Inheritance

Announcements

Attributes

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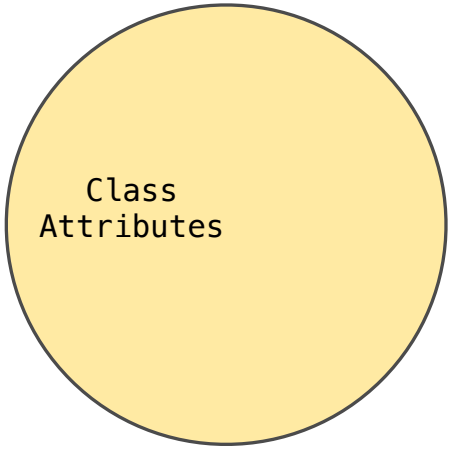

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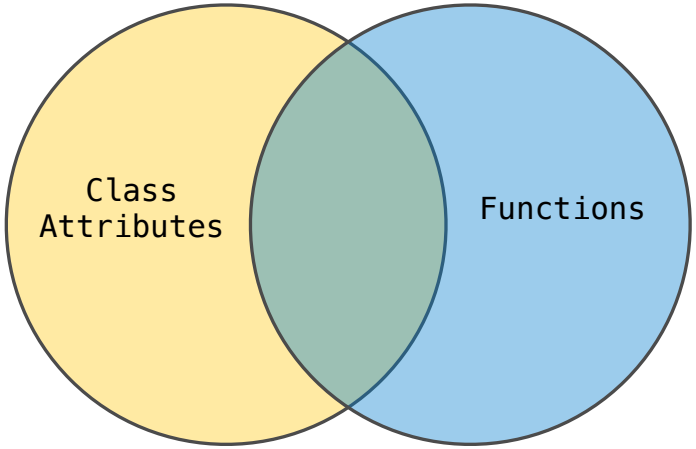

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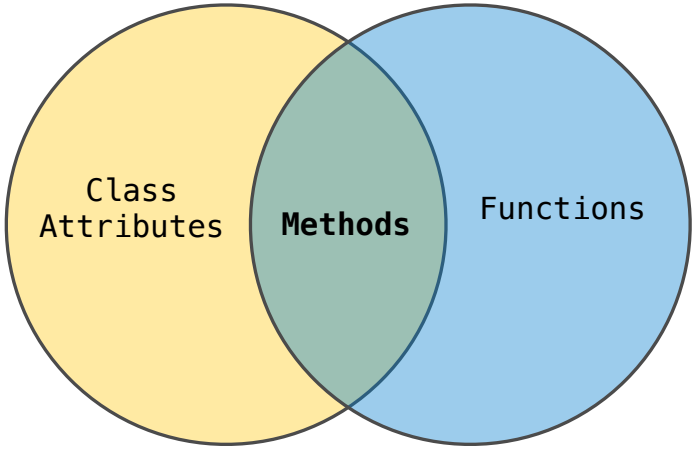

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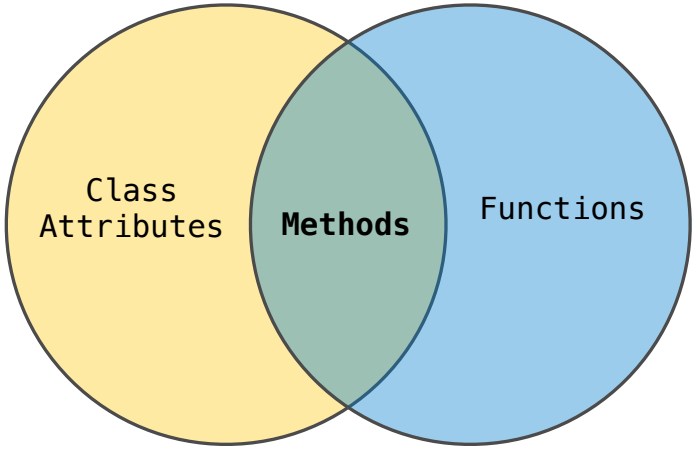

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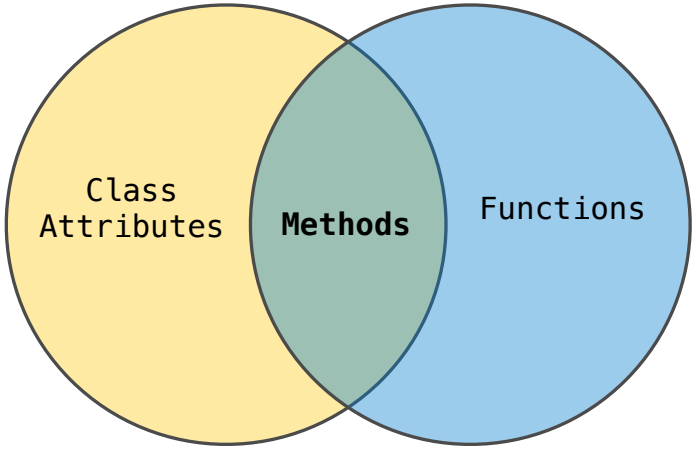

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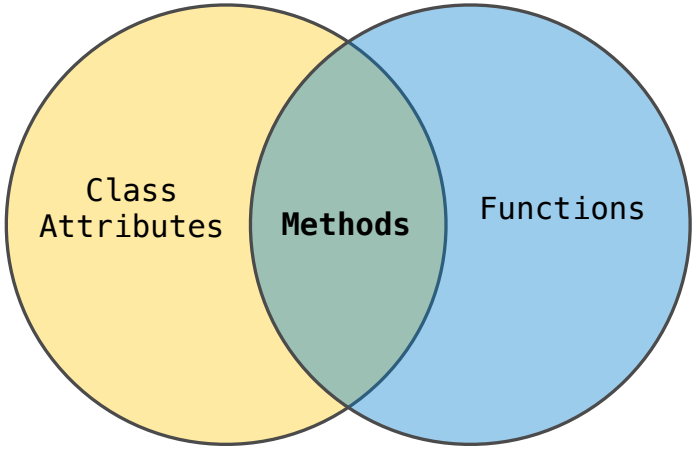

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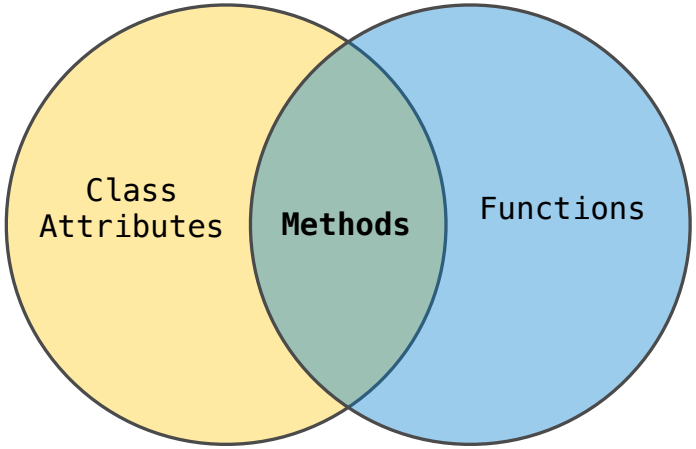

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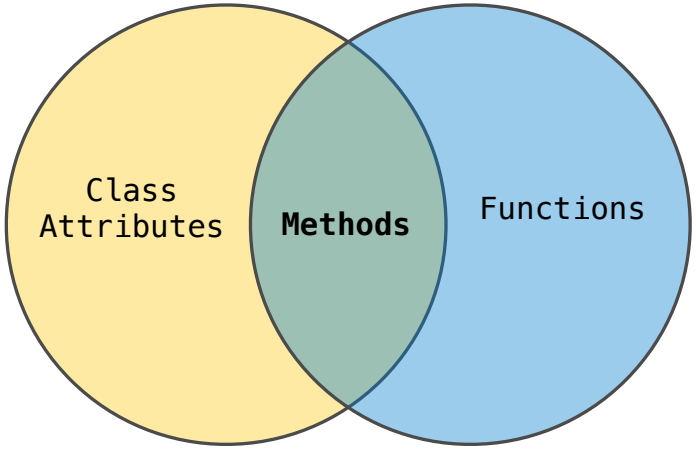

