CS 61A Lecture 11

Friday, September 27

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- Homework 3 due Tuesday 10/1 @ 11:59pm
- Optional Hog Contest due Thursday 10/3 @ 11:59pm

Sequences

The Sequence Abstraction

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Length. A sequence has a finite length.

Element selection. A sequence has an element corresponding to any non-negative integer index less than its length, starting at 0 for the first element.

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The sequence abstraction is a collection of behaviors:

> **Length.** A sequence has a finite length.
>
> **Element selection.** A sequence has an element corresponding to any non-negative integer index less than its length, starting at 0 for the first element.

There is built-in syntax associated with this behavior, or we can use functions.

A tuple is a kind of built-in sequence (demo)

Box-and-Pointer Notation

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```
1  pair = (1, 2)
2  pairs = ((1, 2), (3, 4))
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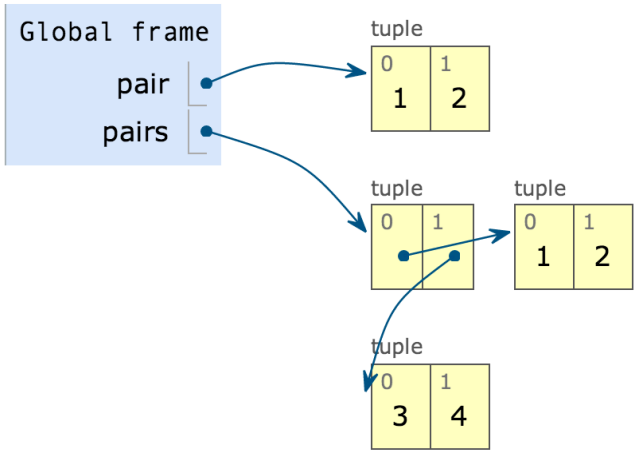

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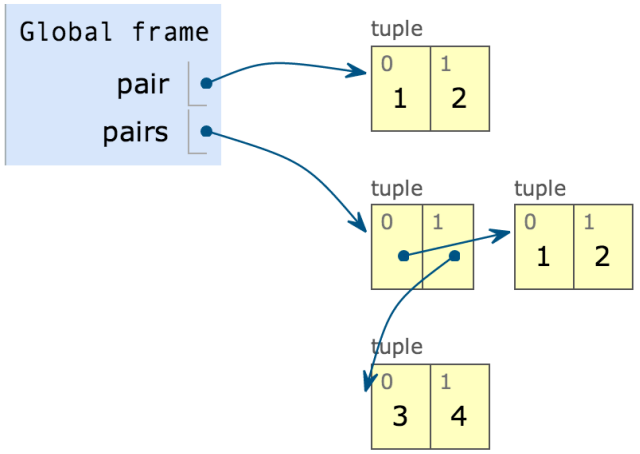


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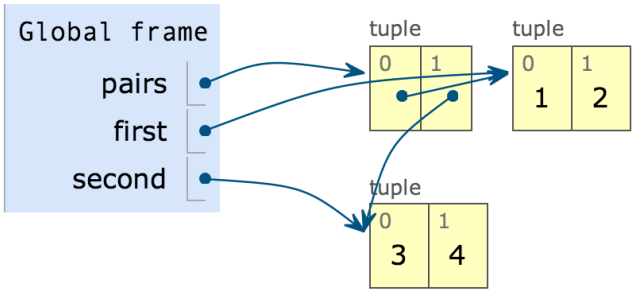

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Tuples can contain tuples as elements

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- `first(s)` returns `f`, and
- `rest(s)` returns `r`, which is a recursive list.

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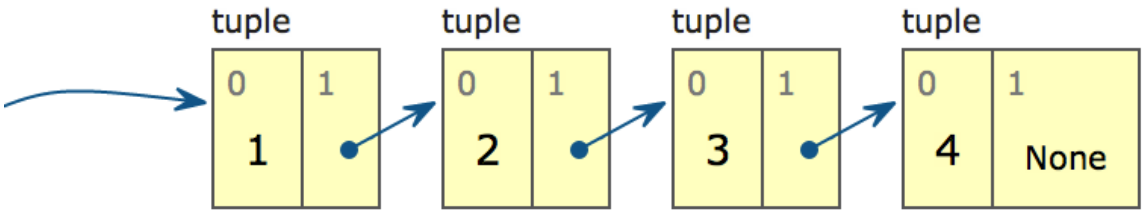

