

61A Lecture 29

Friday, November 15

Announcements

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- Homework 9 due Tuesday 11/19 @ 11:59pm

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- Homework 9 due Tuesday 11/19 @ 11:59pm
- Project 4 due Thursday 11/21 @ 11:59pm

Data Processing

Processing Sequential Data

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- Declarative programming languages to manipulate and transform data
- Distributed and parallel computing

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`range(-2, 2)`

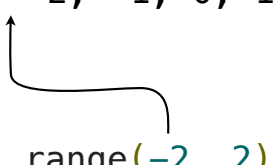
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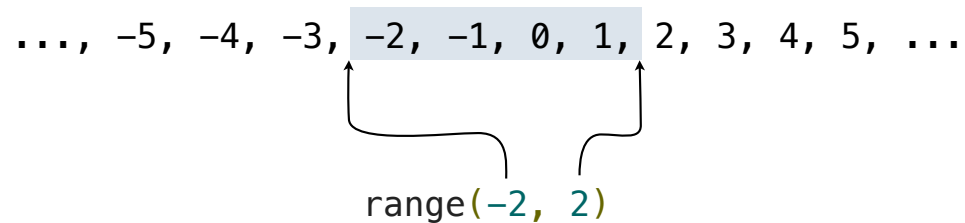
The diagram illustrates the relationship between the `range(-2, 2)` function call and the sequence of integers. Two arrows originate from the `-2` and `2` arguments in the function call. The arrow from `-2` points to the `-2` element in the sequence, and the arrow from `2` points to the `2` element. This indicates that the range function generates integers starting from the start value up to, but not including, the end value.

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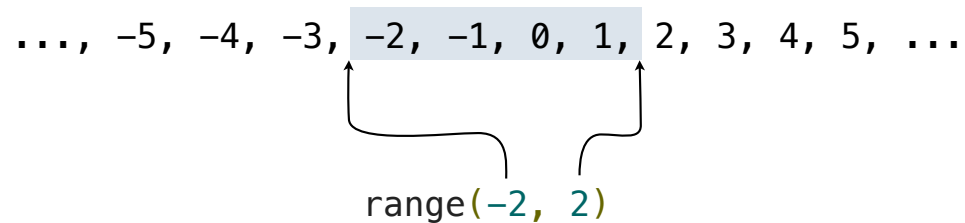


