61A Lecture 22

Monday, March 16

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Linked Lists

Recursive Lists Can Change

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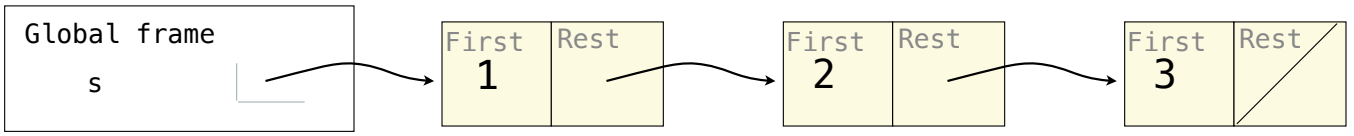

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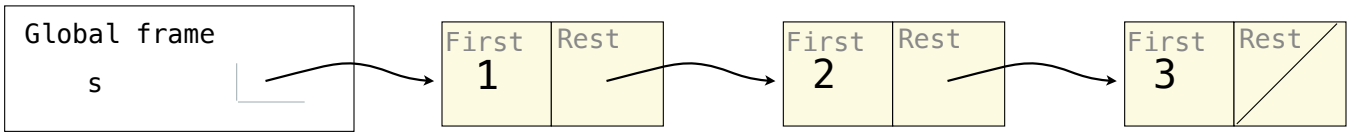

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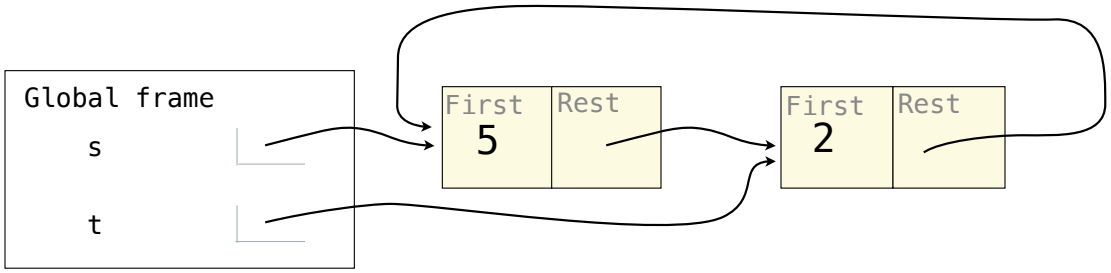

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Environment Diagrams

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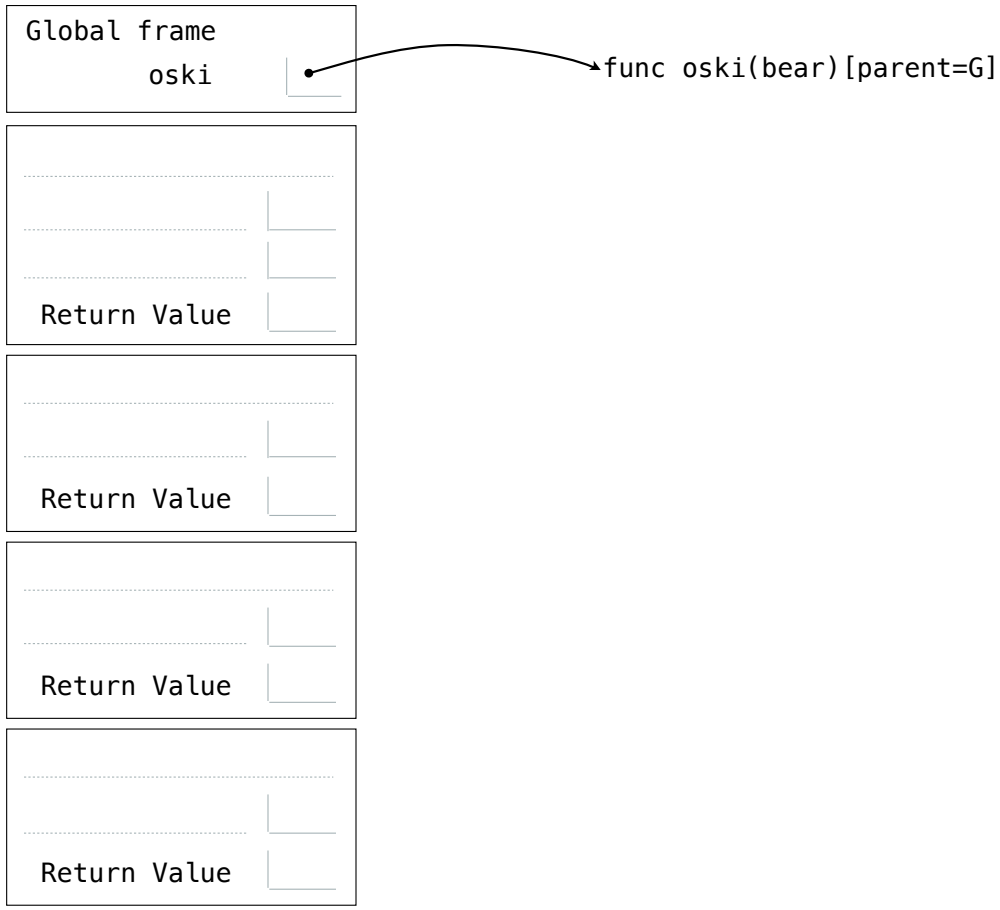

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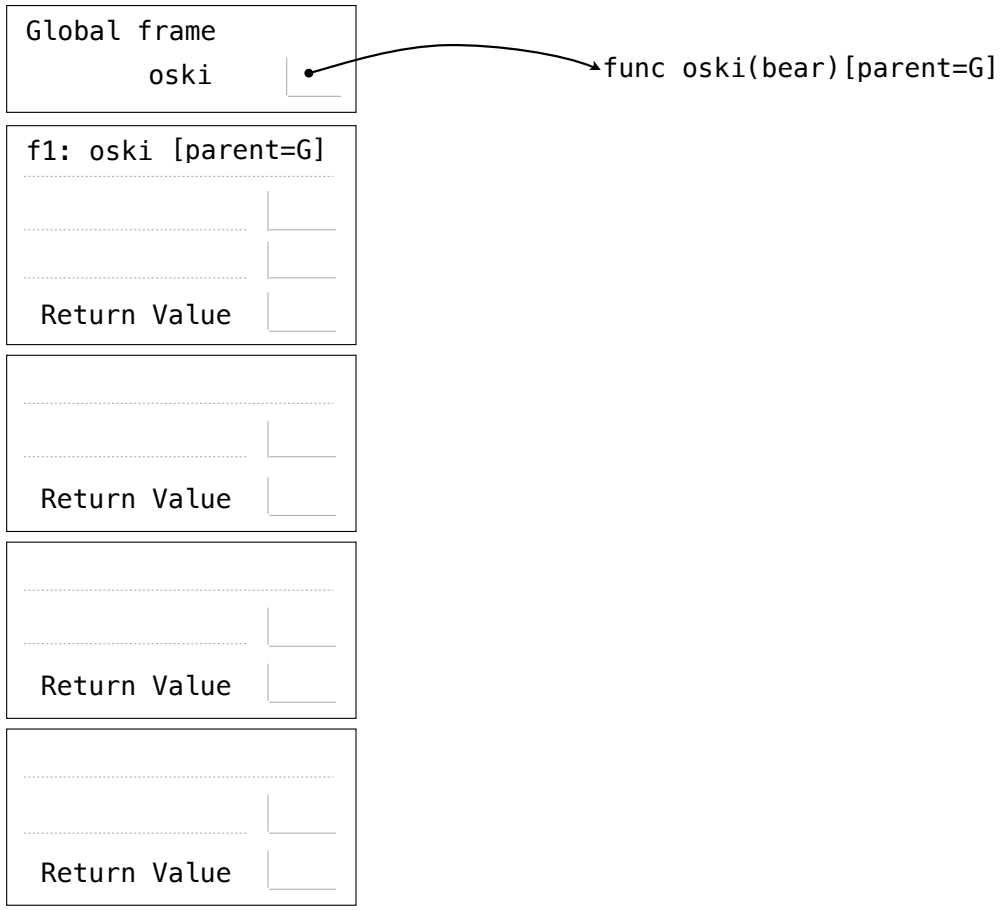

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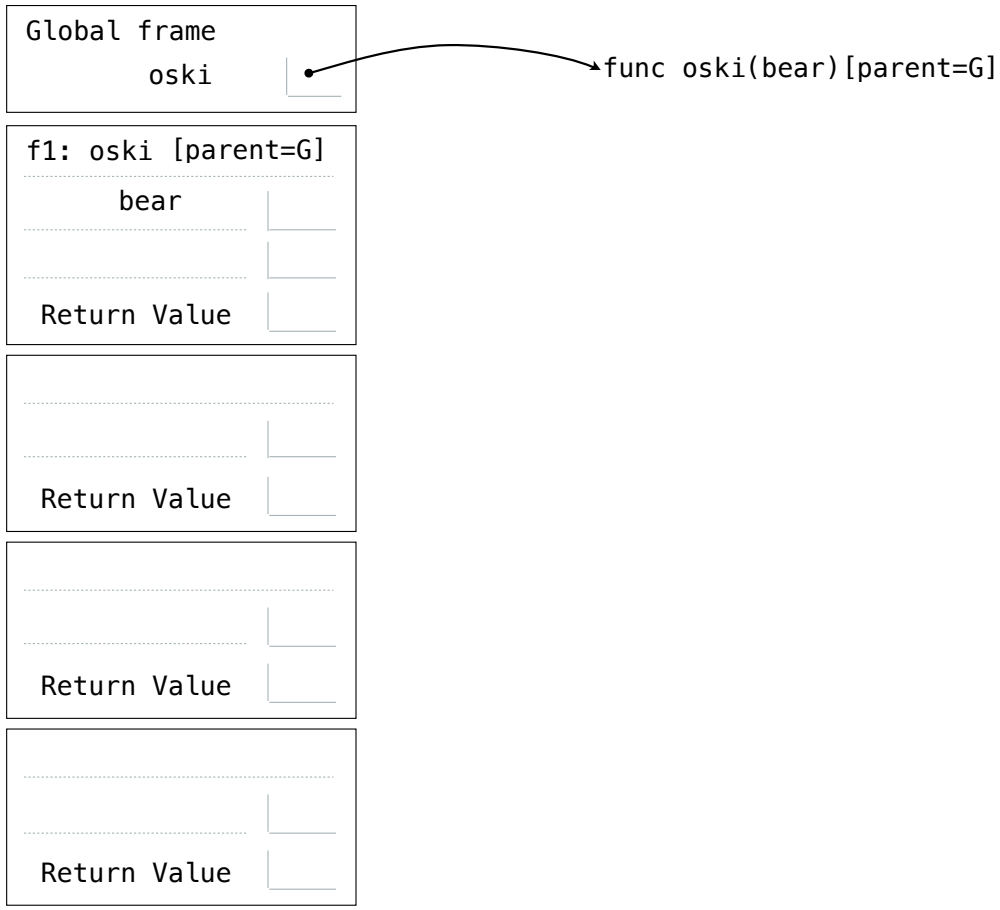

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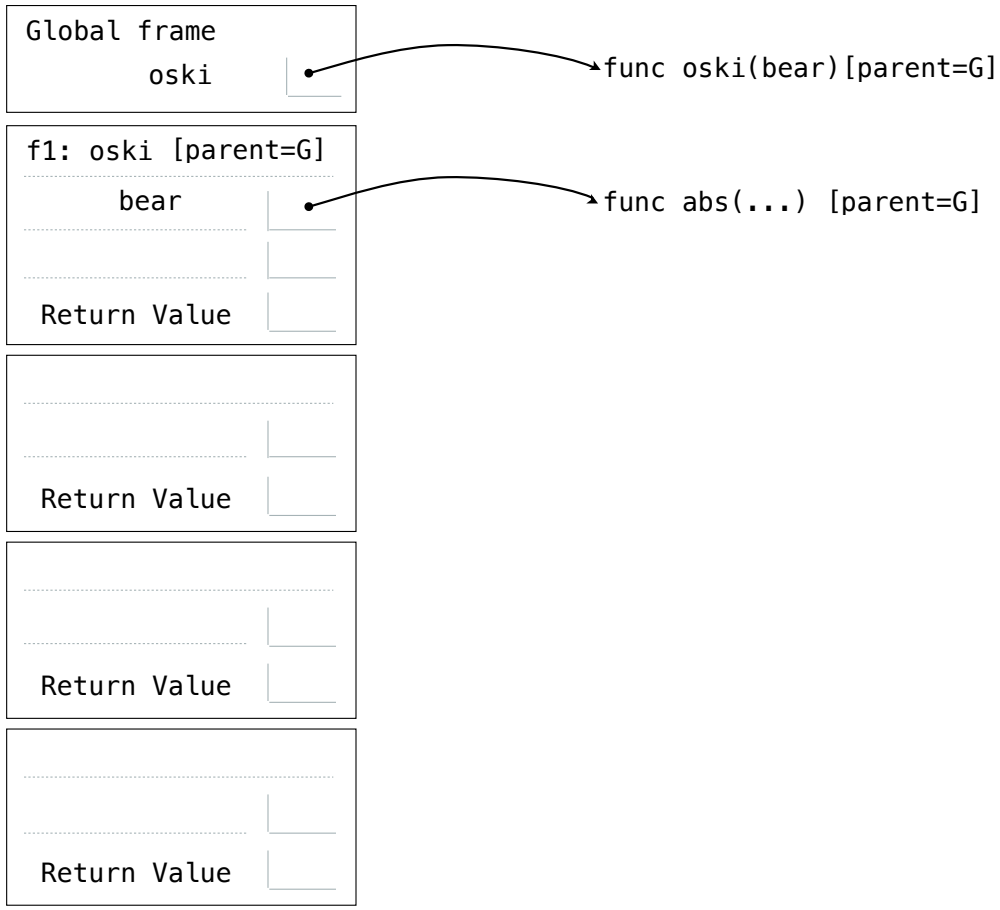

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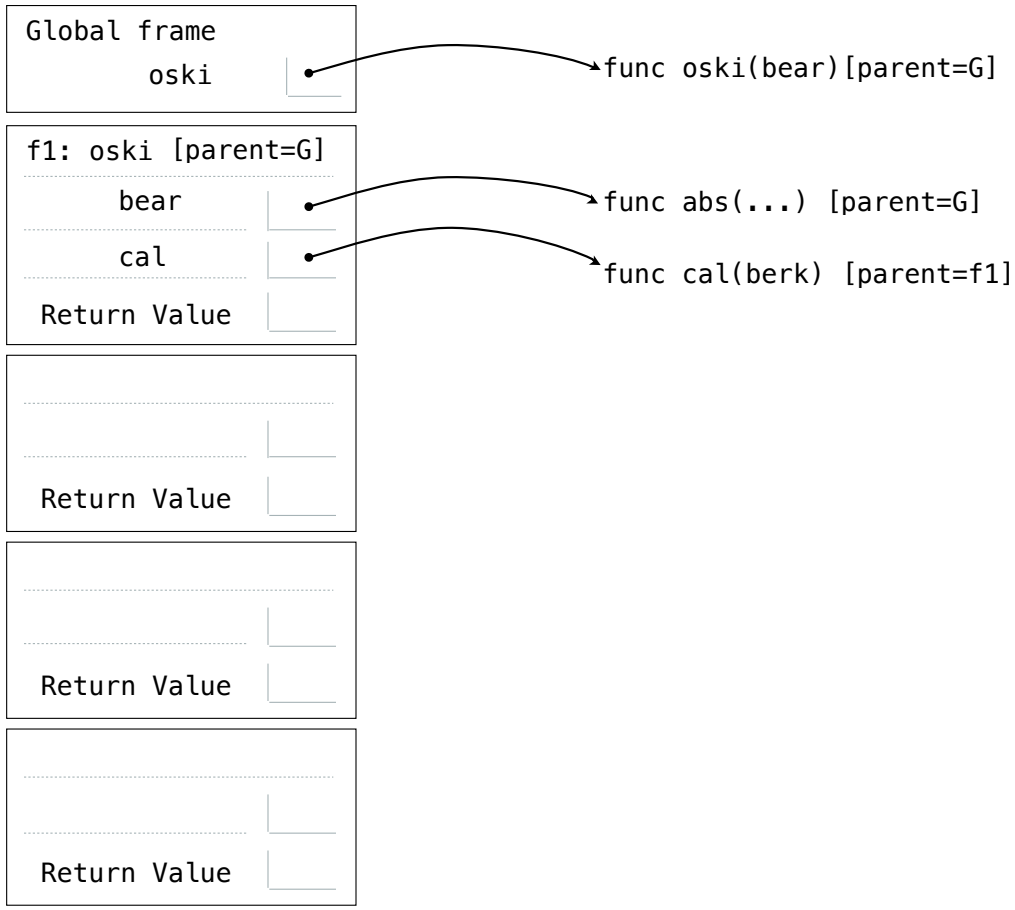