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<instance>.<method_name>

Looking Up Attributes by Name

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<expression> . <name>
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3. If not, <name> is looked up in the class, which yields a class attribute value

4. That value is returned unless it is a function, in which case a bound method is returned instead

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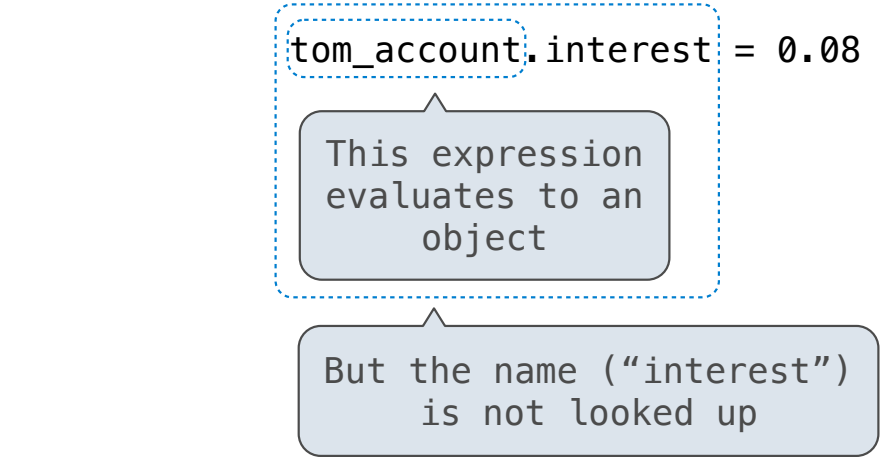

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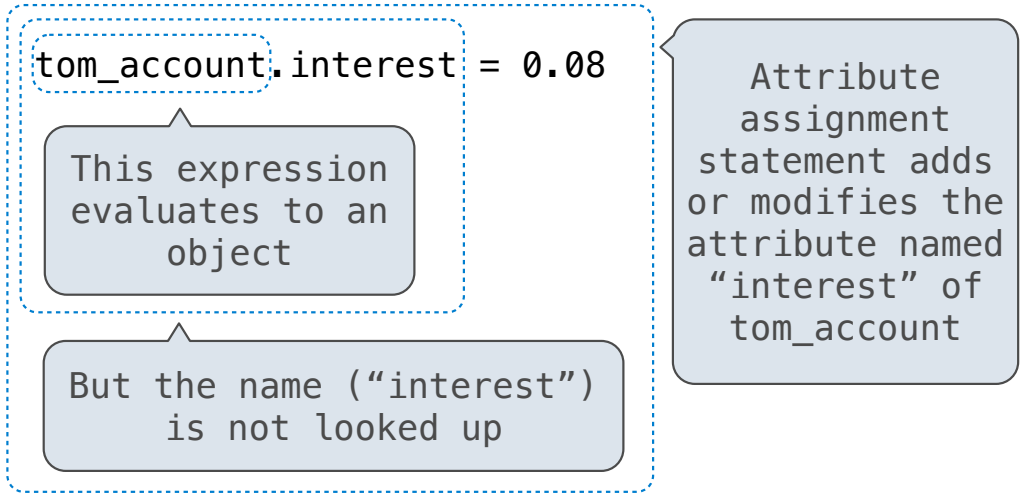

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Attribute assignment statement adds or modifies the attribute named "interest" of tom_account

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Class Attribute Assignment :

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Account.interest = 0.04
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Attribute Assignment Statements

Account class attributes

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(withdraw, deposit, __init__)
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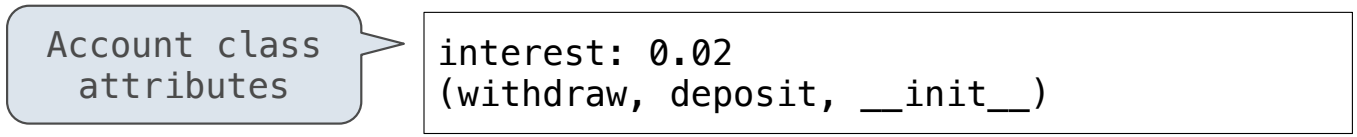
Attribute Assignment Statements

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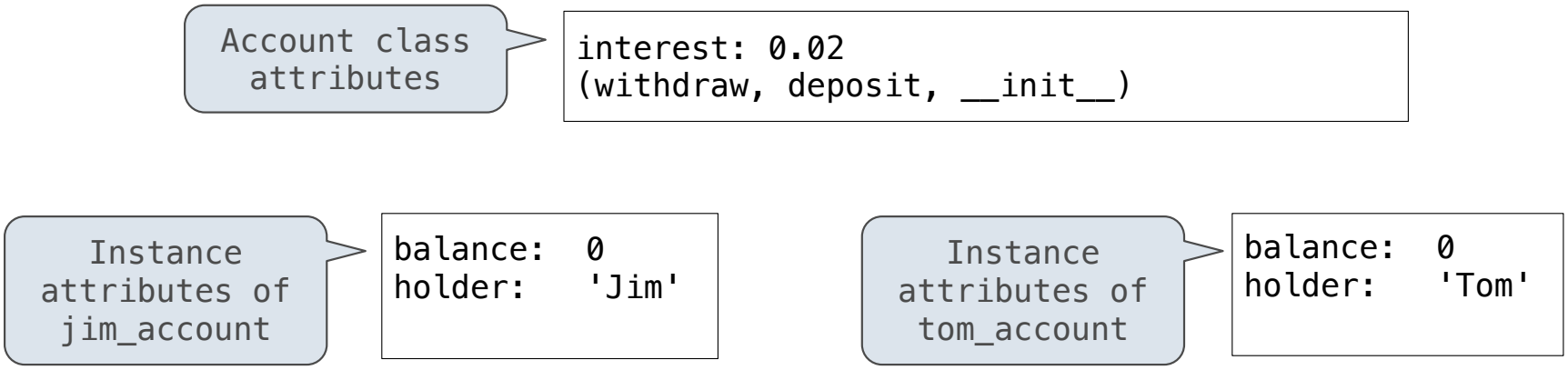


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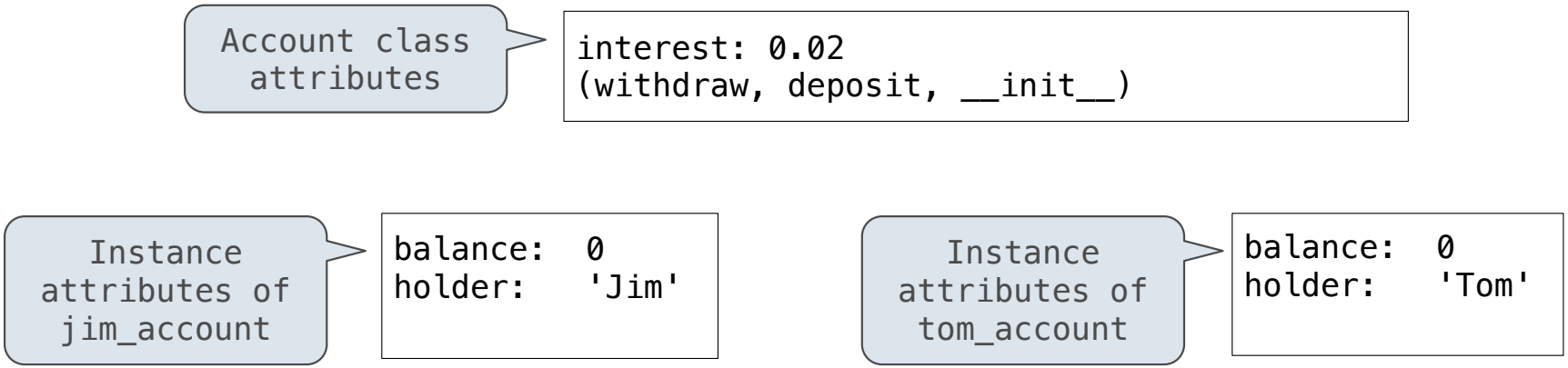


