Iterators

Announcements

List Practice

Spring 2023 Midterm 2 Question 1

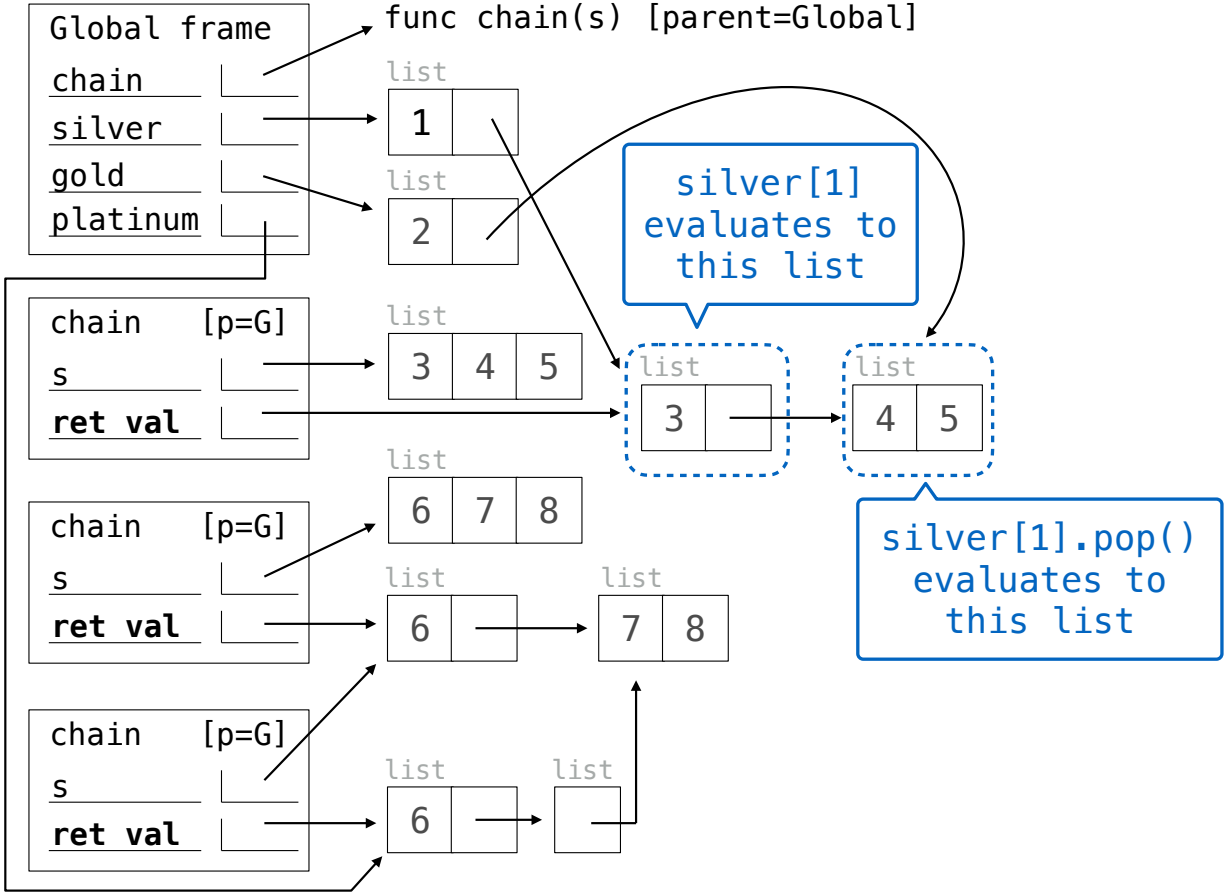
```
def chain(s):
    return [s[0], s[1:]]
silver = [2, chain([3, 4, 5])]
gold = [silver[0], silver[1].pop()]
silver[0] = 1
platinum = chain(chain([6, 7, 8]))
```

Reminder: s.pop() removes and returns the last item in list s.

```
>>> silver
[1, [3]]

>>> gold
[2, [4, 5]]

>>> platinum
[6, [[7, 8]]]
```



Tuples

(Demo)

Iterators

Iterators

A container can provide an iterator that provides access to its elements in order

`iter(iterable)`: Return an iterator over the elements of an iterable value

`next(iterator)`: Return the next element in an iterator

```
>>> s = [3, 4, 5]
>>> t = iter(s)
>>> next(t)
3
>>> next(t)
4
>>> u = iter(s)
>>> next(u)
3
>>> next(t)
5
>>> next(u)
4
```

(Demo)

Discussion Question

What will be printed?

```
a = [1, 2, 3]
b = [a, 4]
c = iter(a)
d = c
print(next(c))
print(next(d))
print(b)
```

Map Function

Map

`map(func, iterable)`: Make an iterator over the return values of calling `func` on each element of the iterable.

(Demo)

Discussion Question

all(s) iterates through s until a false value is found (or the end is reached).

What's printed when evaluating:

```
x = all(map(print, range(-3, 3)))
```

Why?

- print(-3) returns None after displaying -3
- None is a false value
- all([None, ...]) is False for any ...
- The map iterator never needs to advances beyond -3