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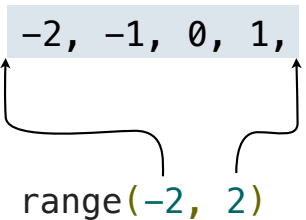
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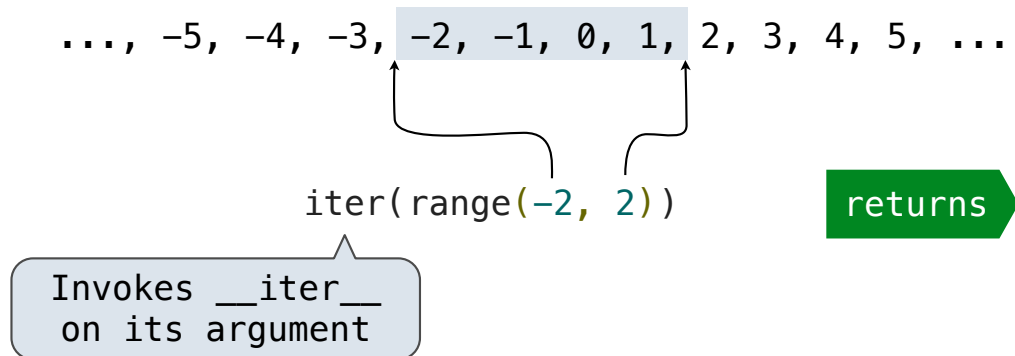
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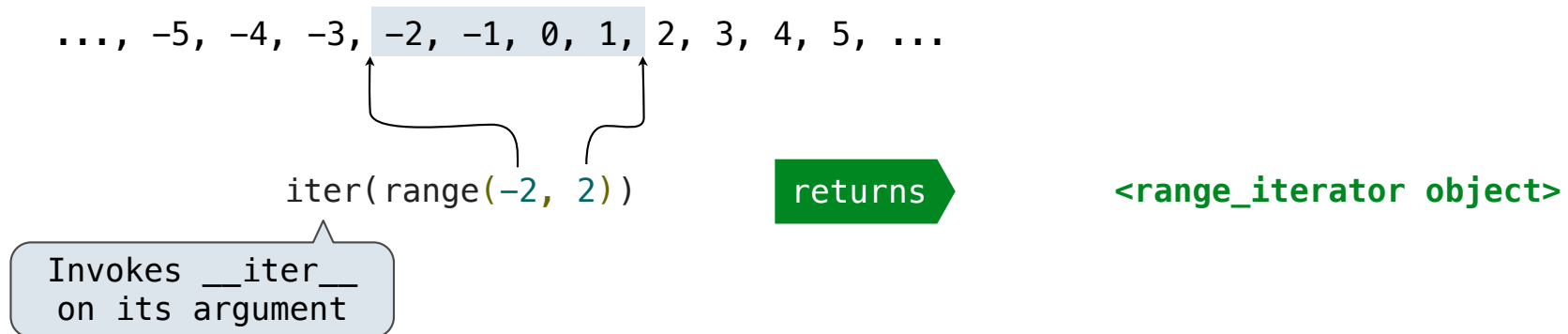
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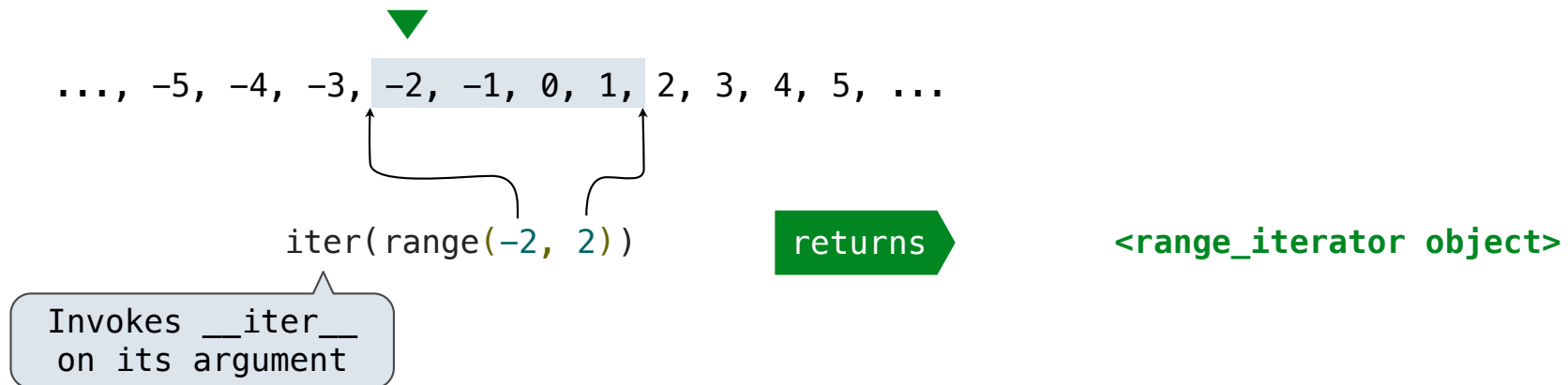
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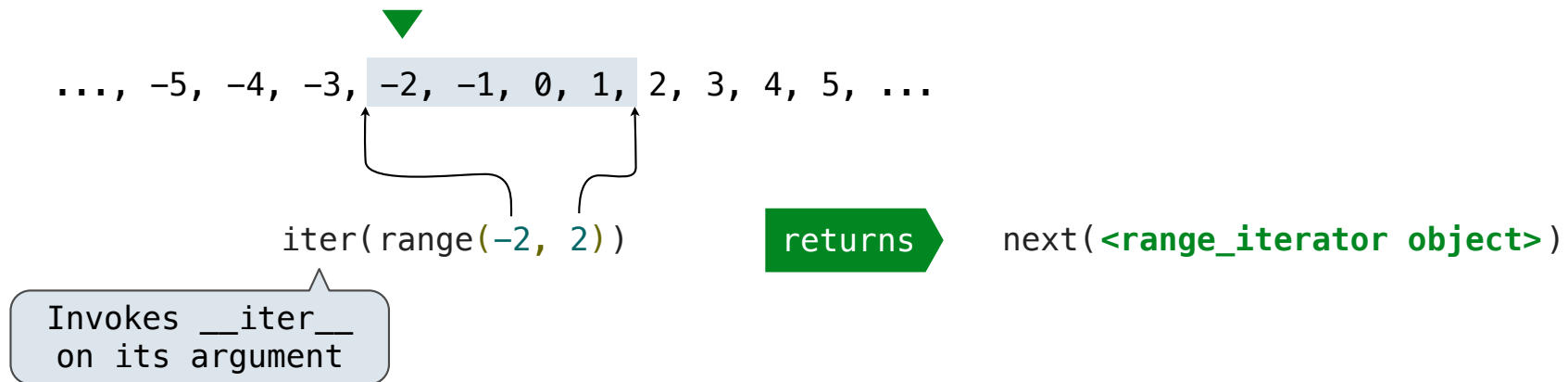
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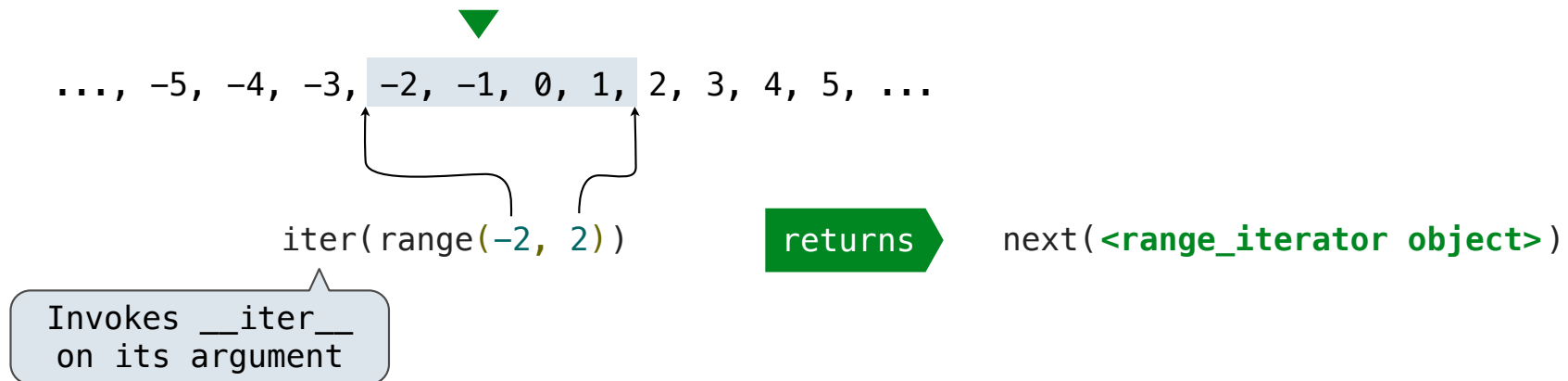
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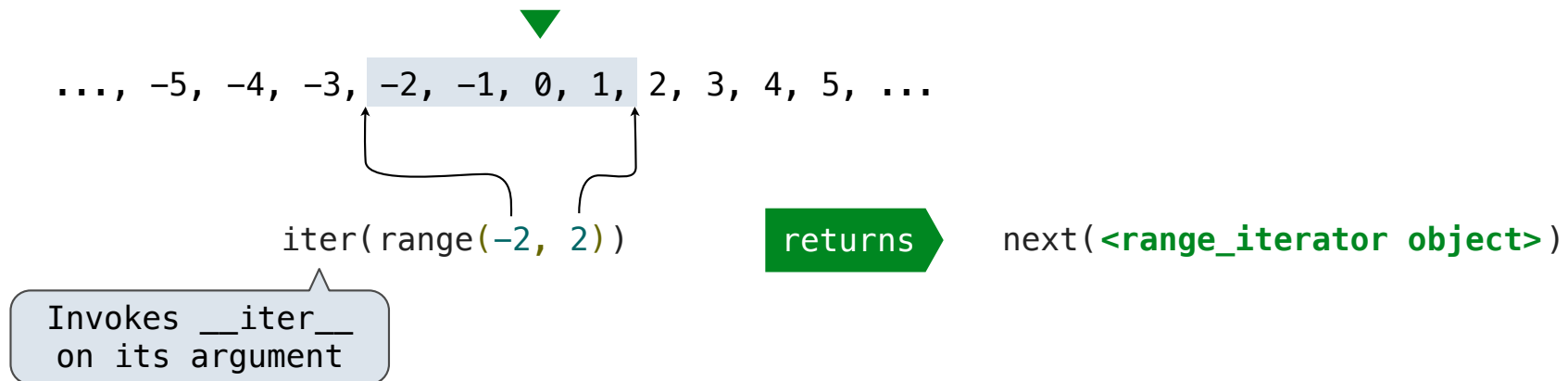