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0.02
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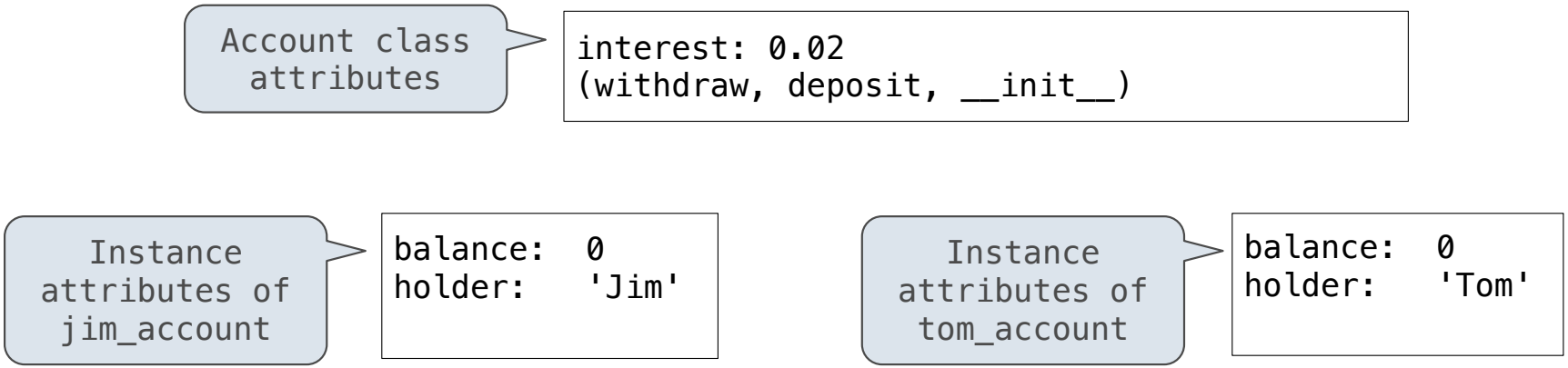


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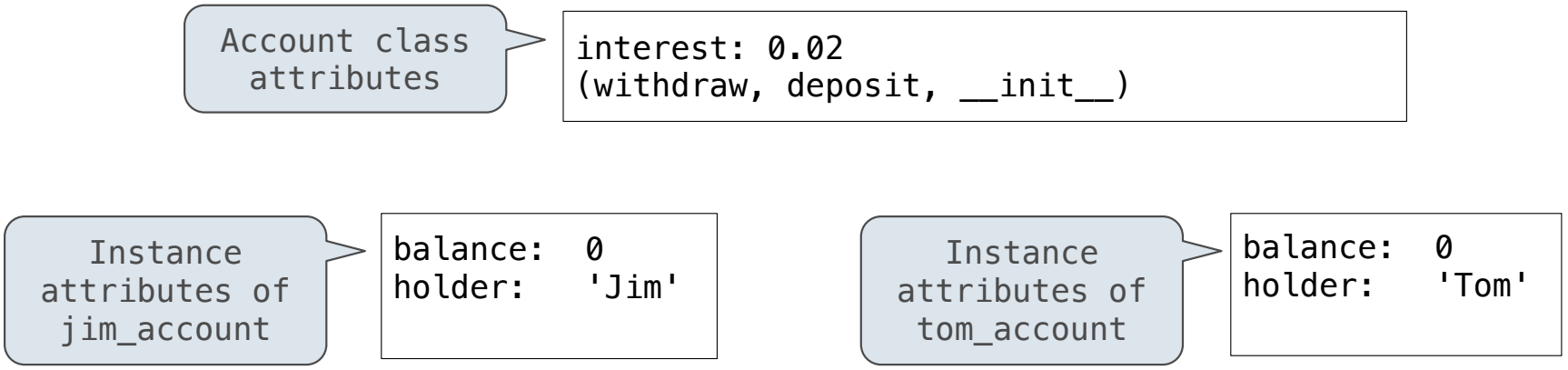


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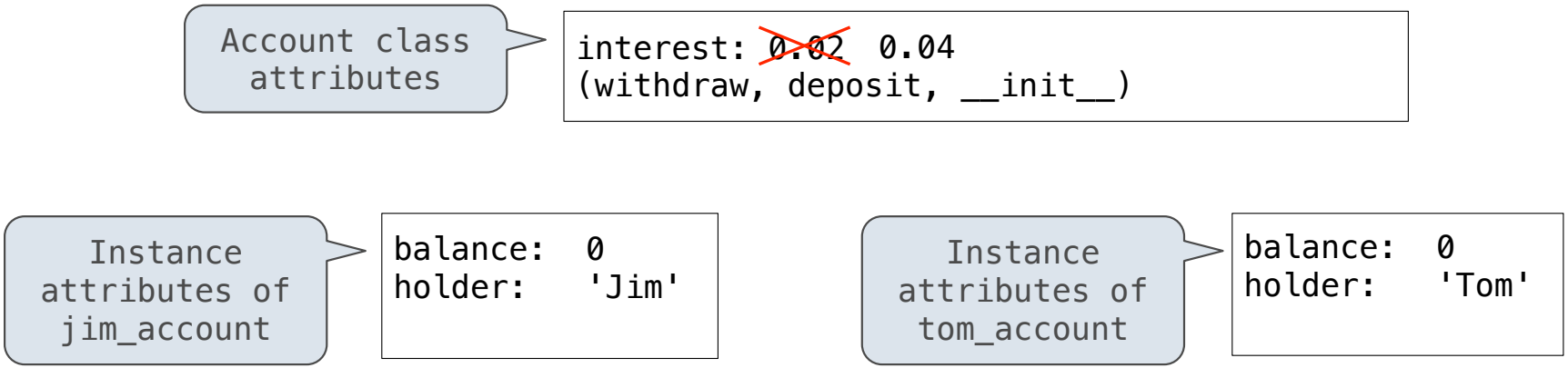


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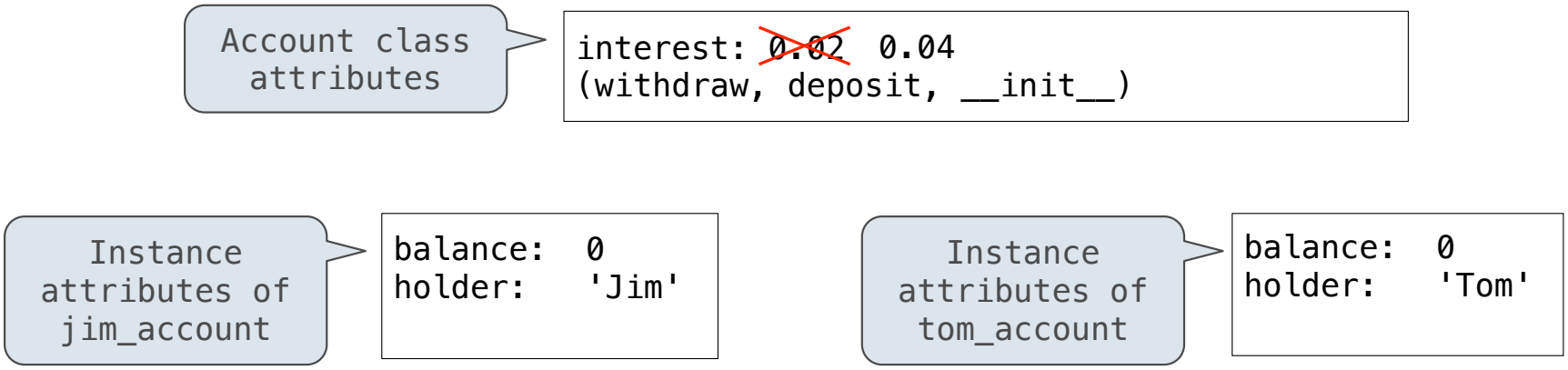