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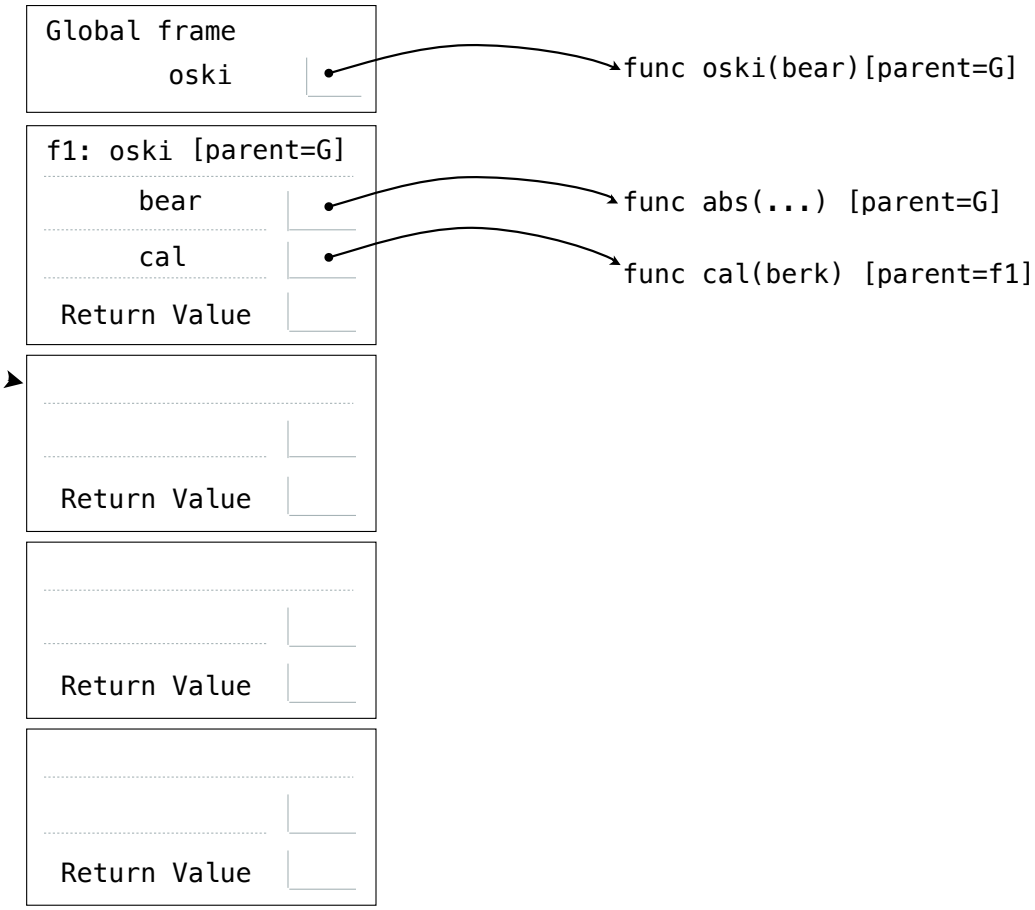

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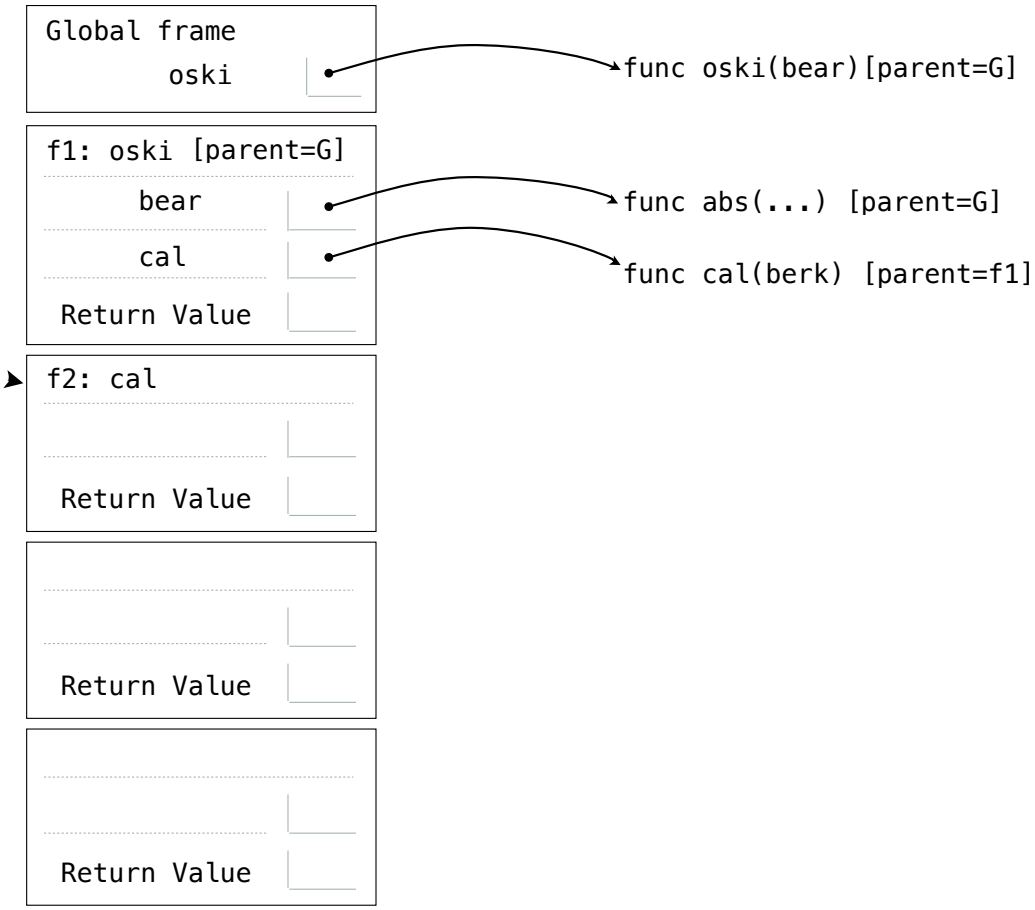

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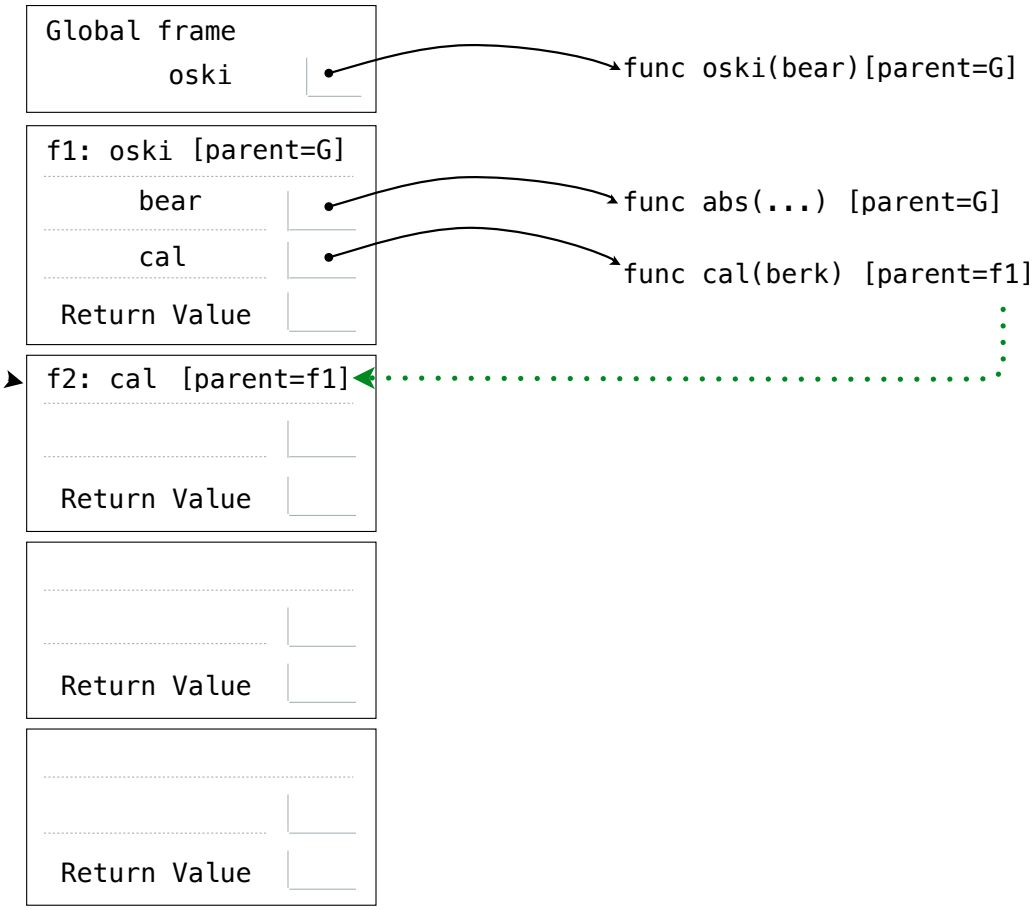

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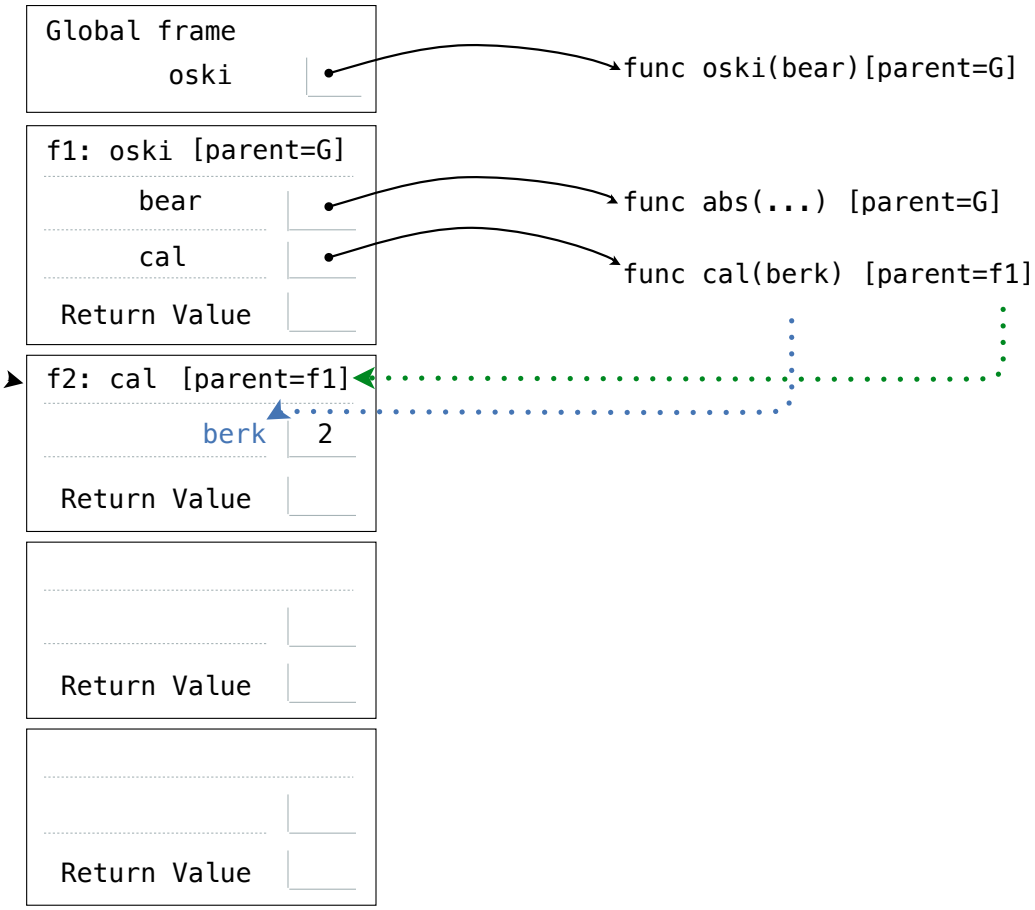

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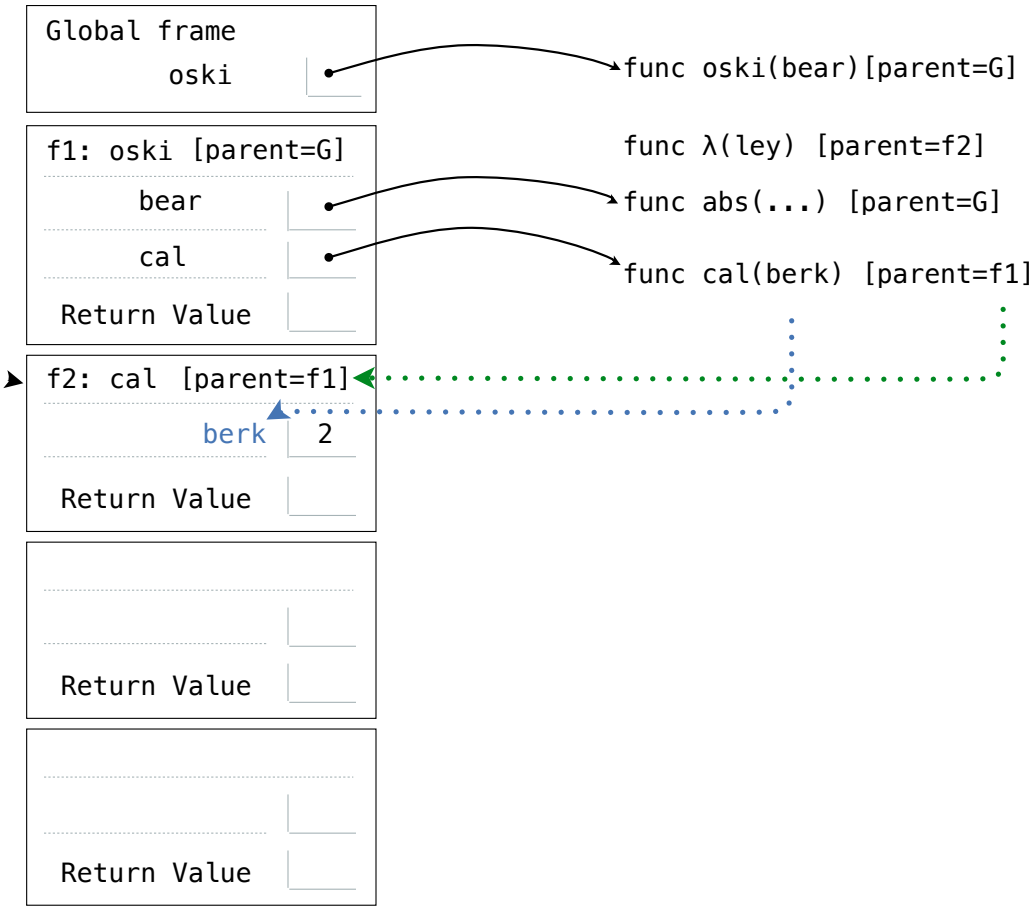