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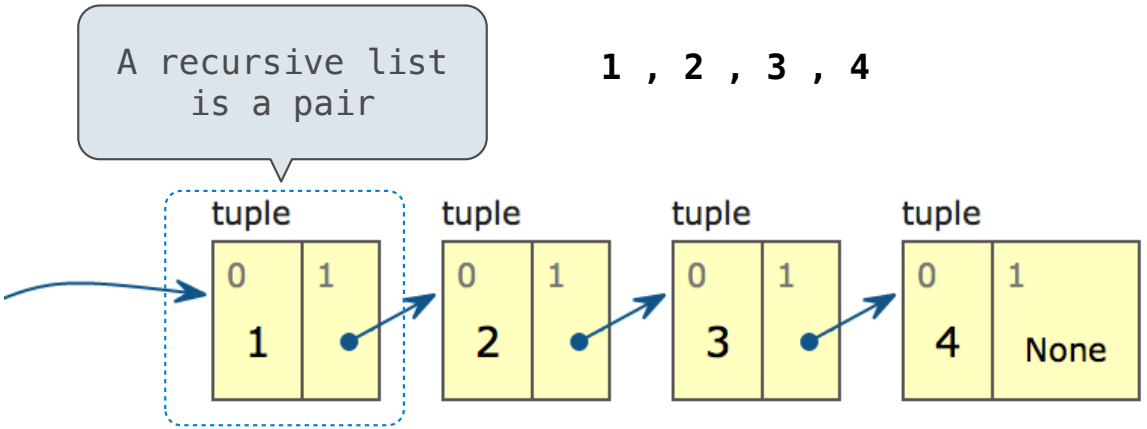

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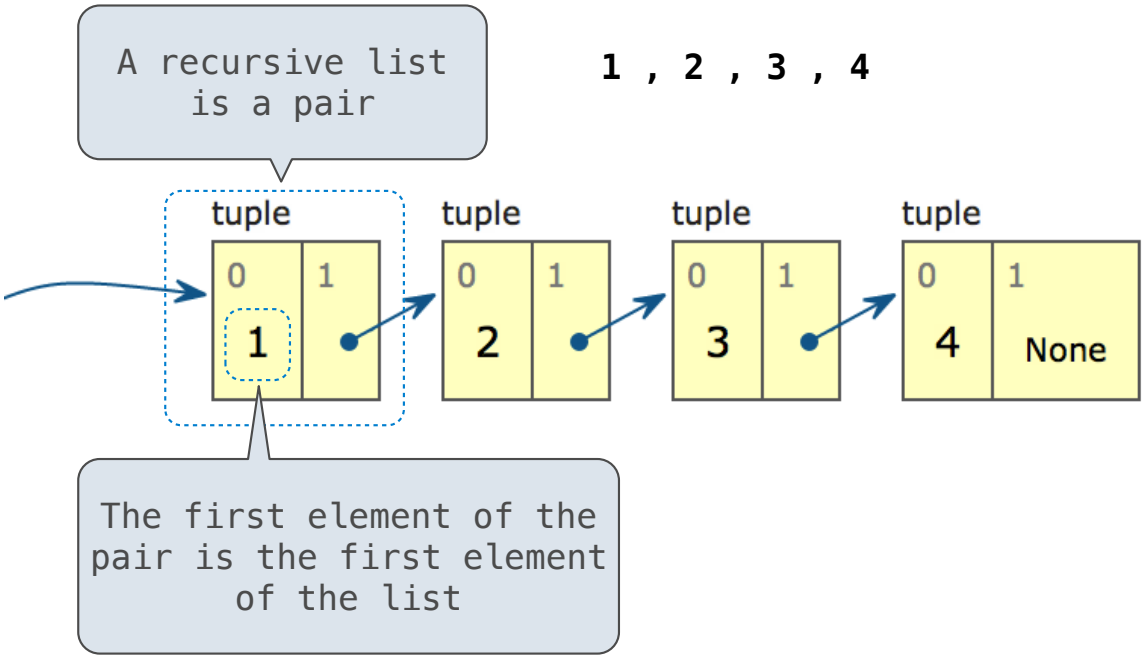