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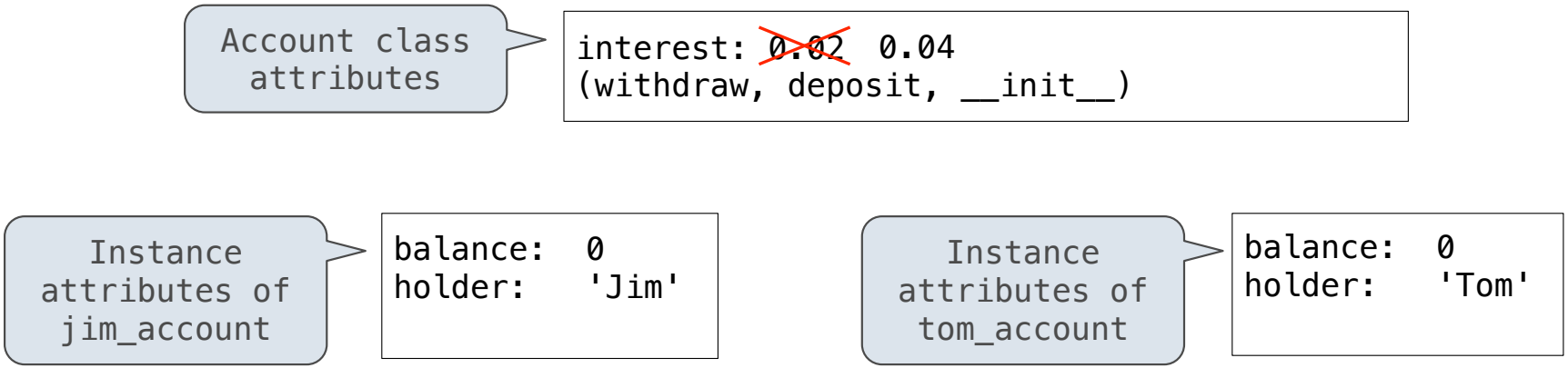


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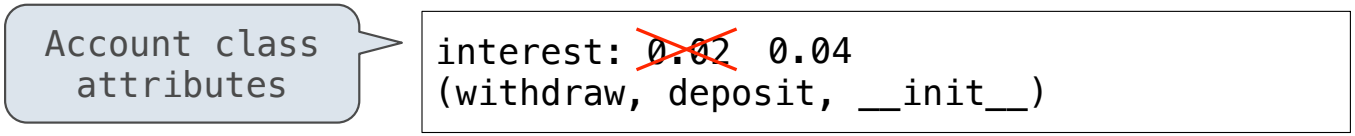

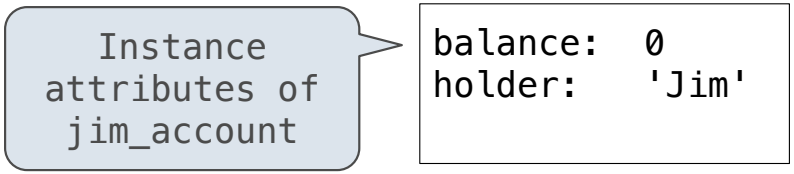

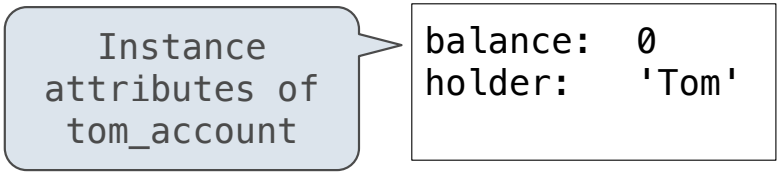


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Instance attributes of jim_account

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holder:   'Jim'
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Instance attributes of tom_account

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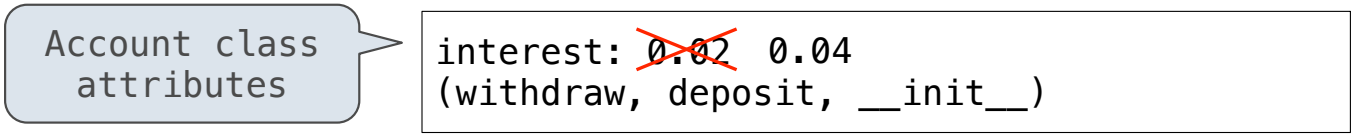

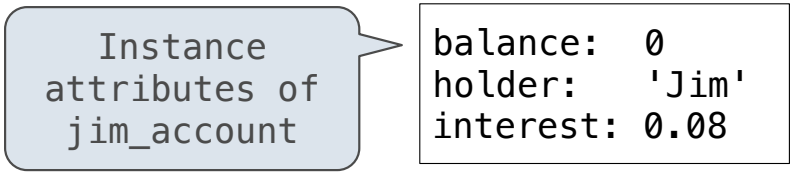

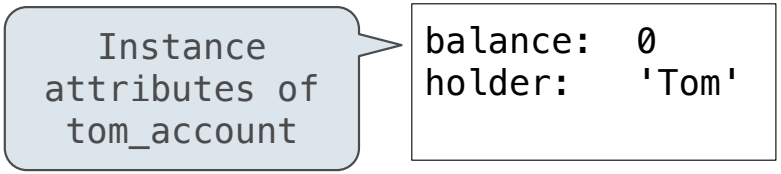


```
>>> jim_account = Account('Jim')
>>> tom_account = Account('Tom')
>>> tom_account.interest
0.02
>>> jim_account.interest
0.02
>>> Account.interest = 0.04
>>> tom_account.interest
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>>> jim_account.interest
0.04
```

```
>>> jim_account.interest = 0.08
>>> jim_account.interest
0.08
>>> tom_account.interest
0.04
>>> Account.interest = 0.05
```

Attribute Assignment Statements

Account class attributes

```
interest: 0.02  0.04  0.05
(withdraw, deposit, __init__)
```