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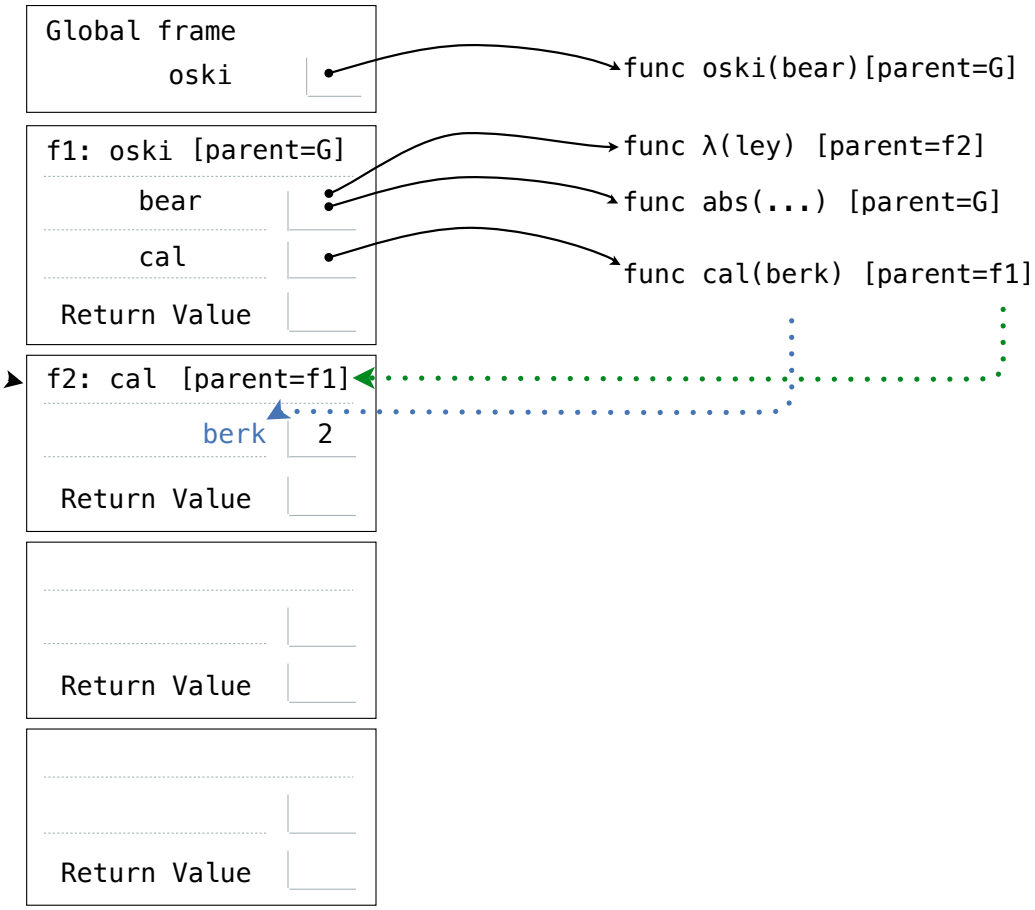

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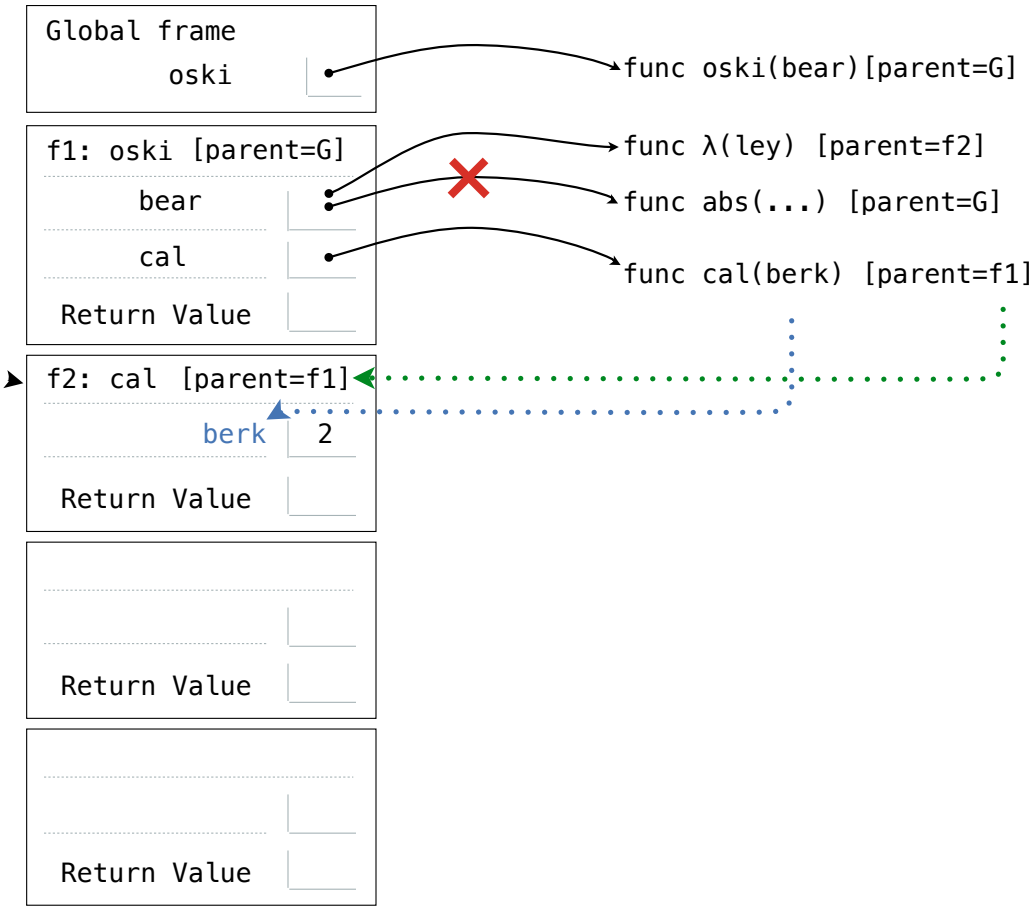

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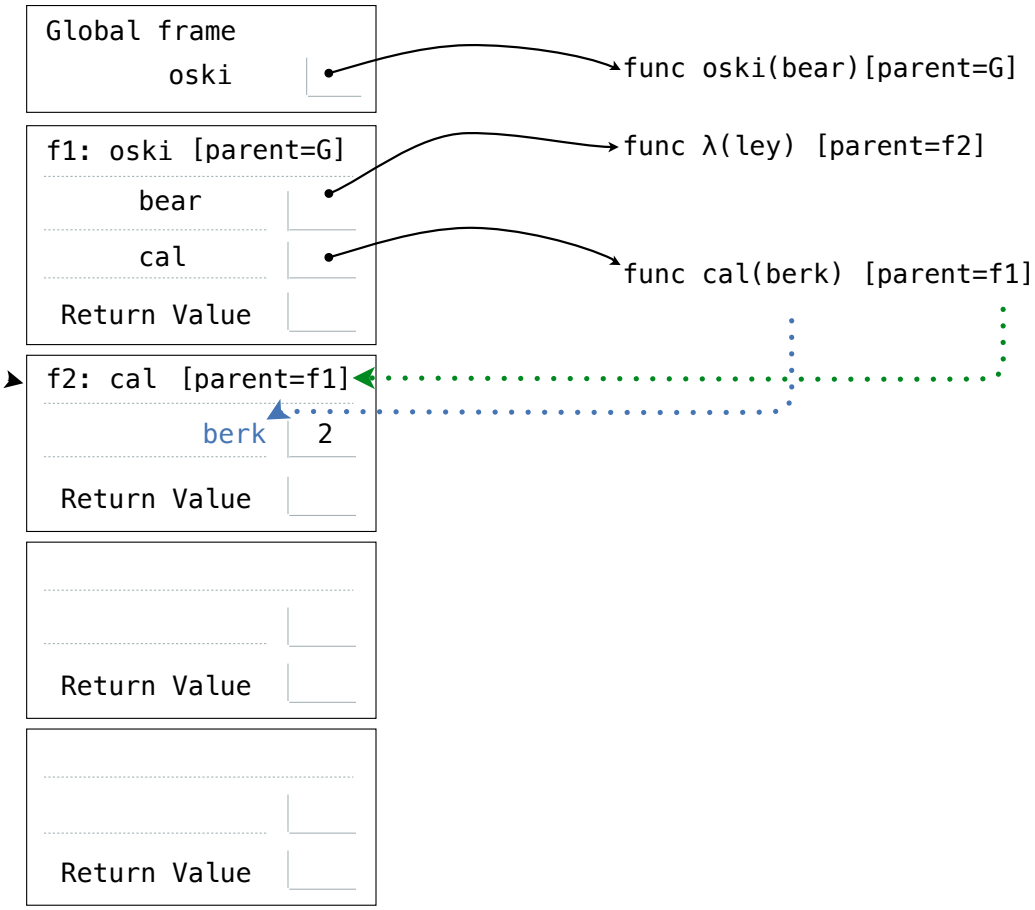

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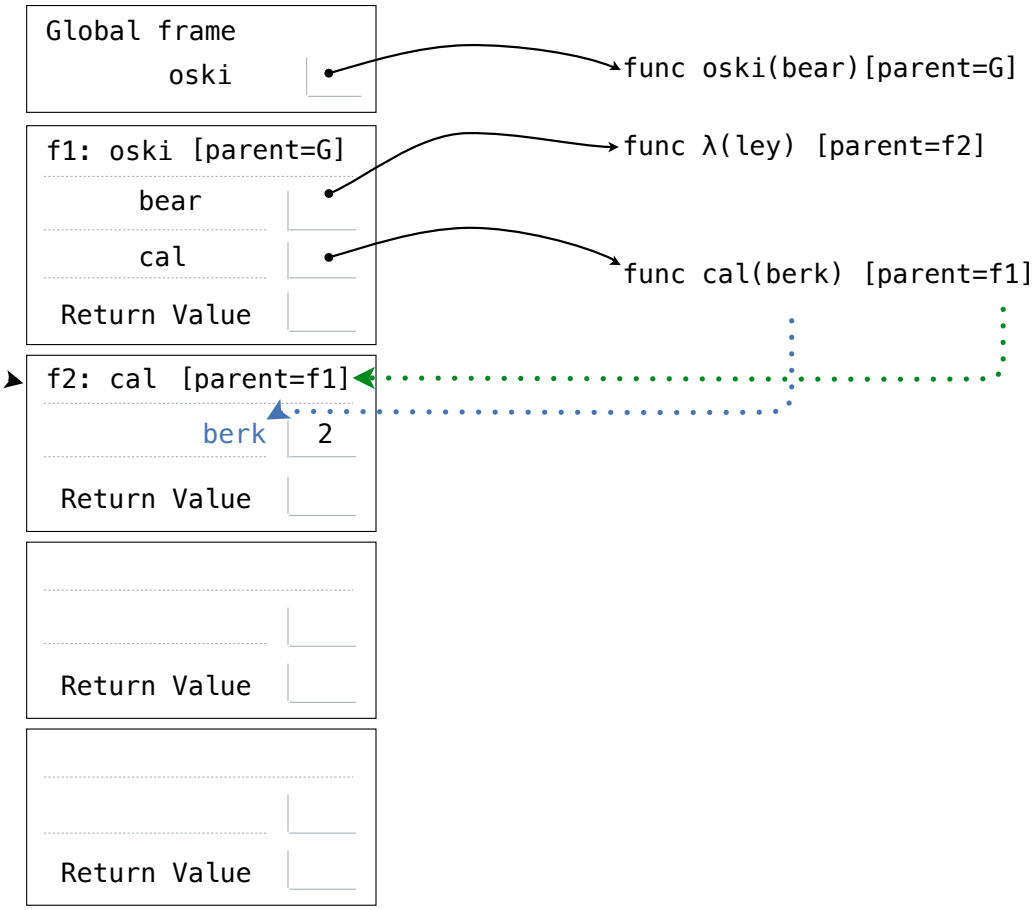

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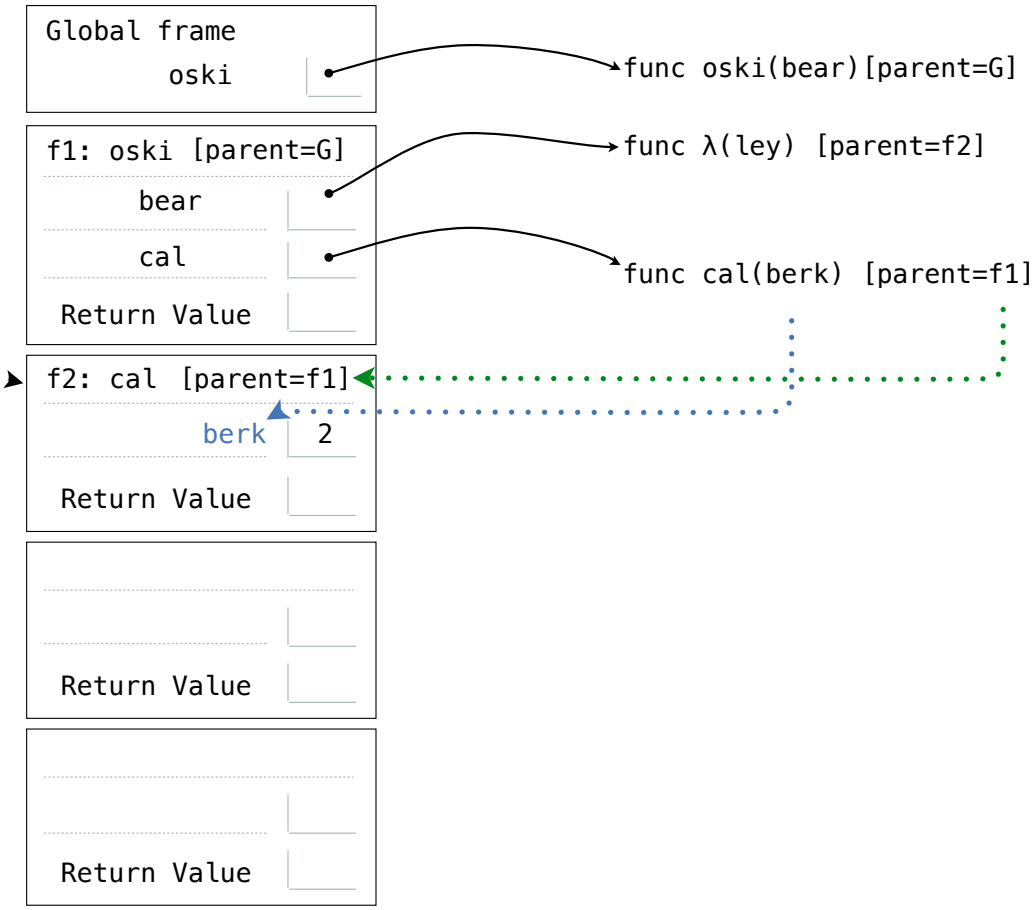