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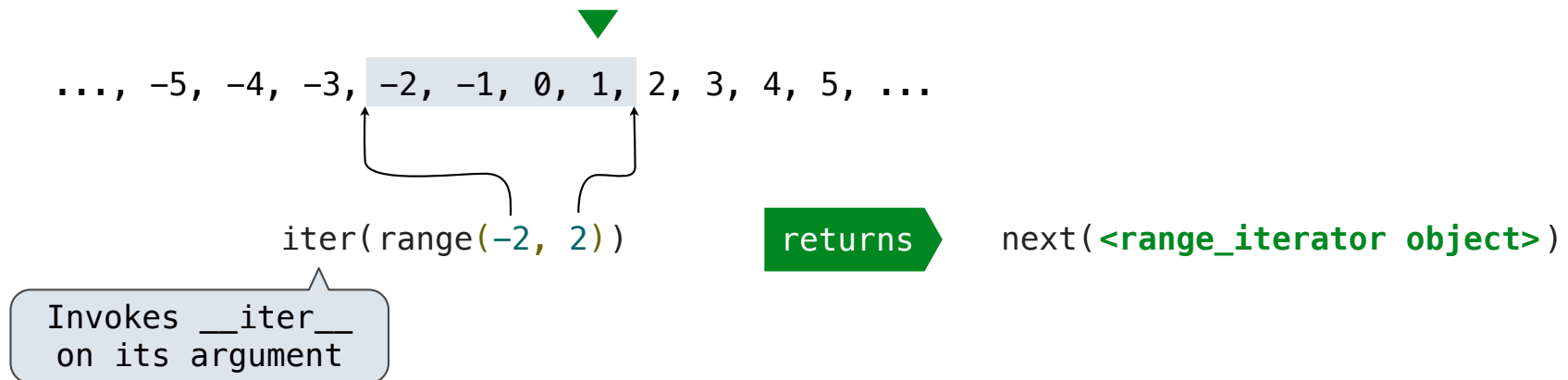
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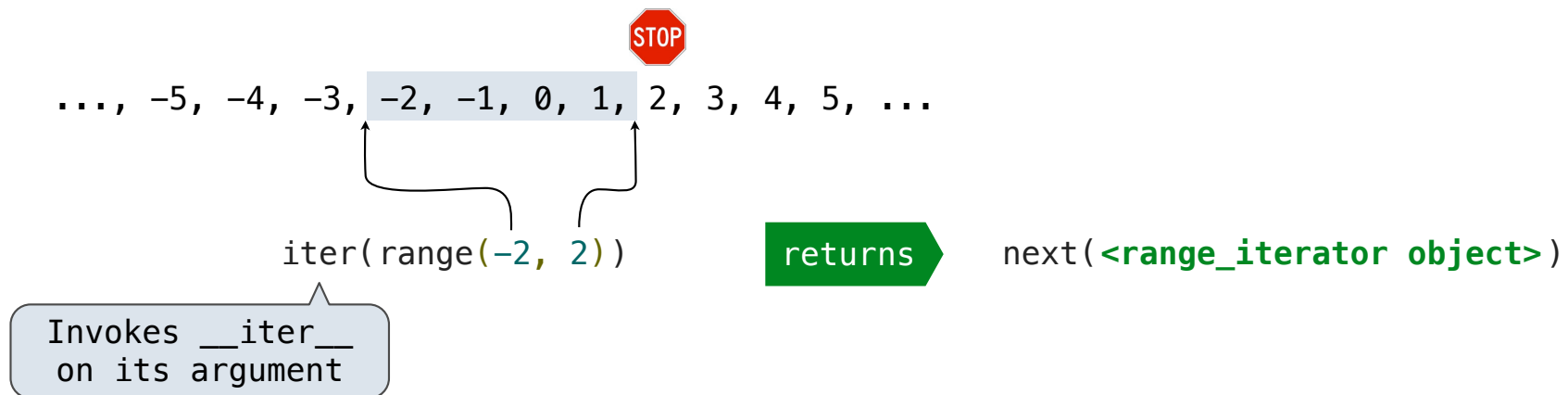
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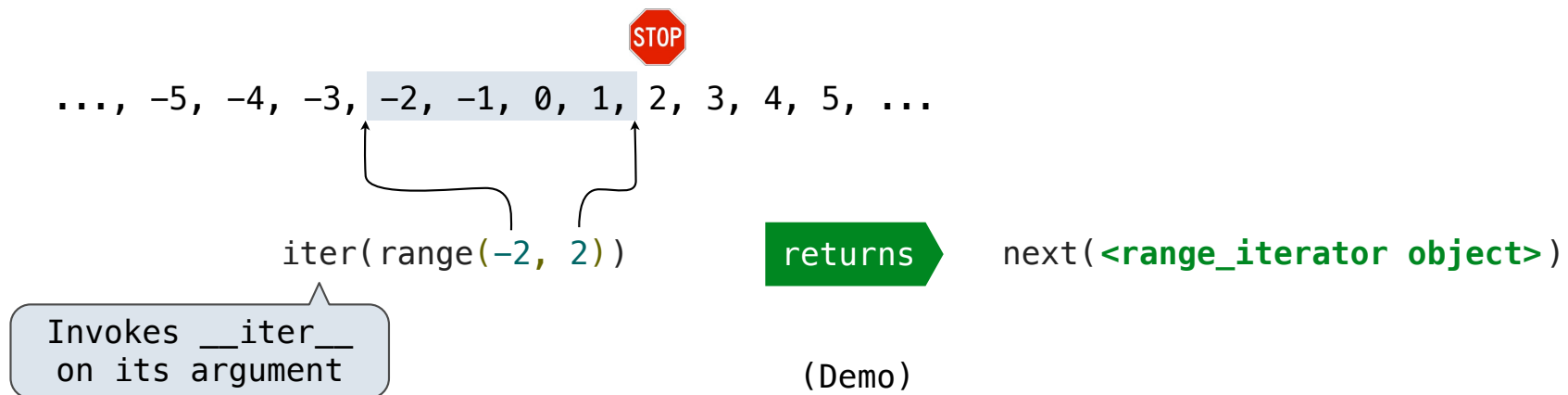
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Iterable Objects

Iterables and Iterators

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For Statements

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>>> counts = [1, 2, 3]  
>>> for item in counts:  
    print(item)  
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2  
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>>> counts = [1, 2, 3]  
>>> items = counts.__iter__()  
>>> try:  
    while True:  
        item = items.__next__()  
        print(item)  
except StopIteration:  
    pass
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Generator Functions

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c
d
```

Generators and Generator Functions

A generator is an iterator backed by a generator function.

A generator function is a function that `yields` values.

When a generator function is called, it returns a generator.

```
>>> def letters_generator(next_letter, end):
...     while next_letter < end:
...         yield next_letter
...         next_letter = chr(ord(next_letter)+1)

>>> for letter in letters_generator('a', 'e'):
...     print(letter)
a
b
c
d
```

(Demo)

Generator Examples

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```
fib_generator(): "Yield Fibonacci numbers."
```

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`all_pairs(s): "Yield pairs of elements from iterable s."`

`Letters.__iter__(): "Yield sequential letters."`

`powerset(t): "Yield all subsets of iterator t."`