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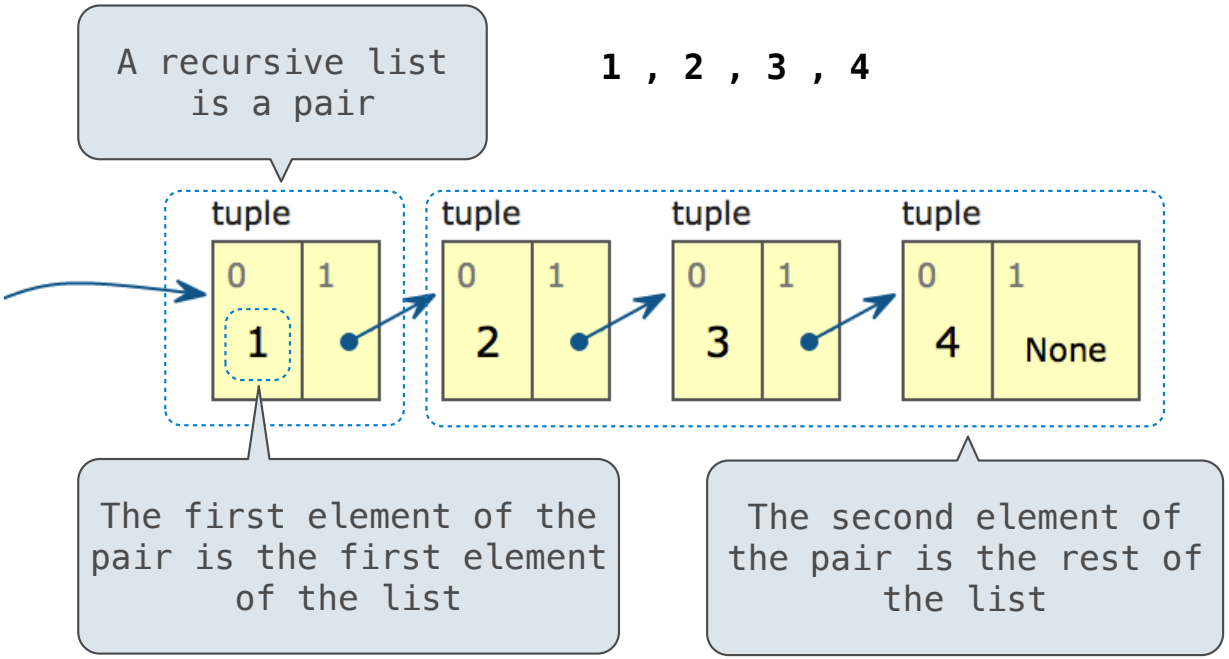

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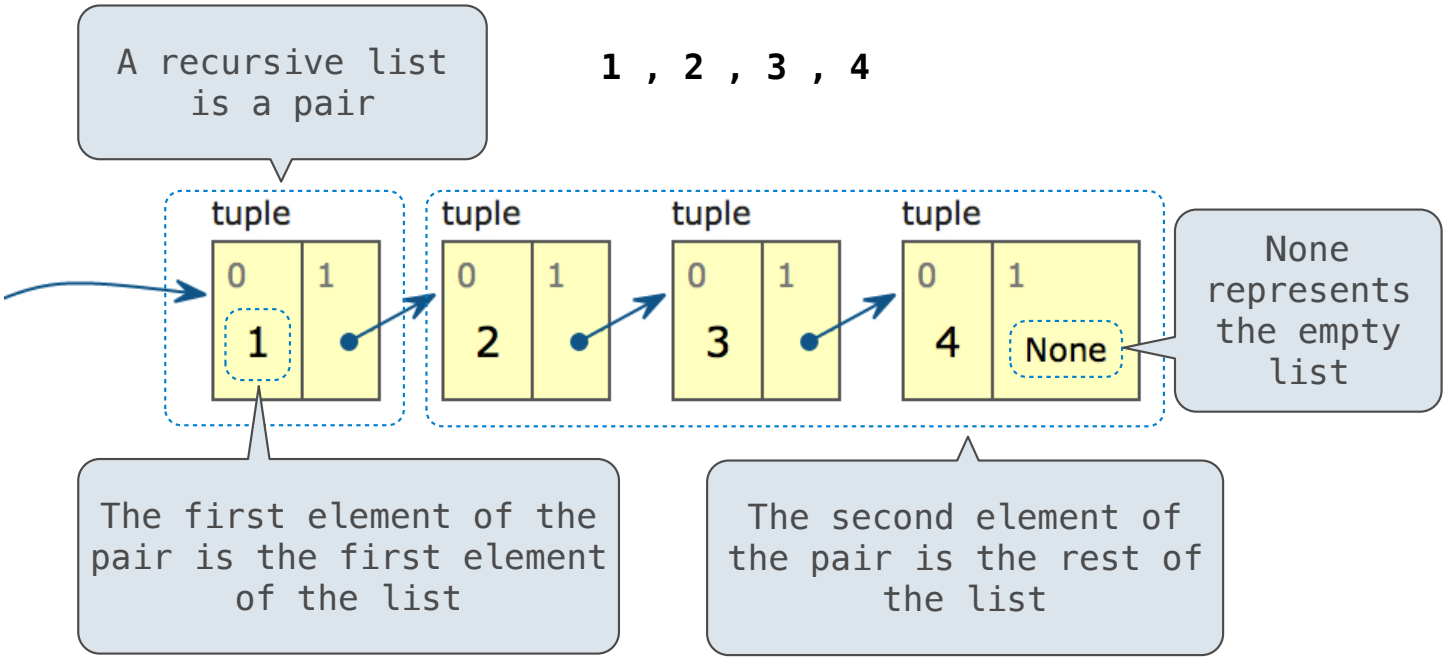