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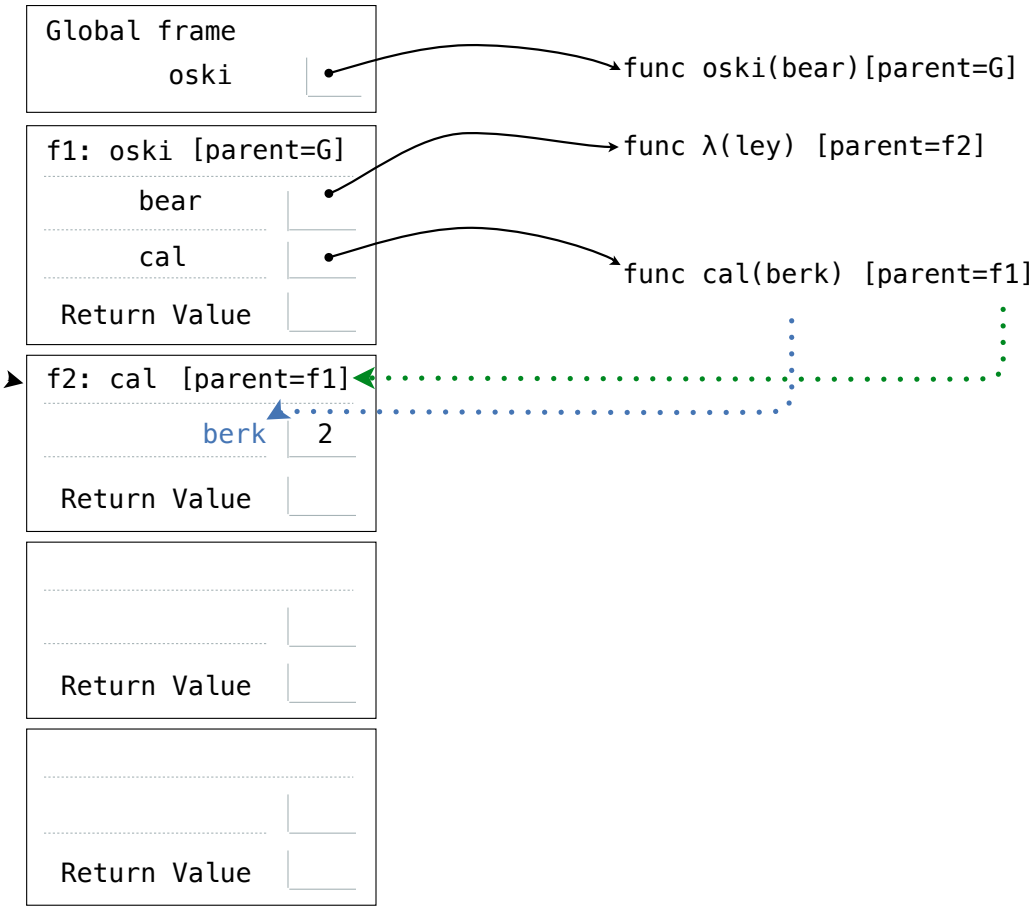

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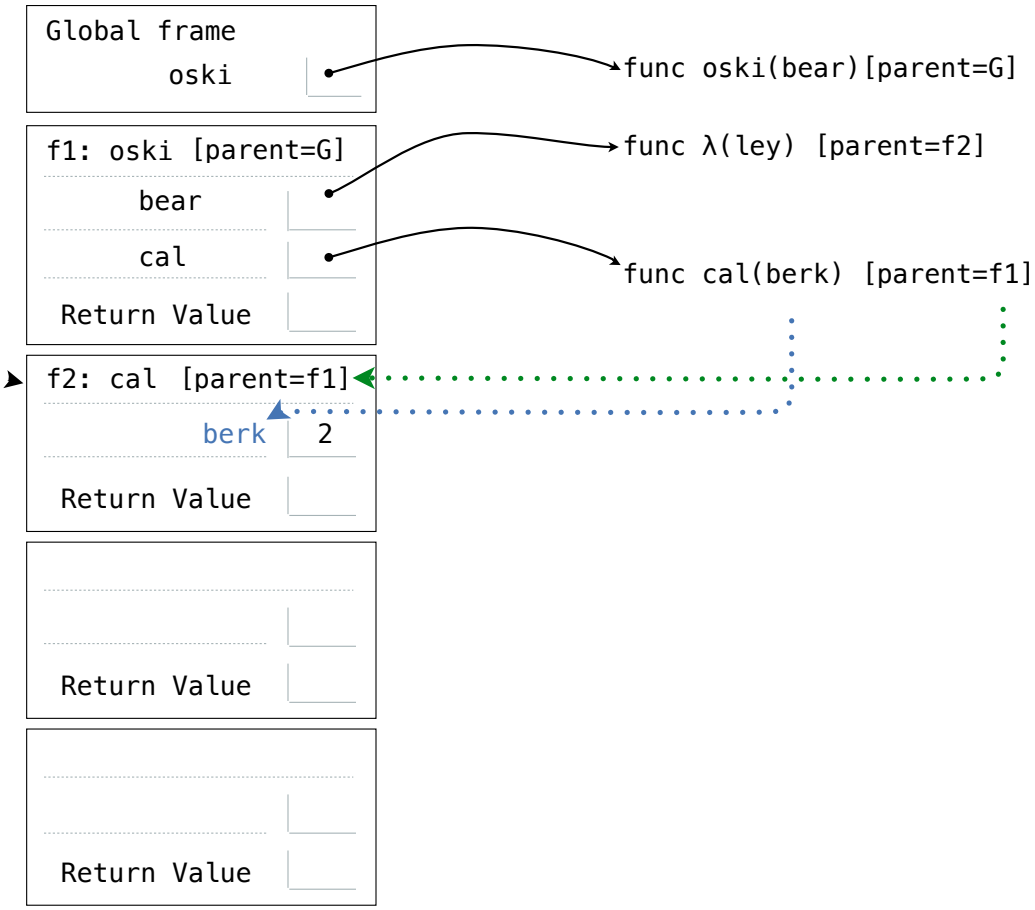

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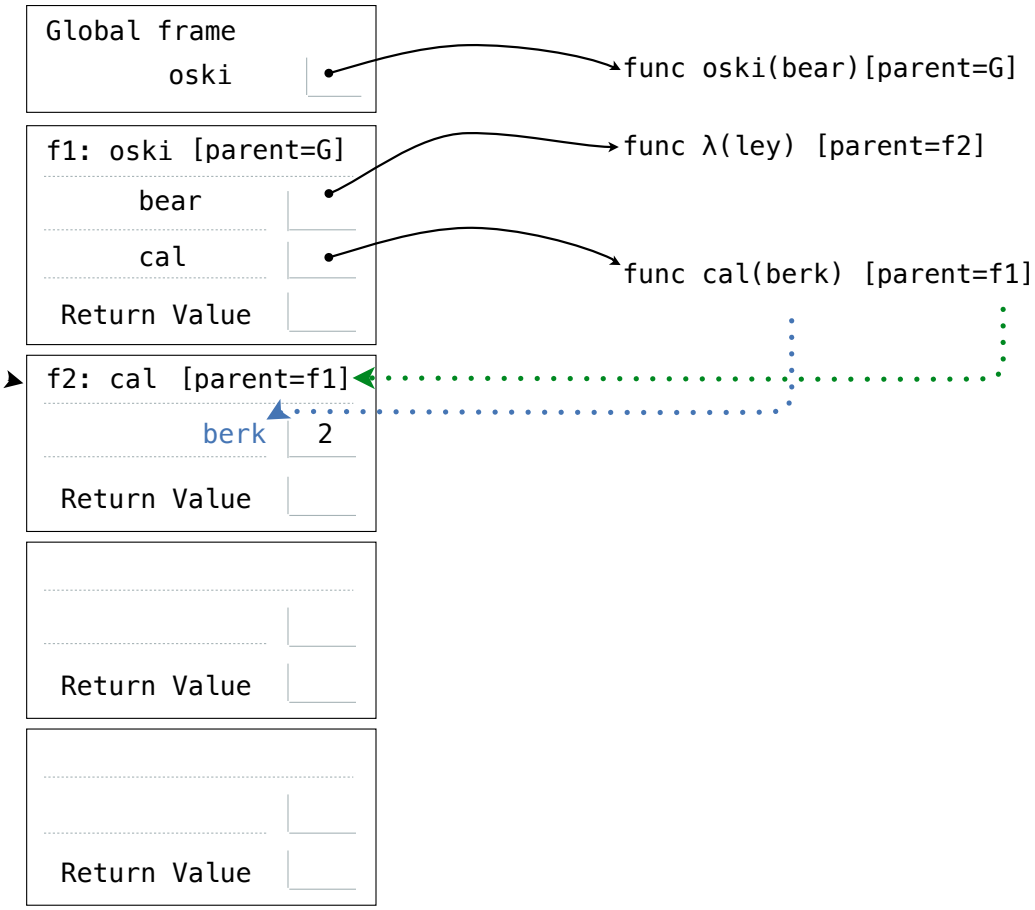

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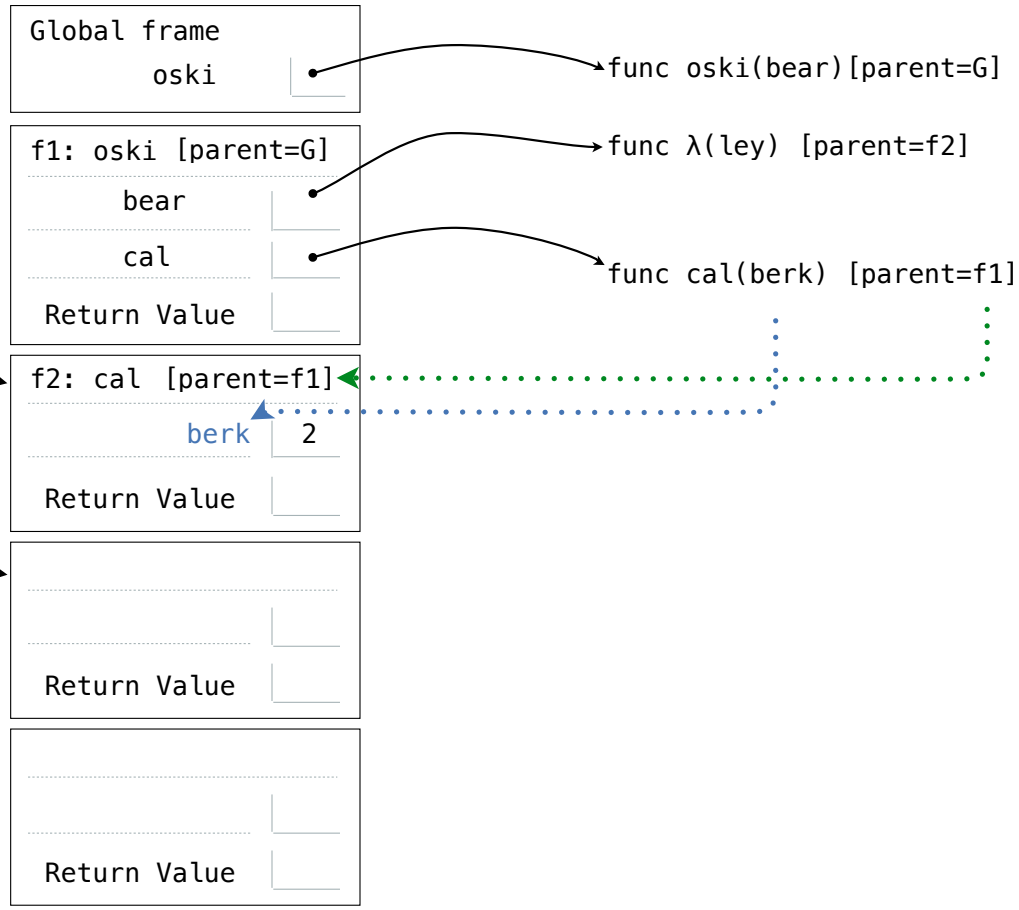

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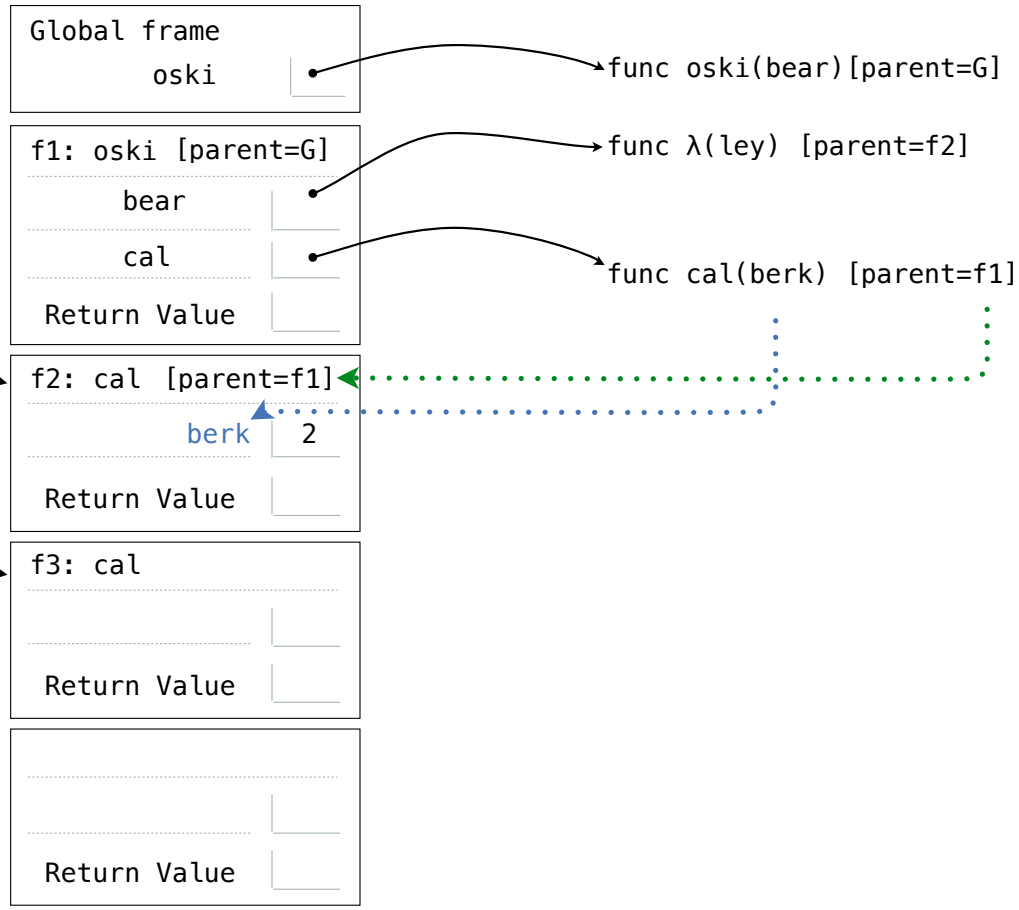

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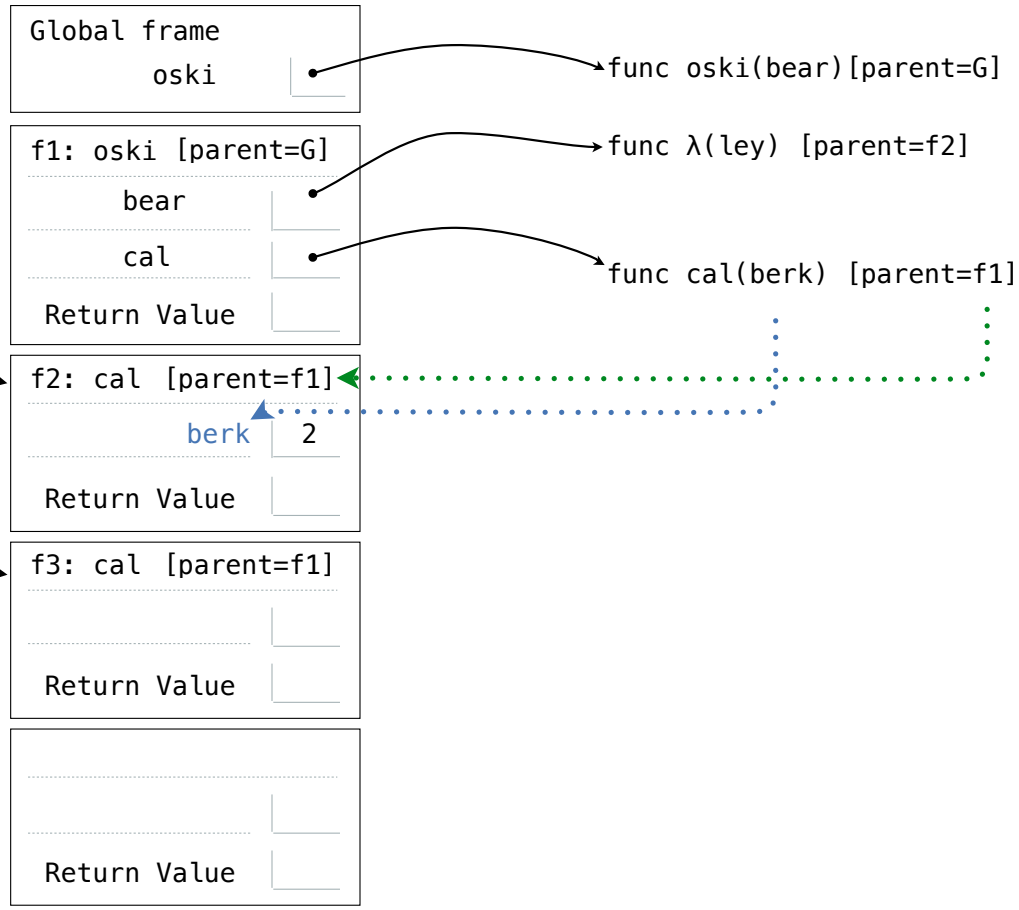