Instance attributes of jim_account

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balance:  0
holder:   'Jim'
interest: 0.08
```

Instance attributes of tom_account

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Inheritance

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Using inheritance, we implement a subclass by specifying its differences from the the base class

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A `CheckingAccount` is a specialized type of `Account`

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(Demo)

Object-Oriented Design

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Preferred to CheckingAccount.withdraw_fee to allow for specialized accounts

Inheritance and Composition

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(Demo)

Review: Attributes Lookup, Methods, & Inheritance

Inheritance and Attribute Lookup

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    z = -1
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class B(A):
    n = 4
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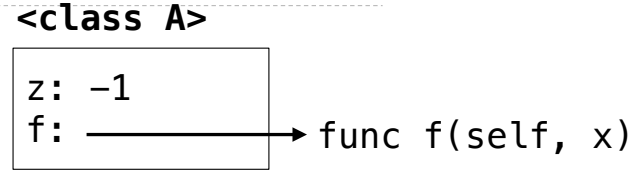

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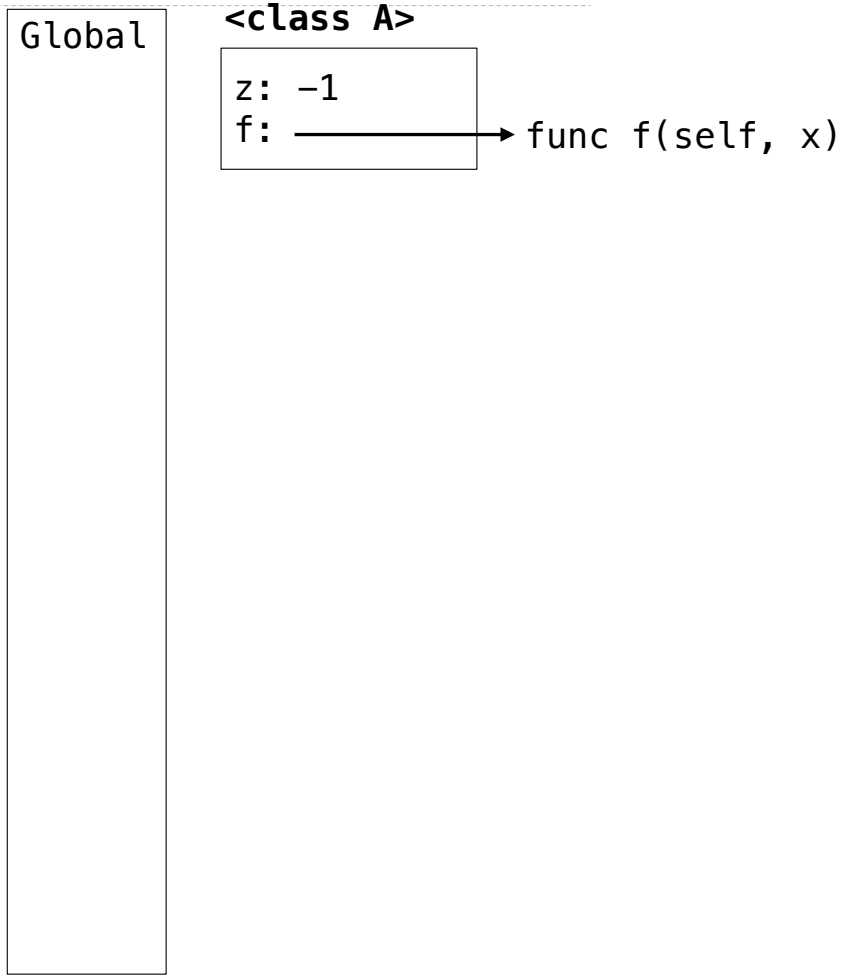