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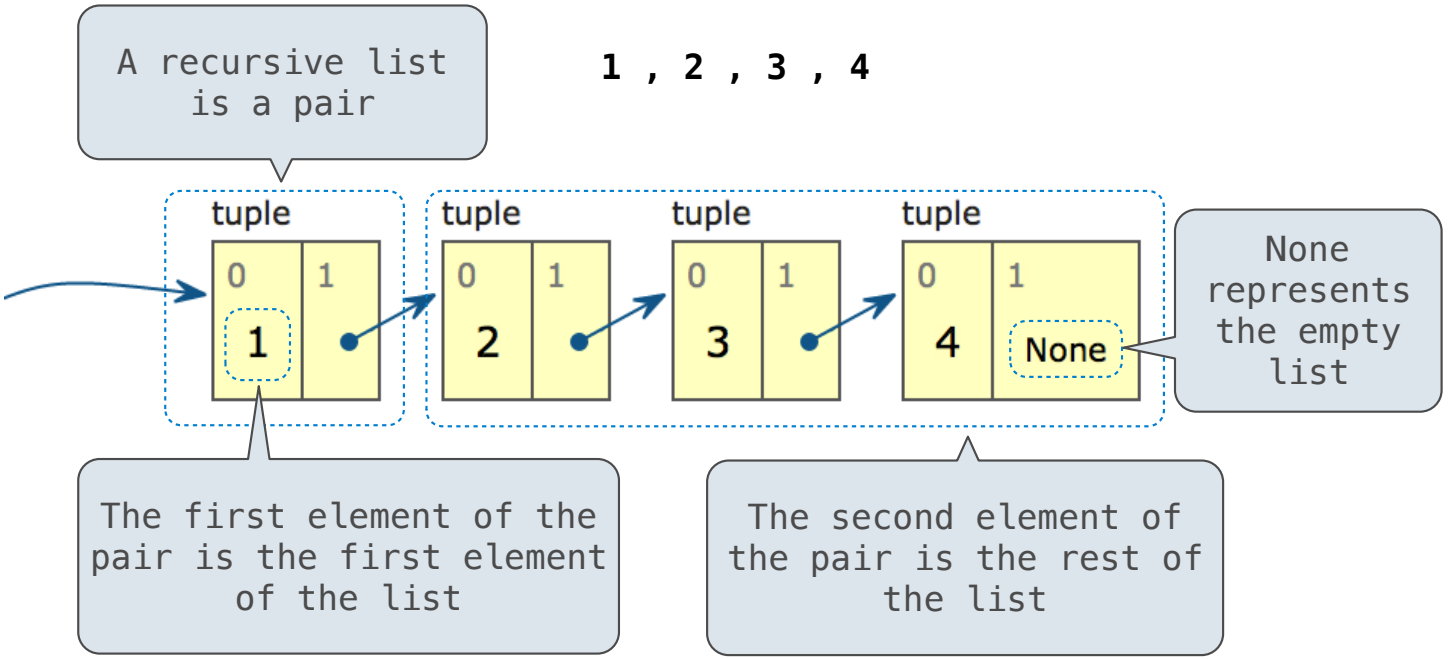

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Sequence Abstraction Implementation

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    """Return the length of recursive list s."""
    length = 0
    while s != empty_rlist:
        s, length = rest(s), length + 1
    return length
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    """Return the element at index i of recursive list s."""
    while i > 0:
        s, i = rest(s), i - 1
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Recursive implementations

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