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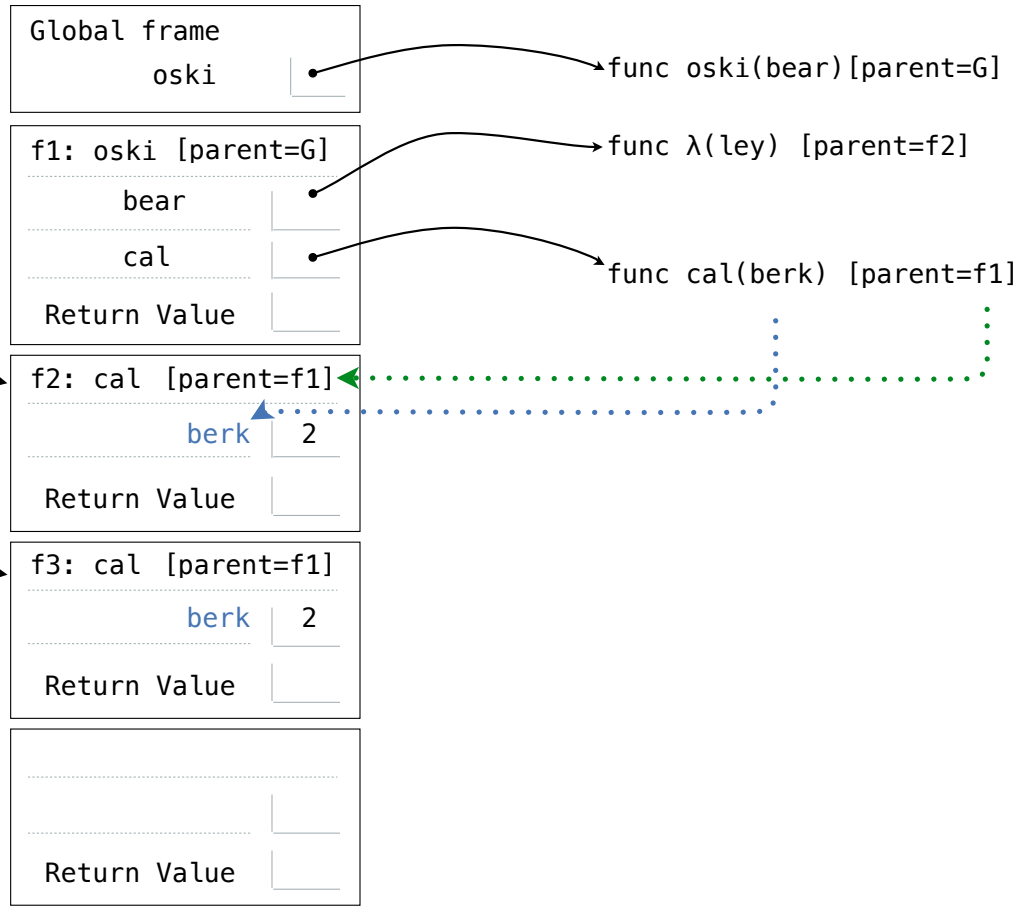

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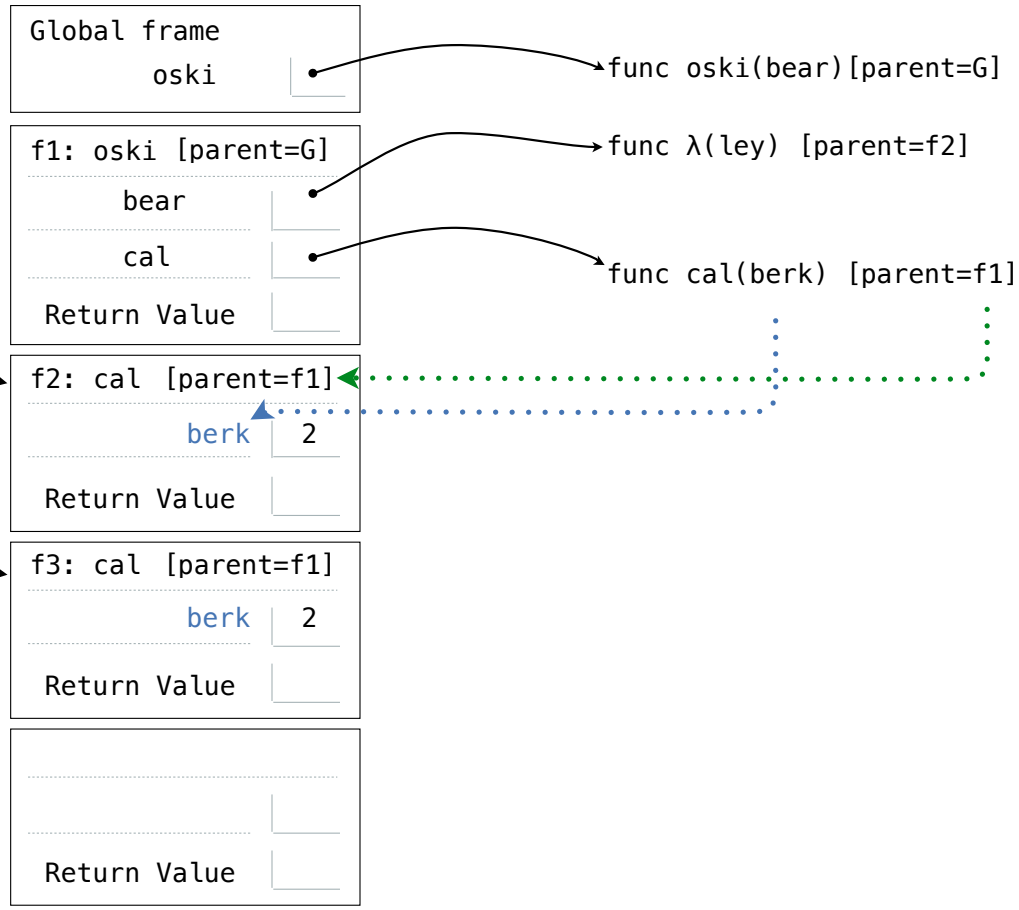

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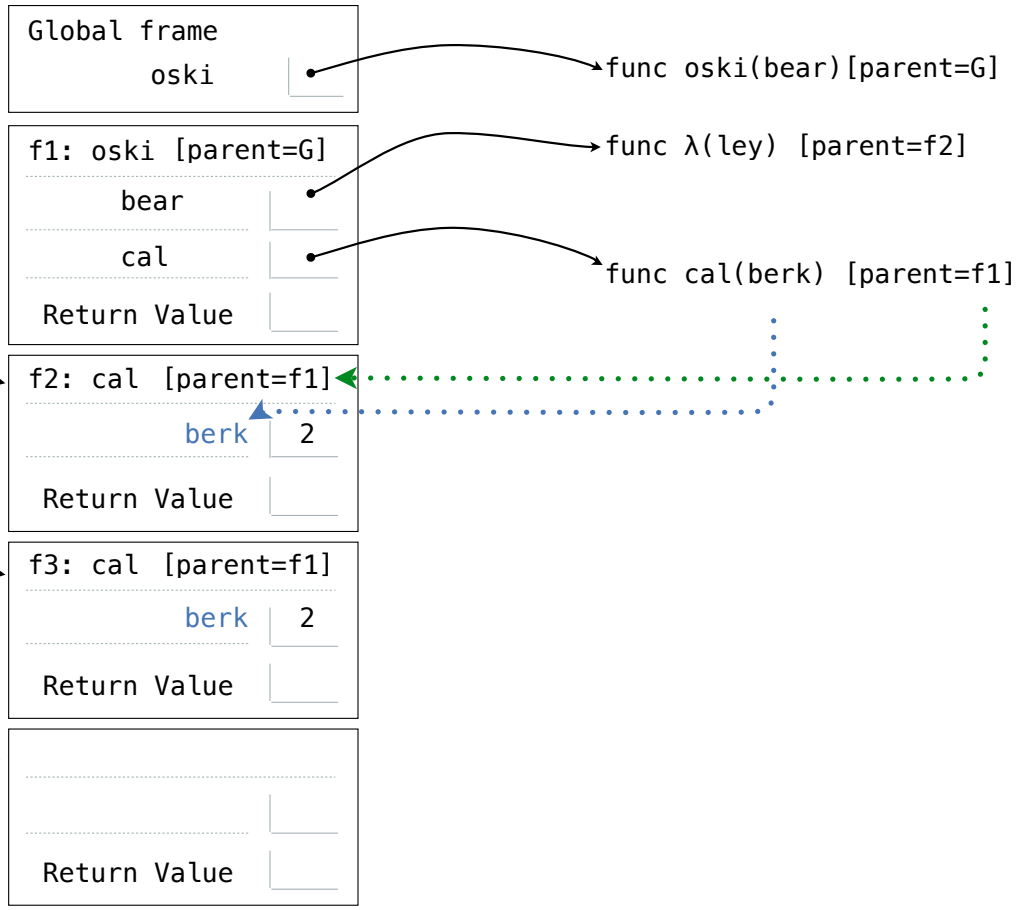

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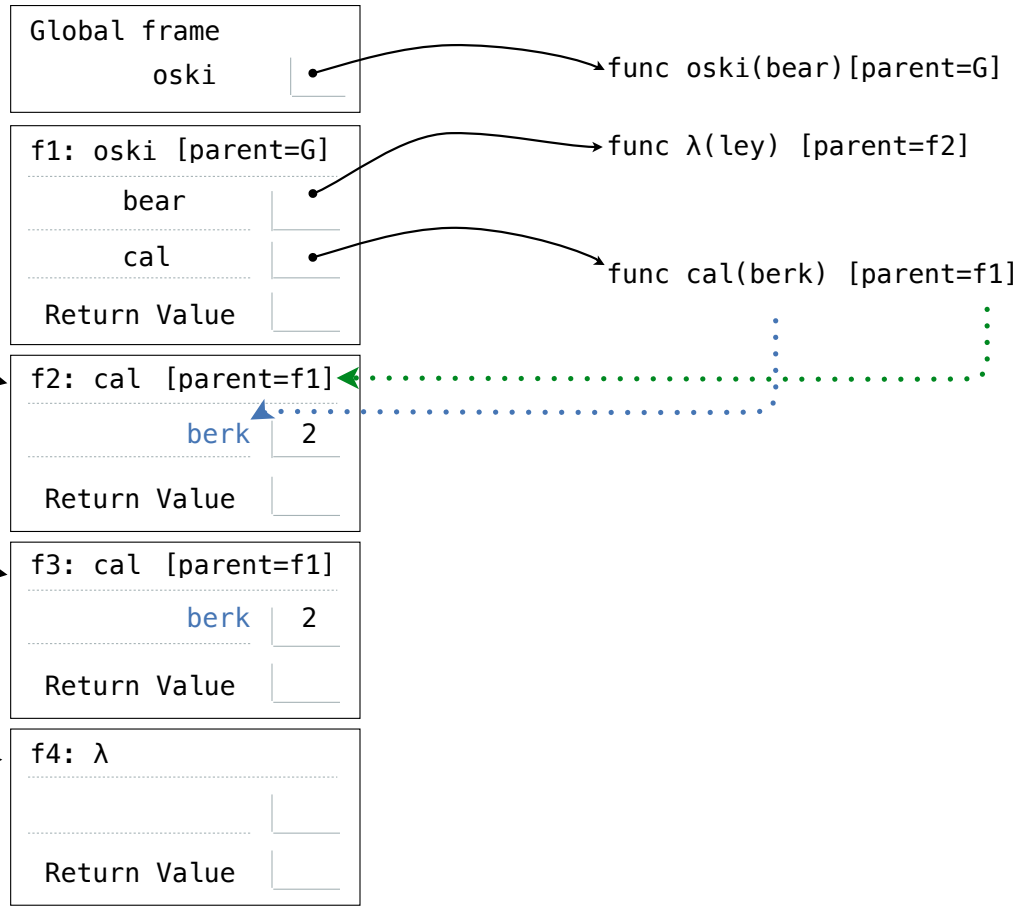

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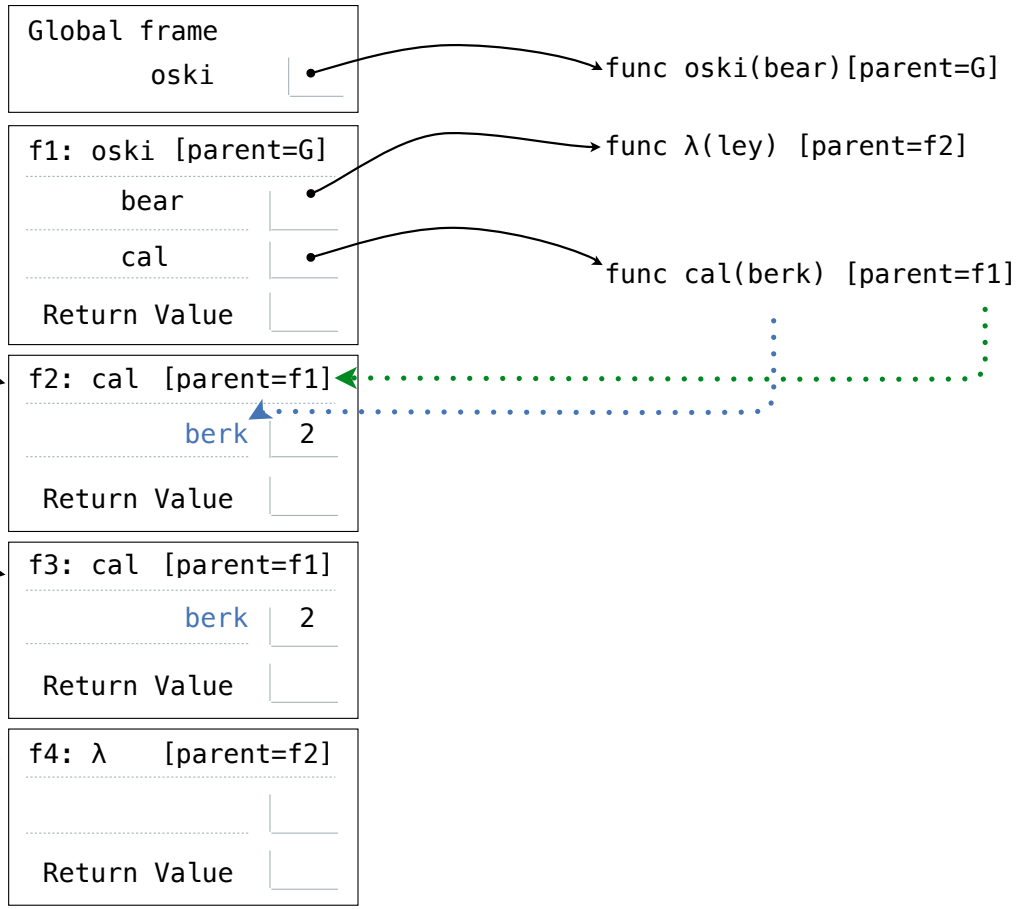