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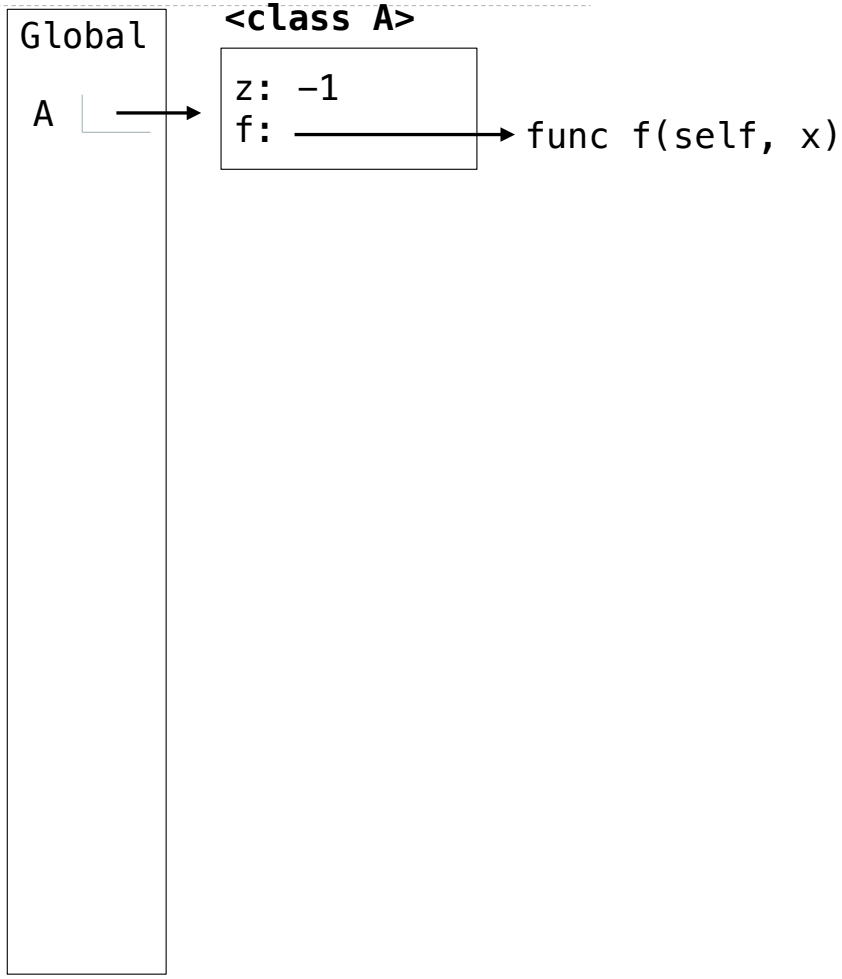

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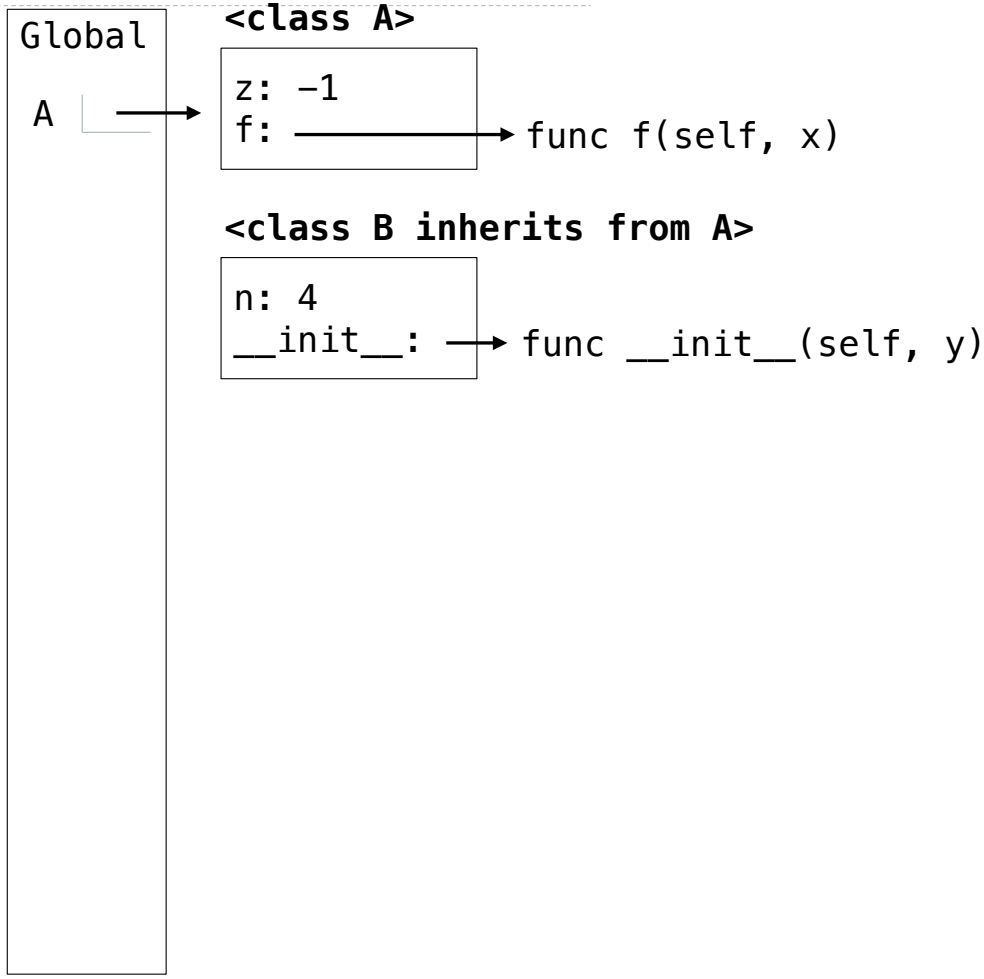

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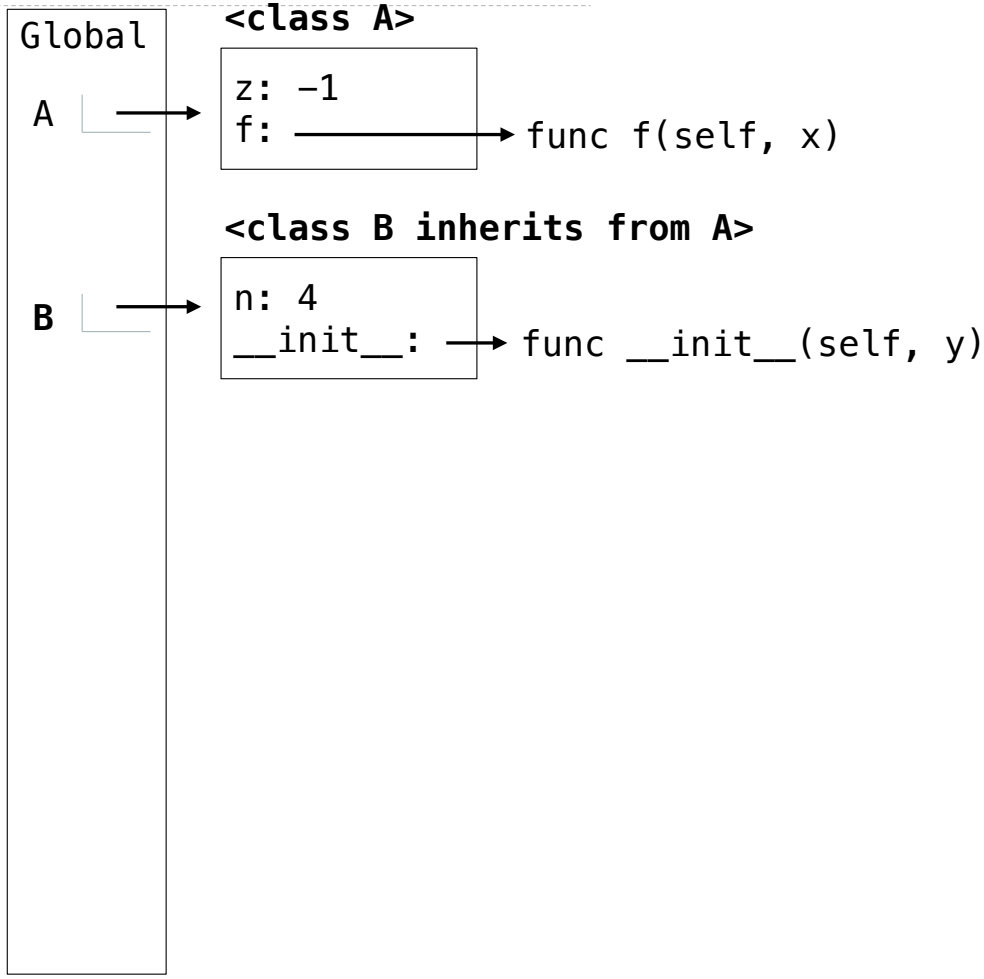

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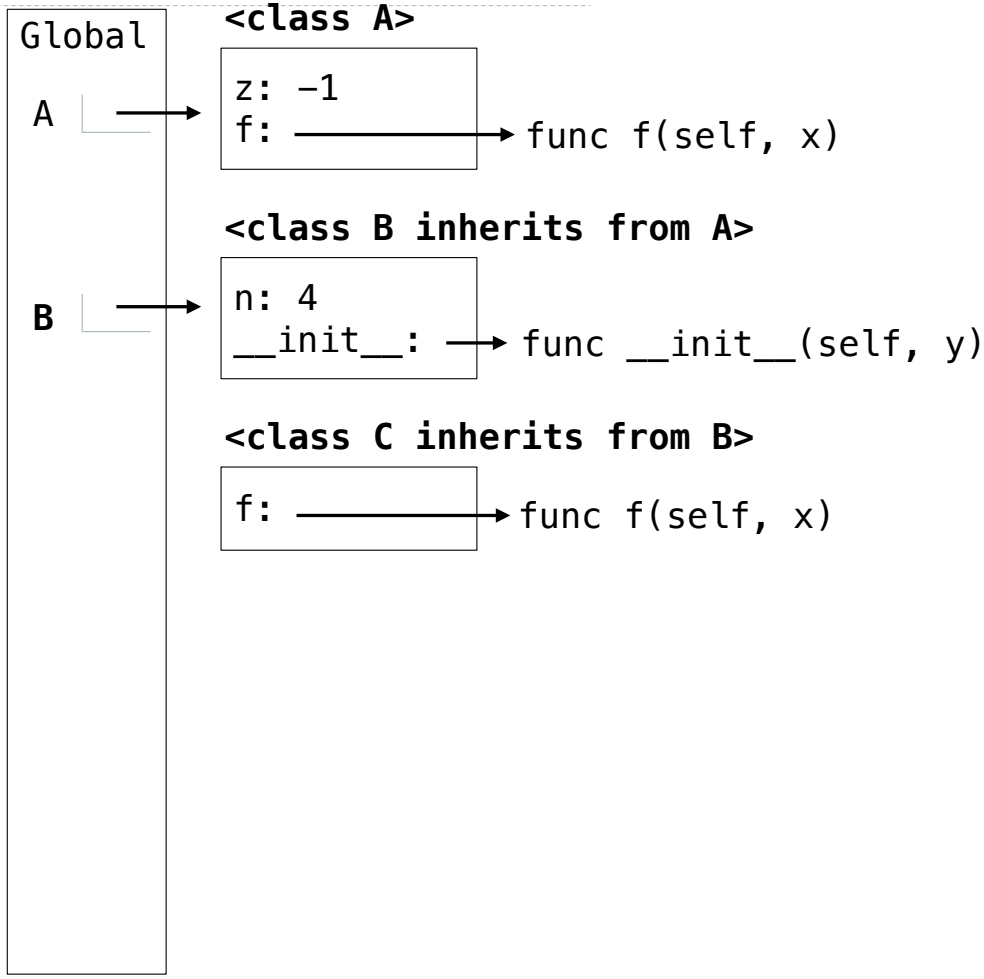

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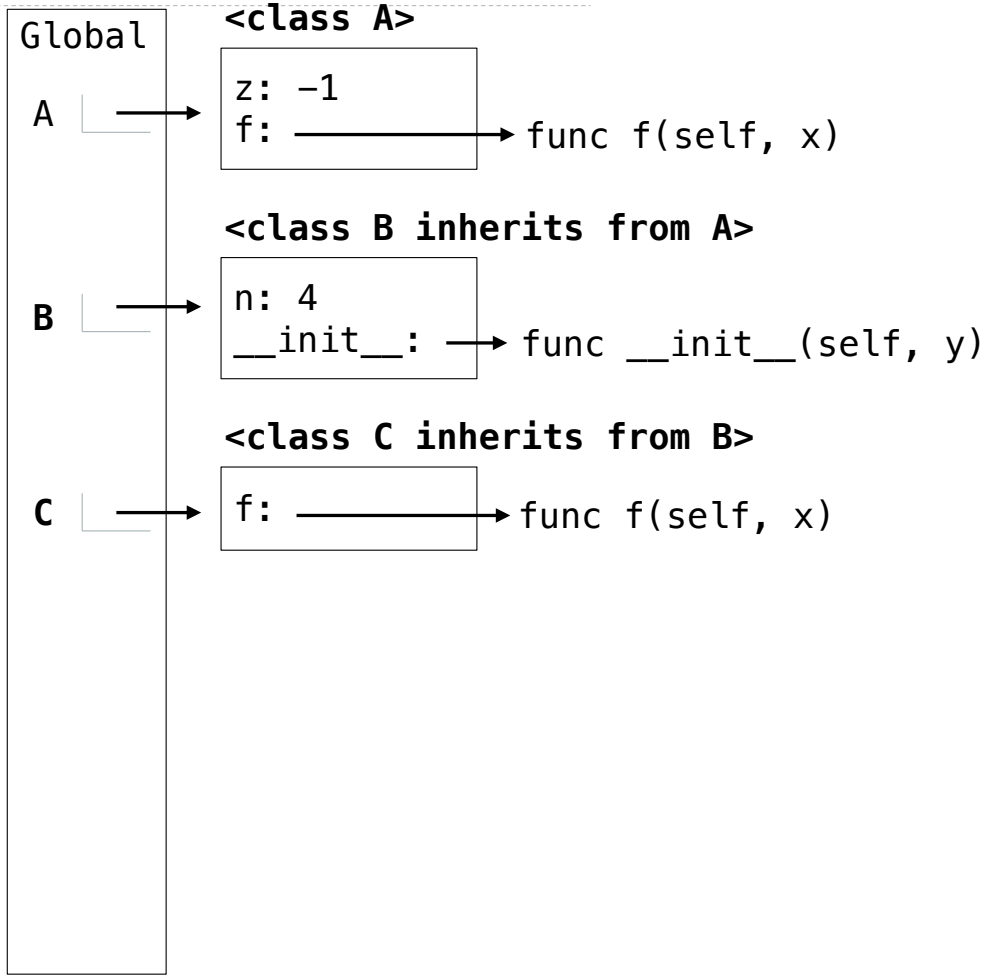

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Inheritance and Attribute Lookup

