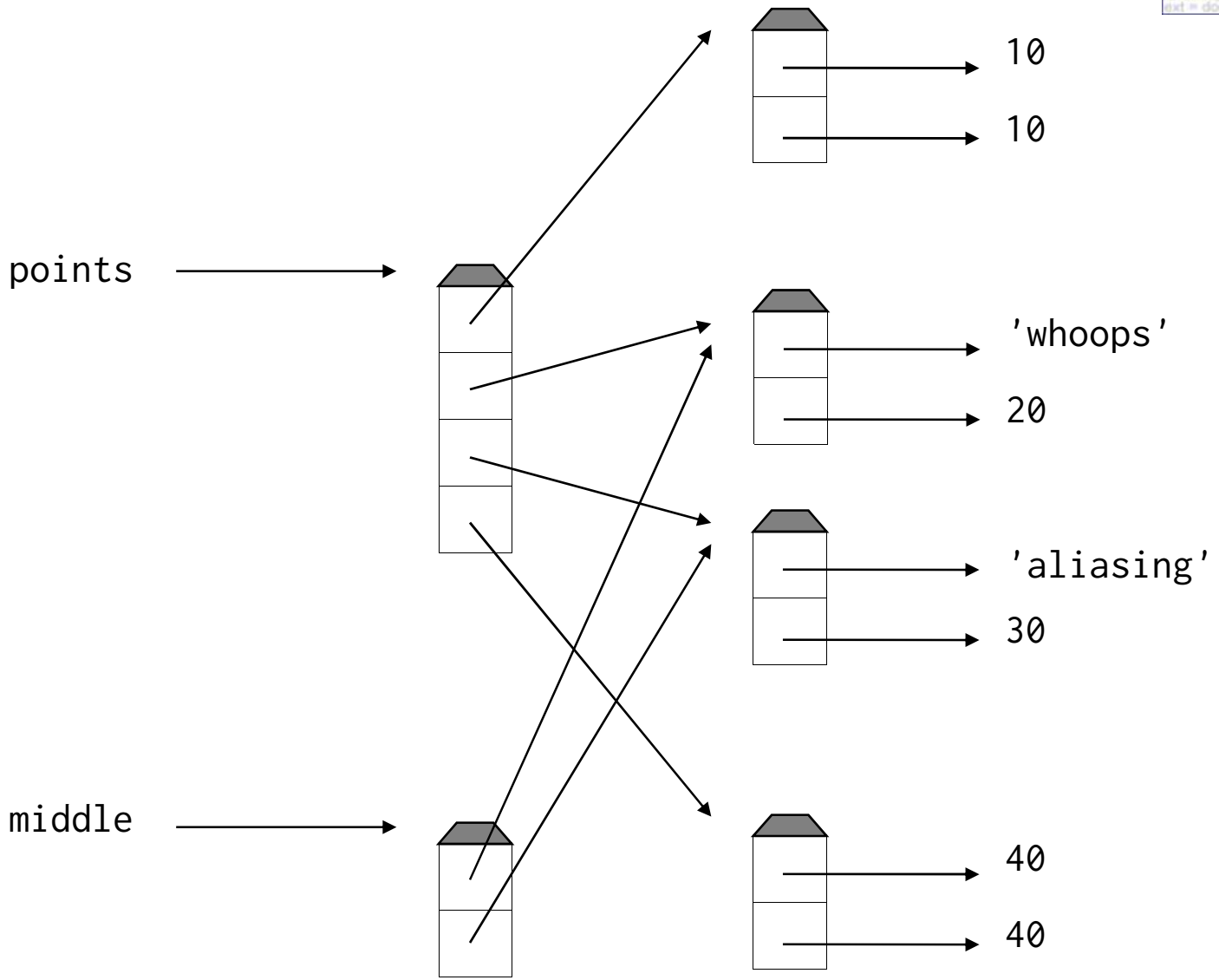
Beware of aliasing

```
>>> points = [[10, 10], [20, 20], [30, 30], [40, 40]]
>>> middle = points[1:-1]
>>> middle[0][0] = 'whoops'
>>> middle[1][0] = 'aliasing'
>>> print middle
[['whoops', 20], ['aliasing', 30]]
>>> print points
[[10, 10], ['whoops', 20], ['aliasing', 30], [40, 40]]
>>>
```


points
10
10
20
20
30
30
40
40


points
middle
10
10
20
20
30
30
40
40


points
middle
10
10
'whoops'
20
30
30
40
40


points
middle
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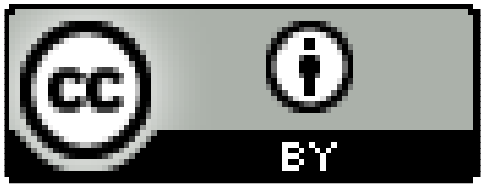
created by

Greg Wilson

October 2010



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