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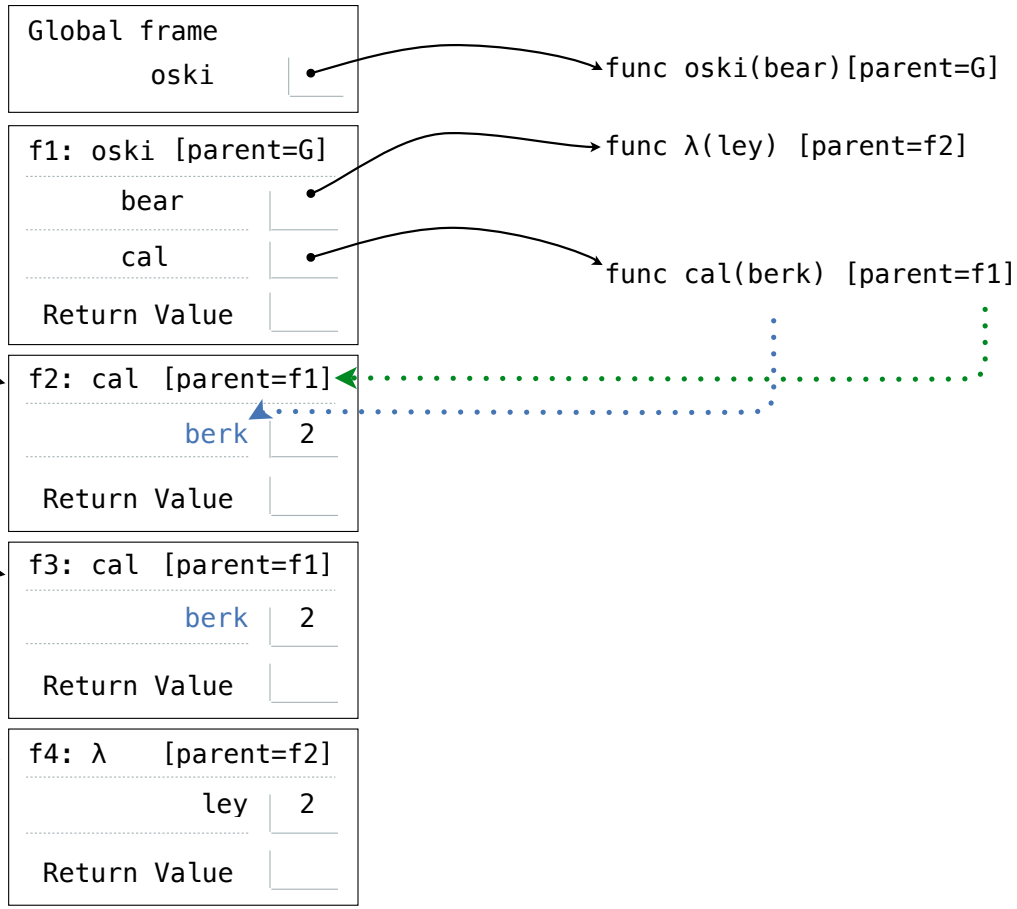

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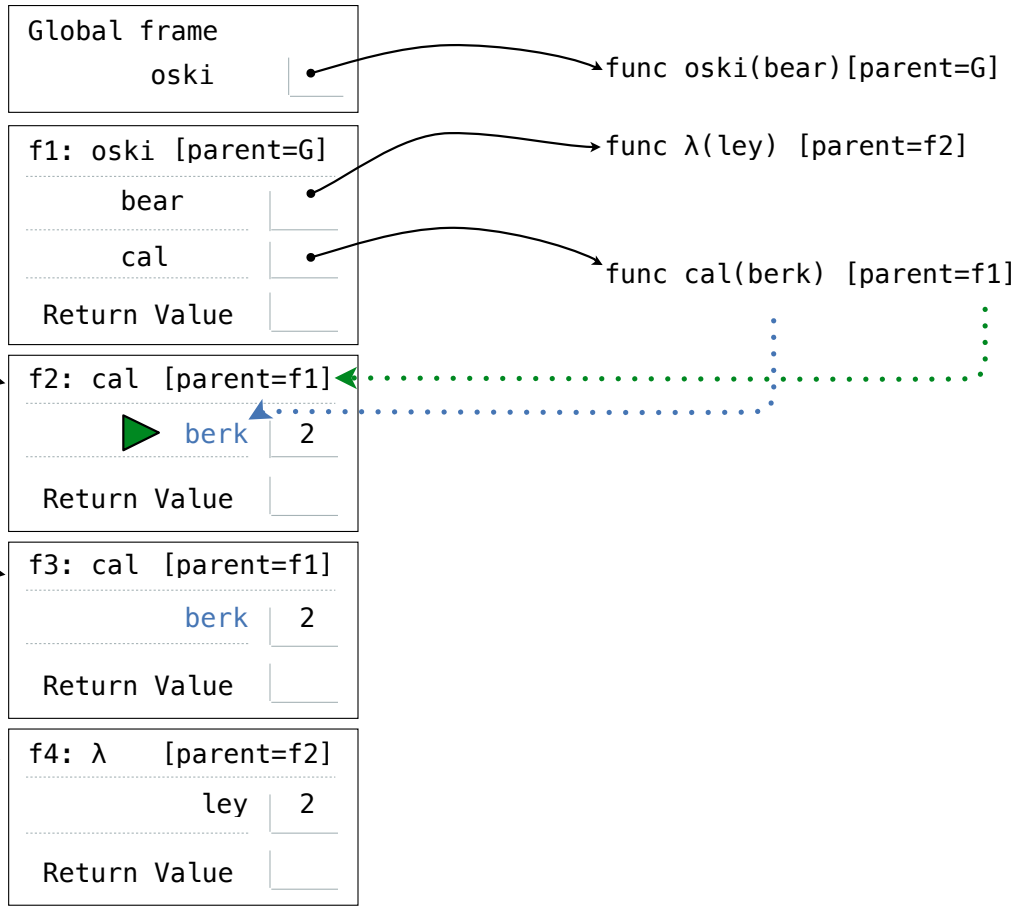

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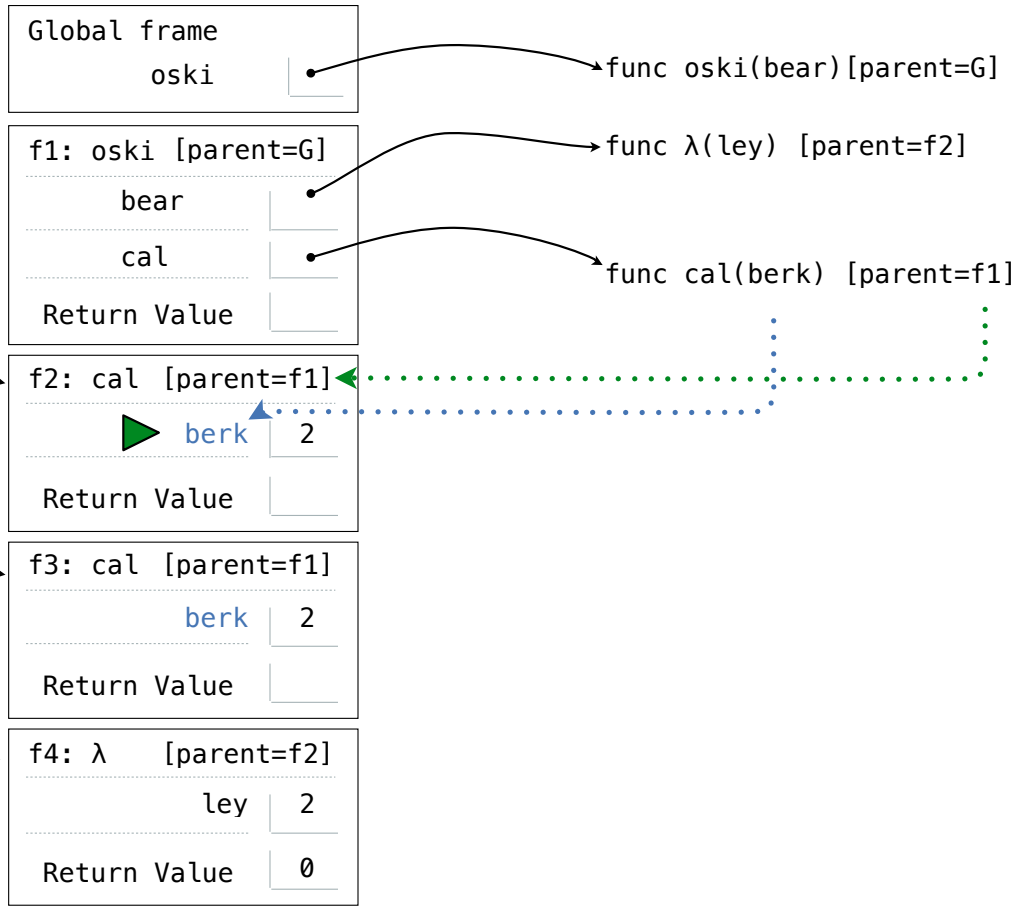

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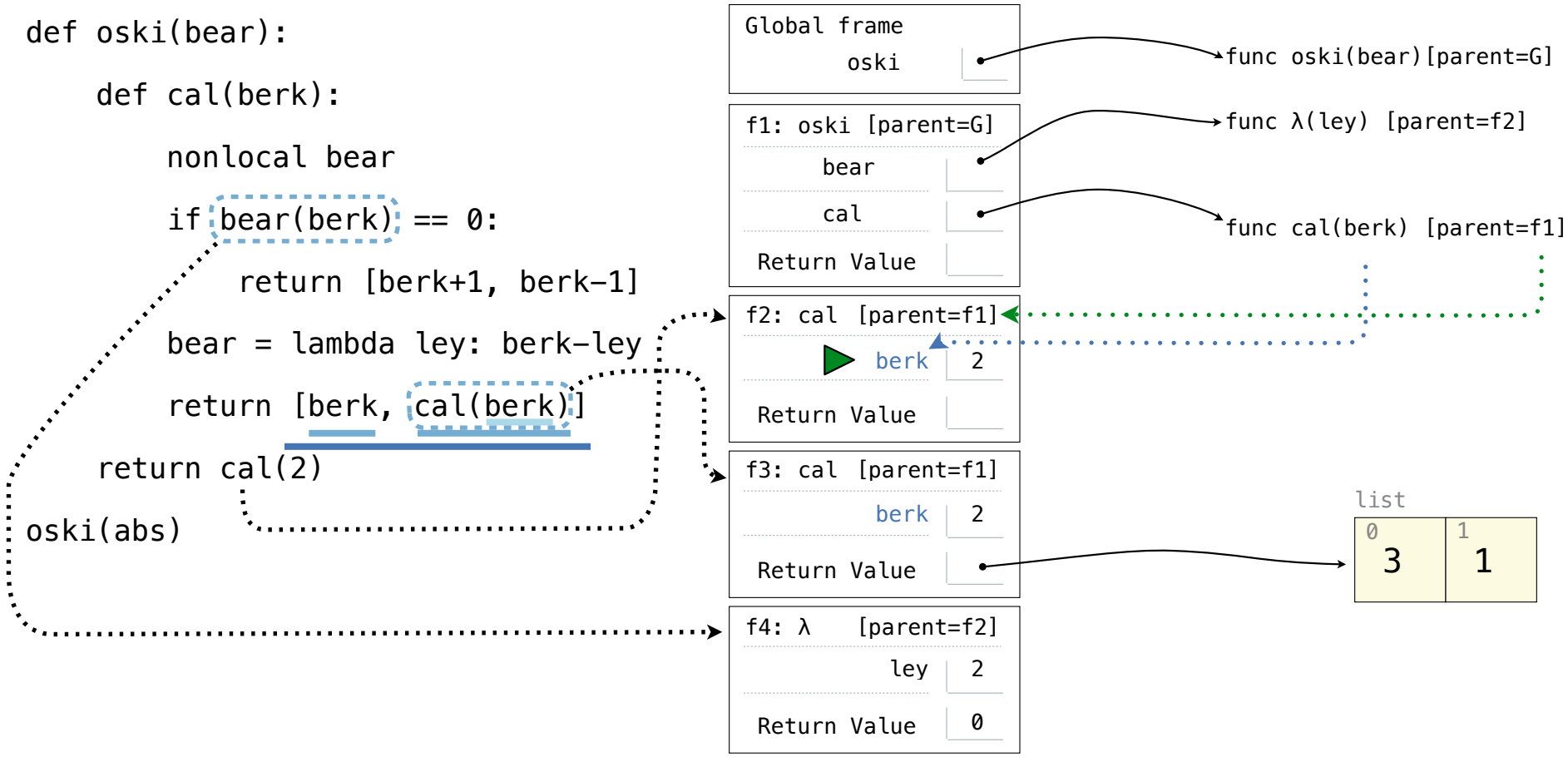

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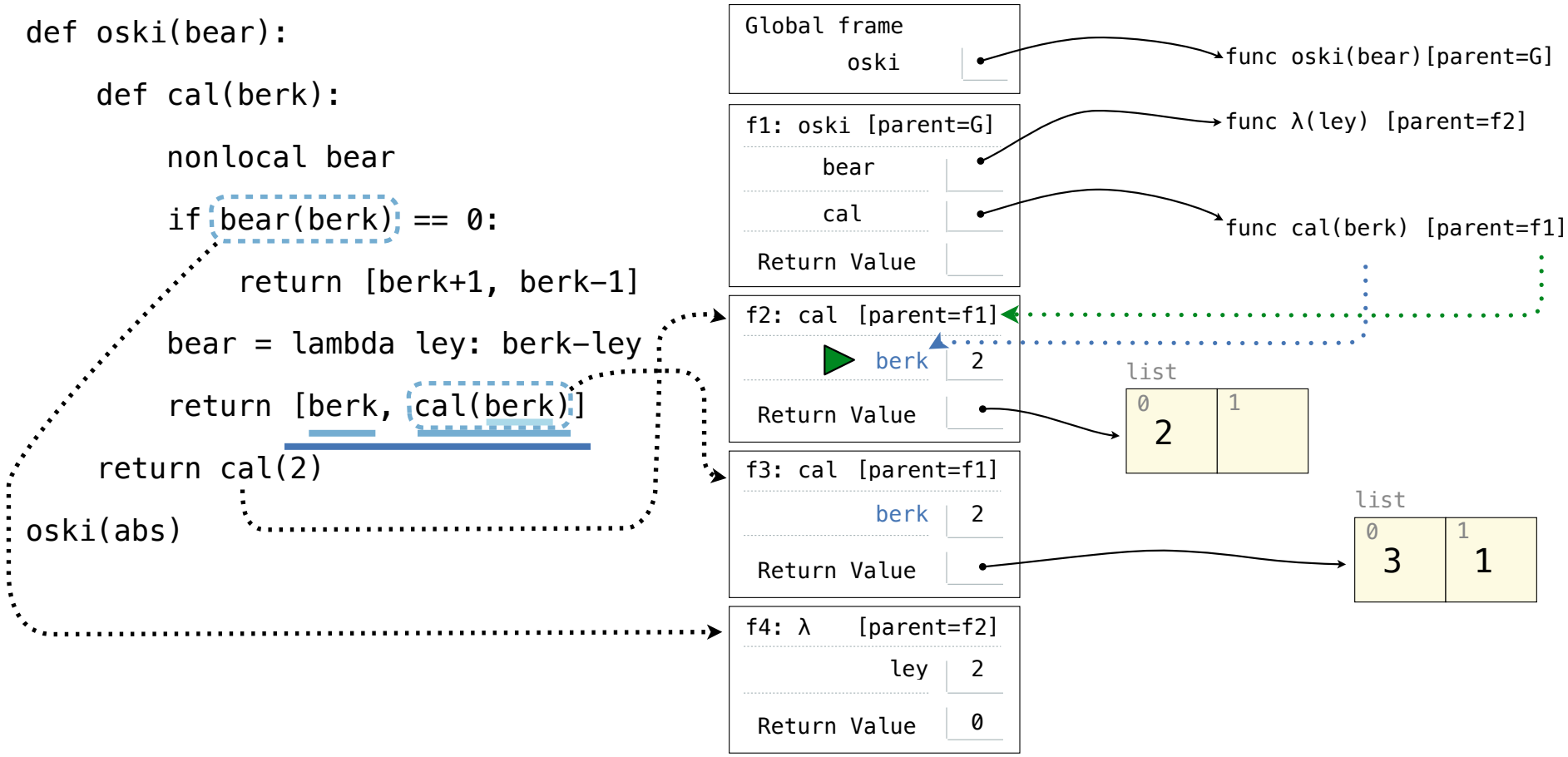

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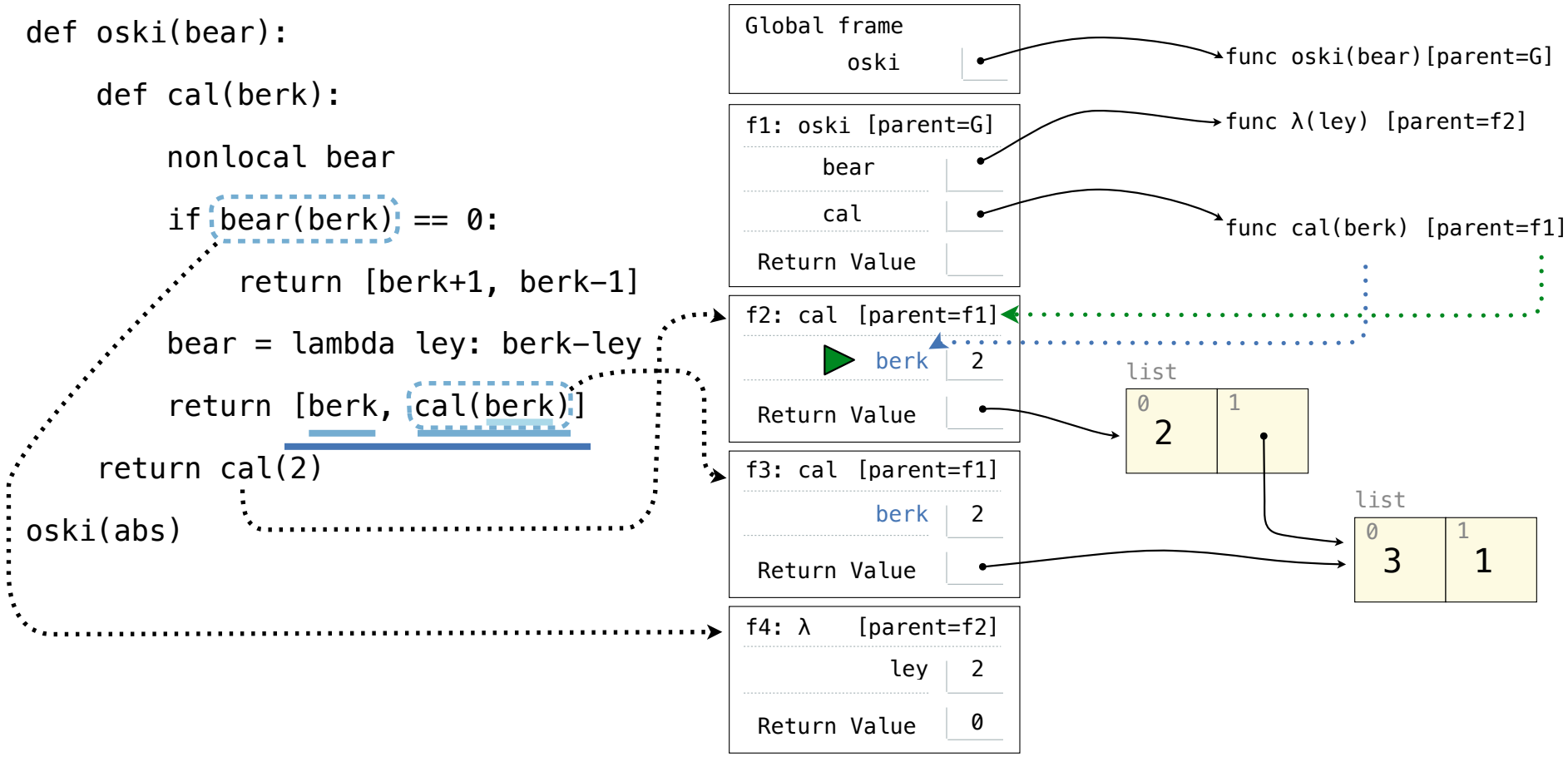

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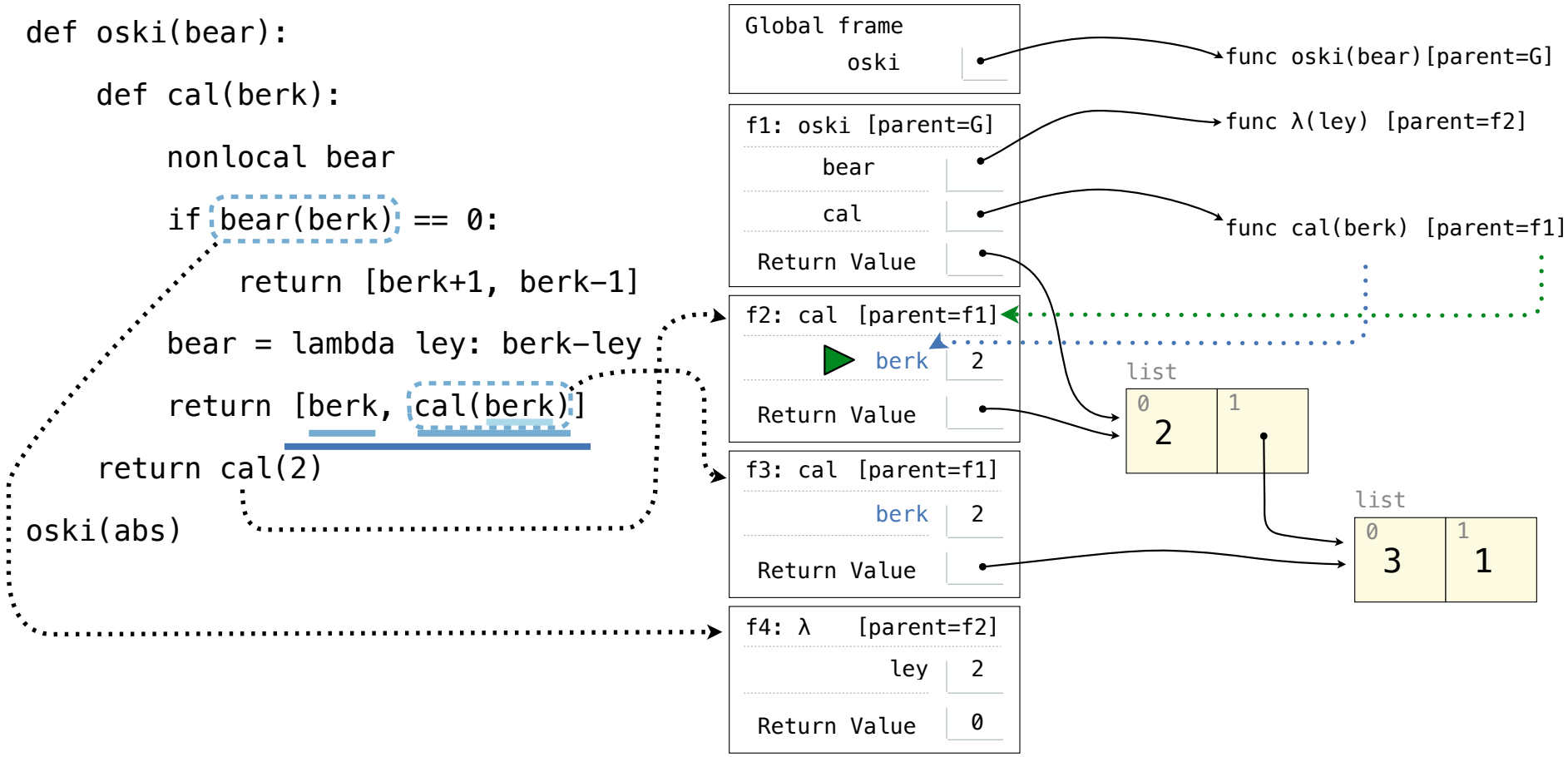

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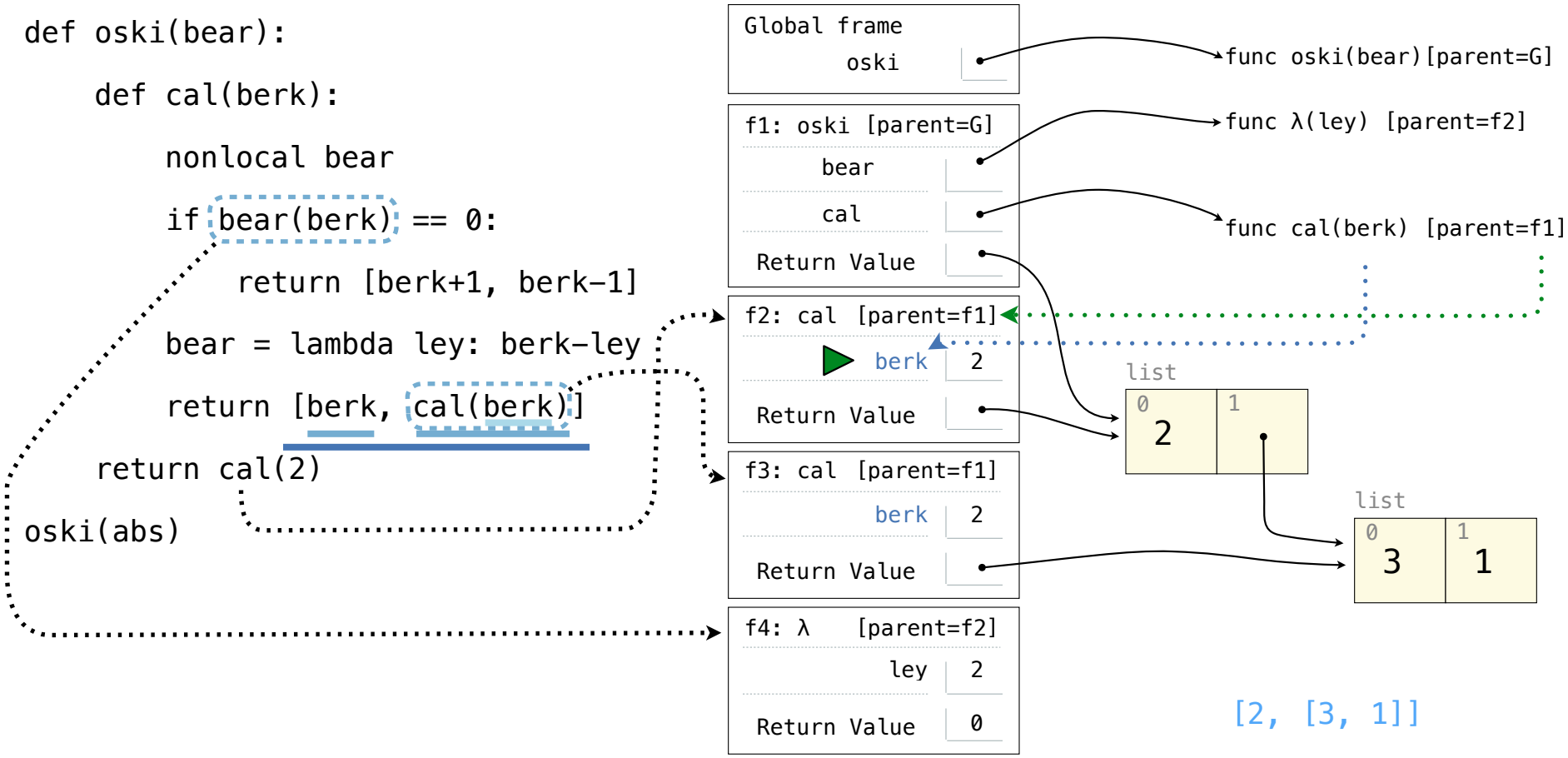

Objects

Land Owners

Instance attributes are found before class attributes; class attributes are inherited

Land Owners

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```
class Worker:
```

Land Owners

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class Worker:
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class Worker:
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    def __init__(self):
        self.elf = Worker
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class Worker:
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        return self.greeting + ', I work'
```

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class Worker:
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    def __repr__(self):
        return Bourgeoisie.greeting
```

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class Bourgeoisie(Worker):
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class Bourgeoisie(Worker):
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>>> Worker().work()

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```

<class Worker>

greeting: 'Sir'

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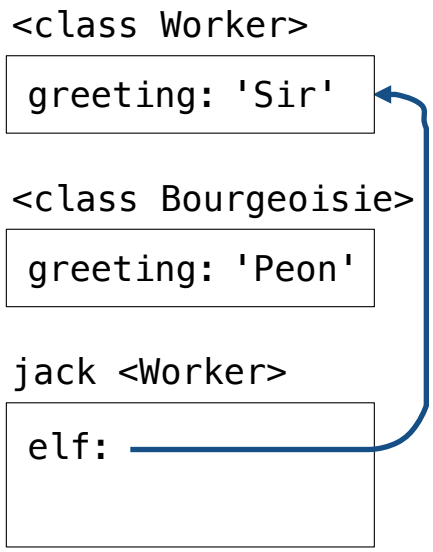

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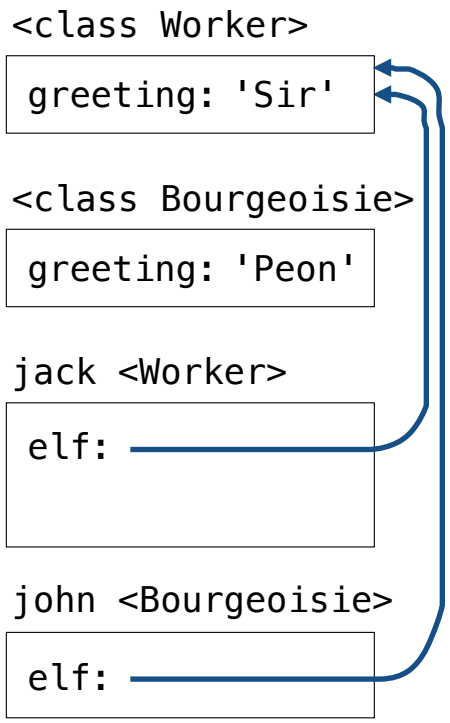

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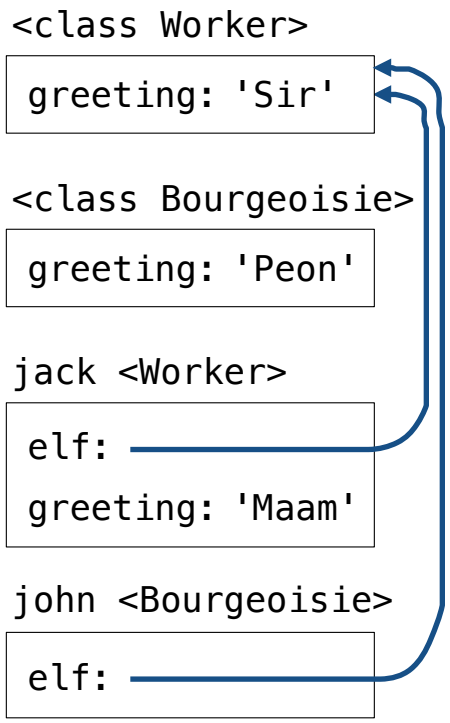

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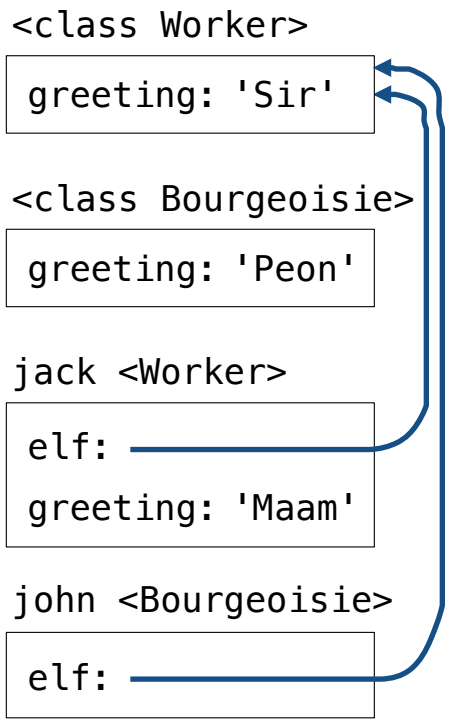

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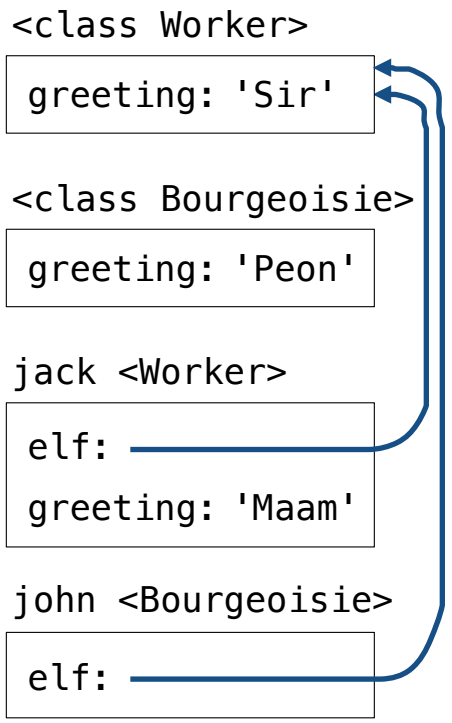

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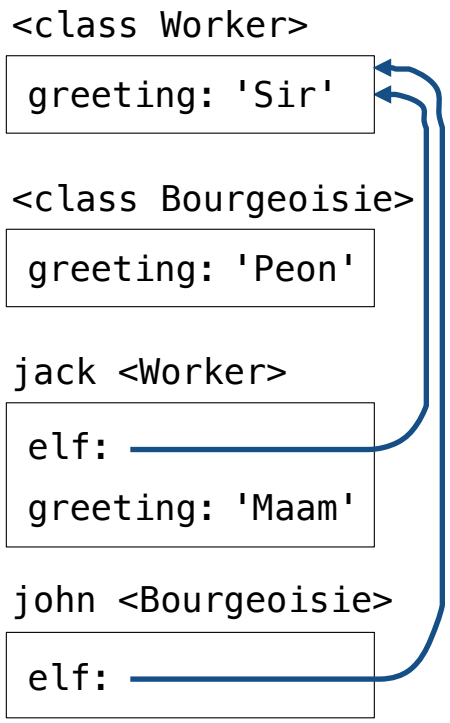

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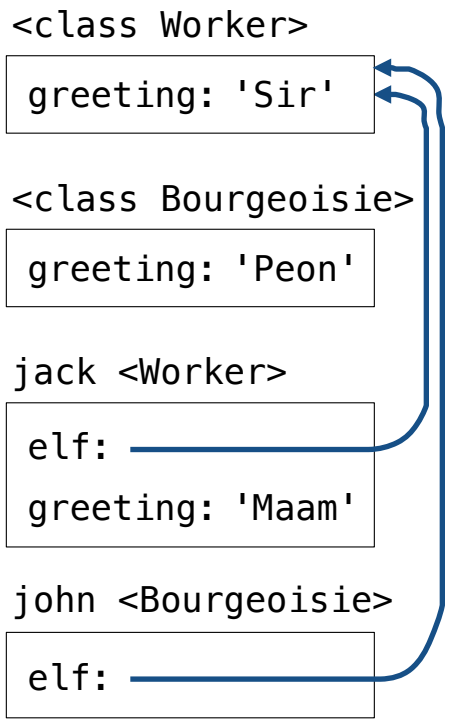

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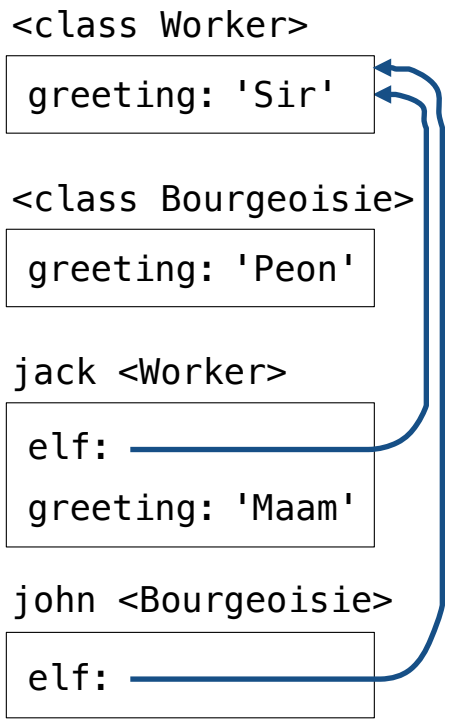

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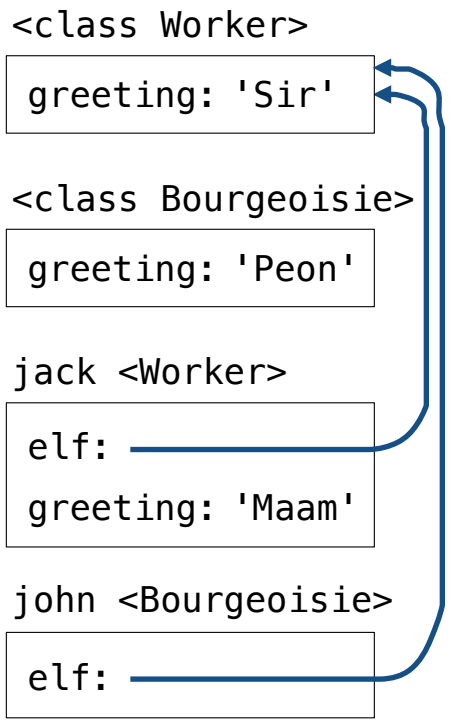

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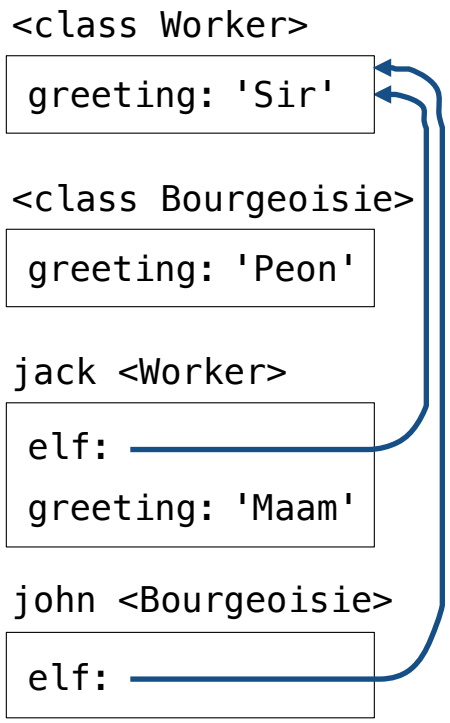

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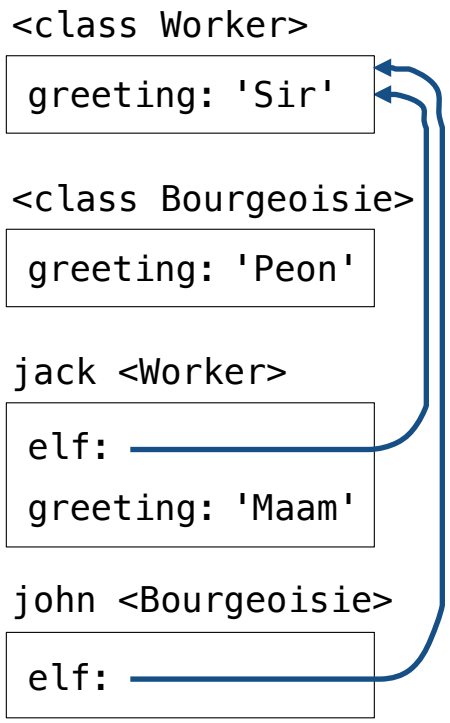

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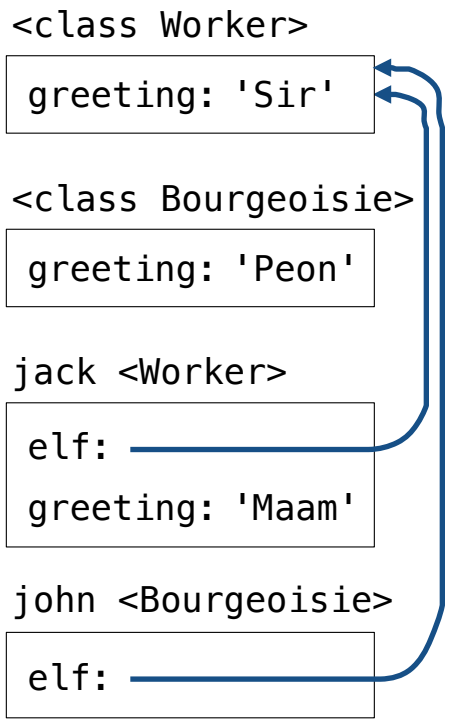


Land Owners

Instance attributes are found before class attributes; class attributes are inherited

```
class Worker:
    greeting = 'Sir'
    def __init__(self):
        self.elf = Worker
    def work(self):
        return self.greeting + ', I work'
    def __repr__(self):
        return Bourgeoisie.greeting

class Bourgeoisie(Worker):
    greeting = 'Peon'
    def work(self):
        print(Worker.work(self))
        return 'I gather wealth'

jack = Worker()
john = Bourgeoisie()
jack.greeting = 'Maam'
```

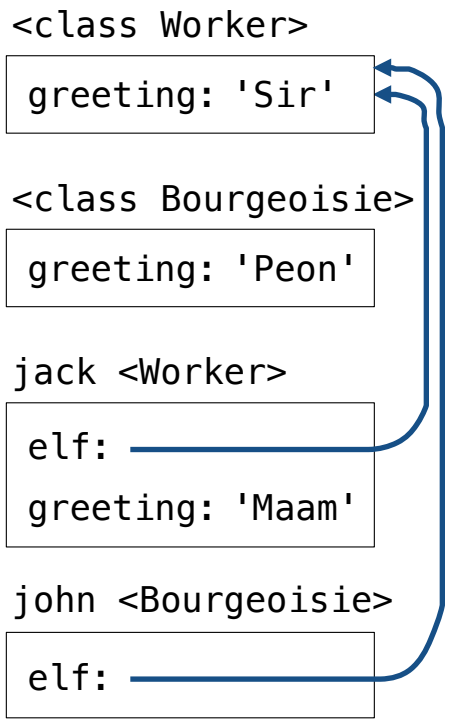
```
>>> Worker().work()
'Sir, I work'

>>> jack
Peon

>>> jack.work()
'Maam, I work'

>>> john.work()
Peon, I work
'I gather wealth'

>>> john.elf.work(john)
'Peon, I work'
```



Binary Trees

Morse Code

Morse code is a signaling protocol that transmits messages by sequences of signals

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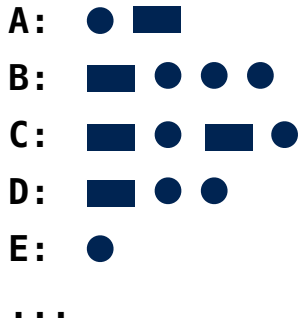
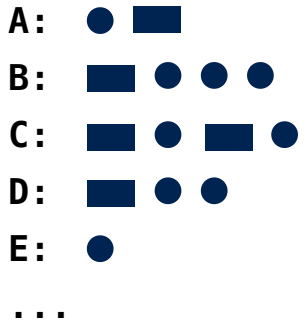


Morse Code

Morse code is a signaling protocol that transmits messages by sequences of signals

Problem: Implement **morse** so that **decode** works correctly



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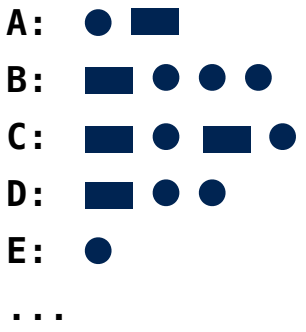

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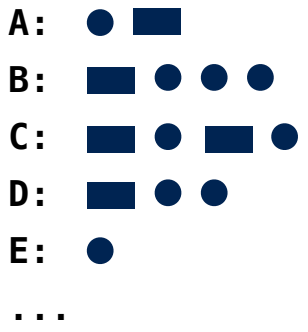

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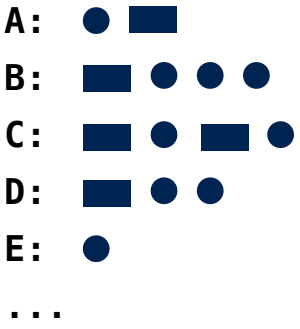


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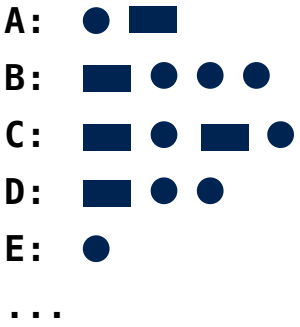


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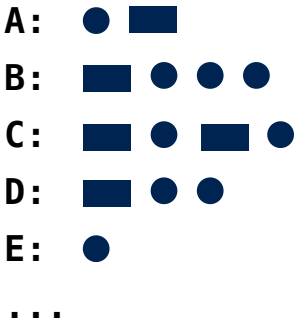


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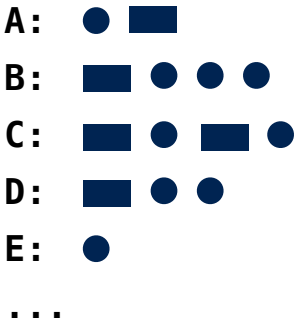


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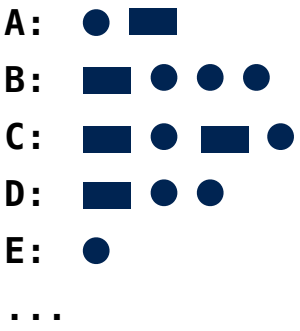


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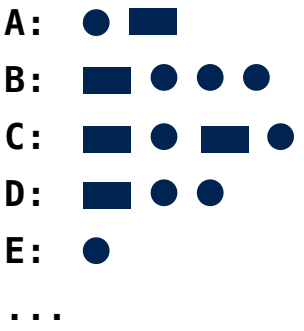


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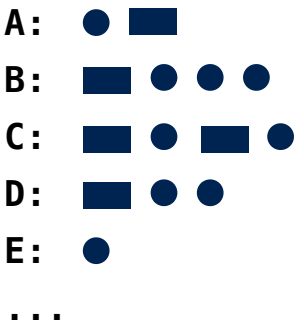


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```
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    ....
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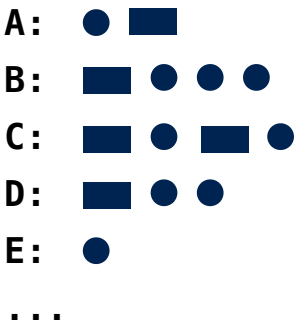


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(Demo)