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```
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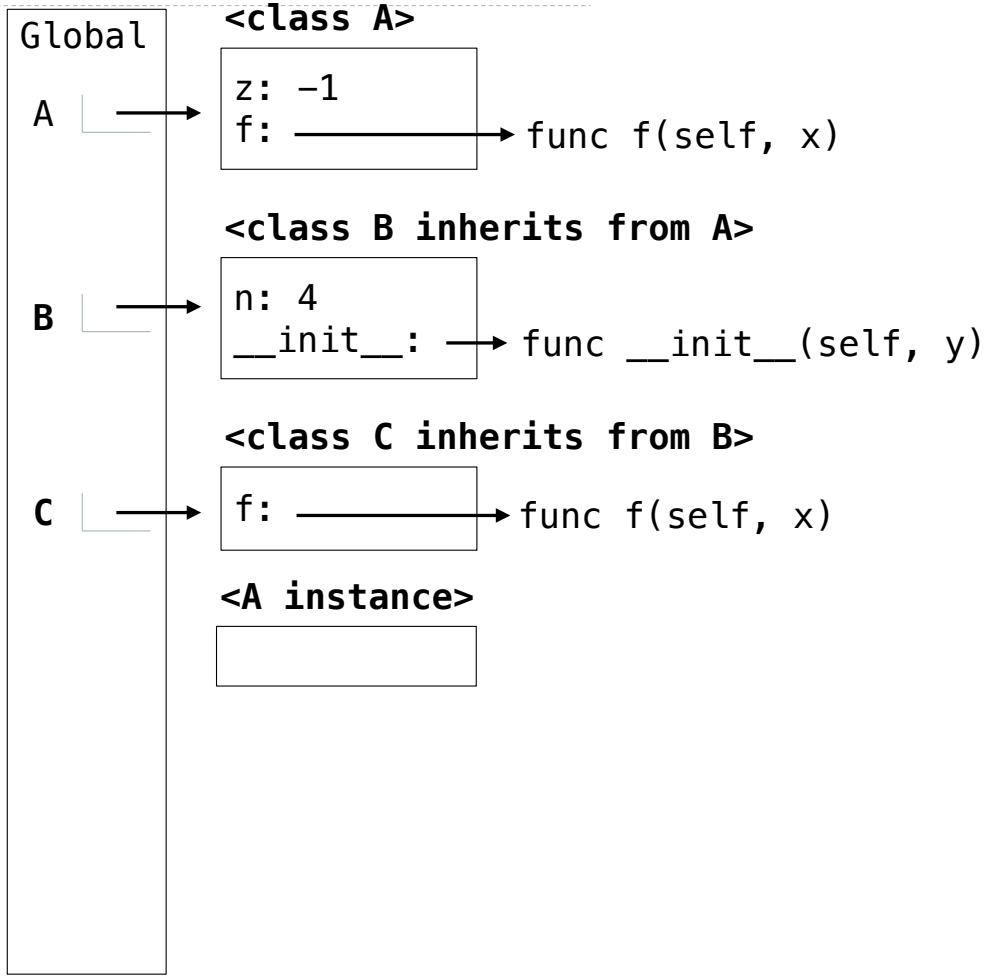

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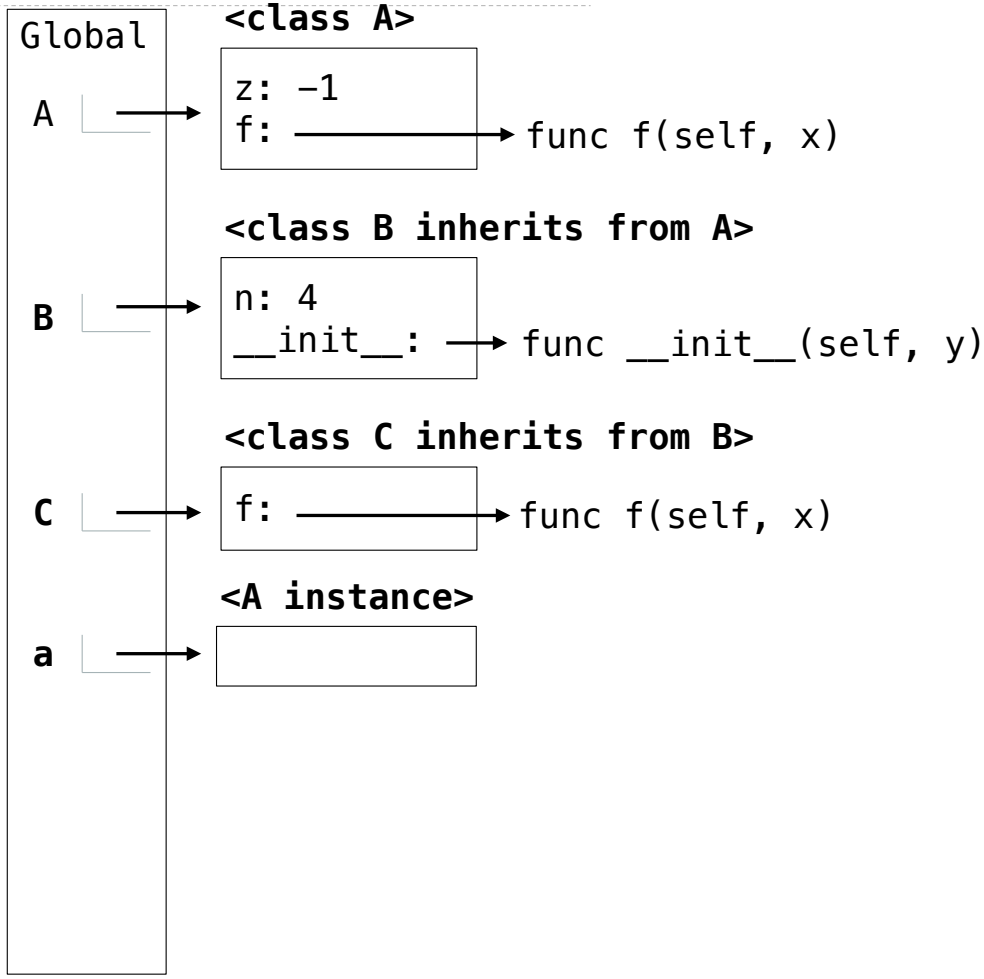

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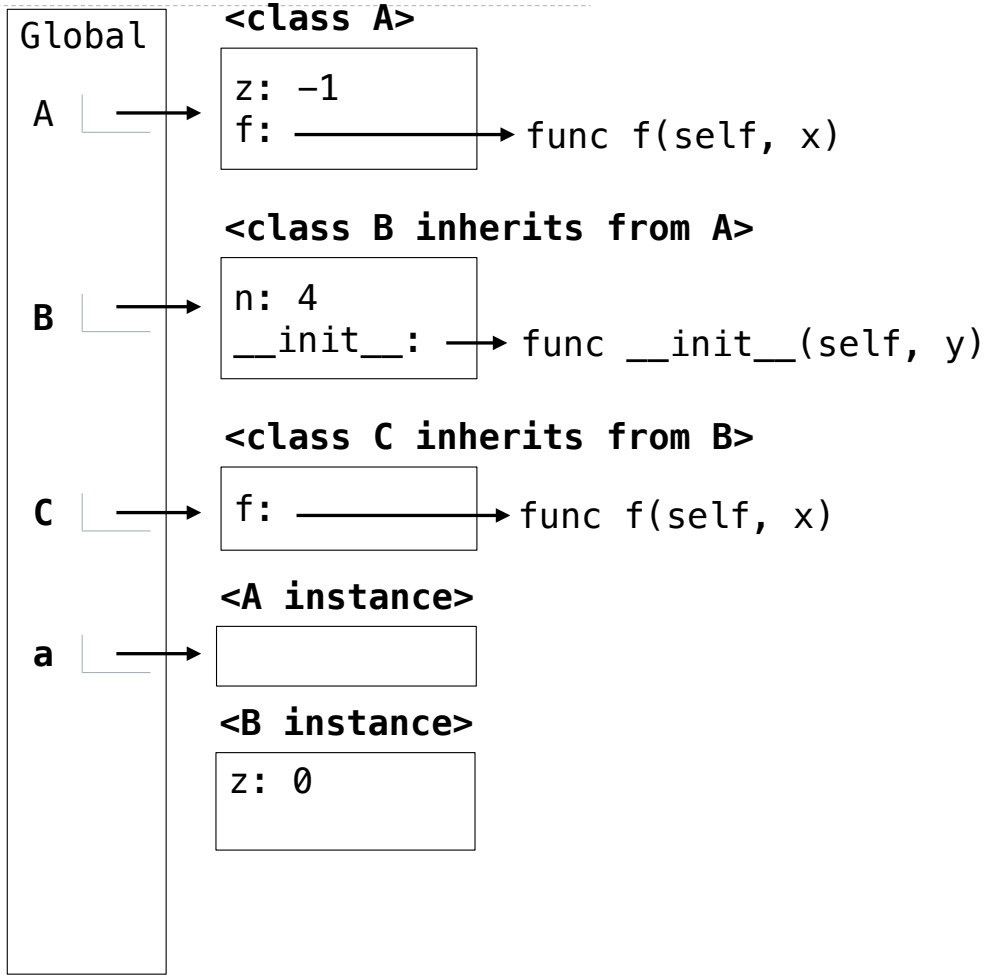

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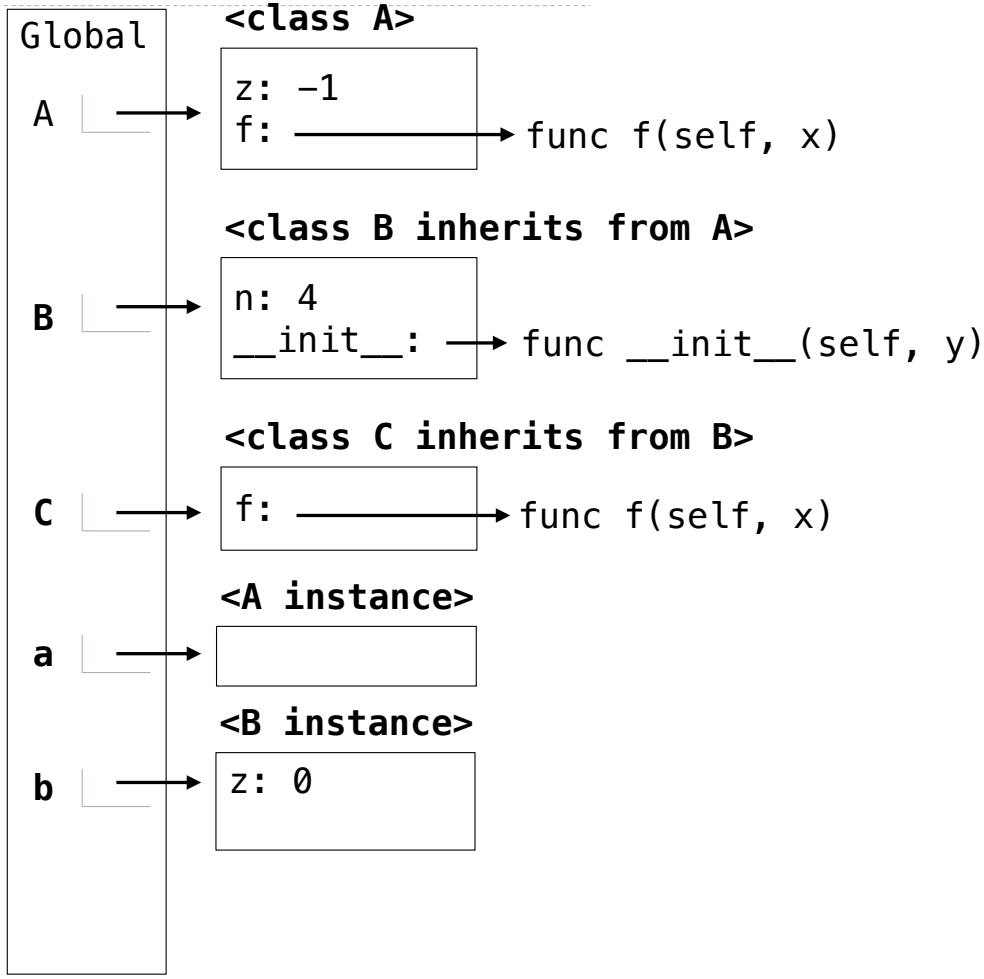

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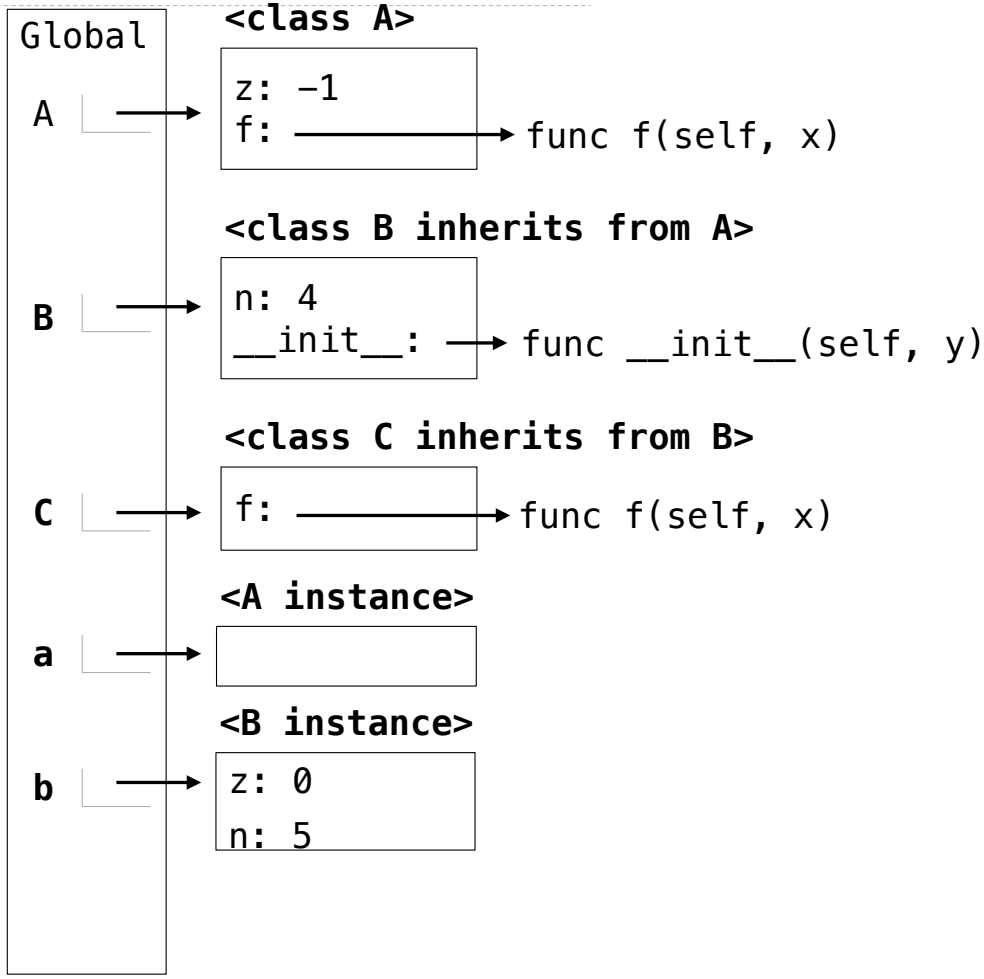

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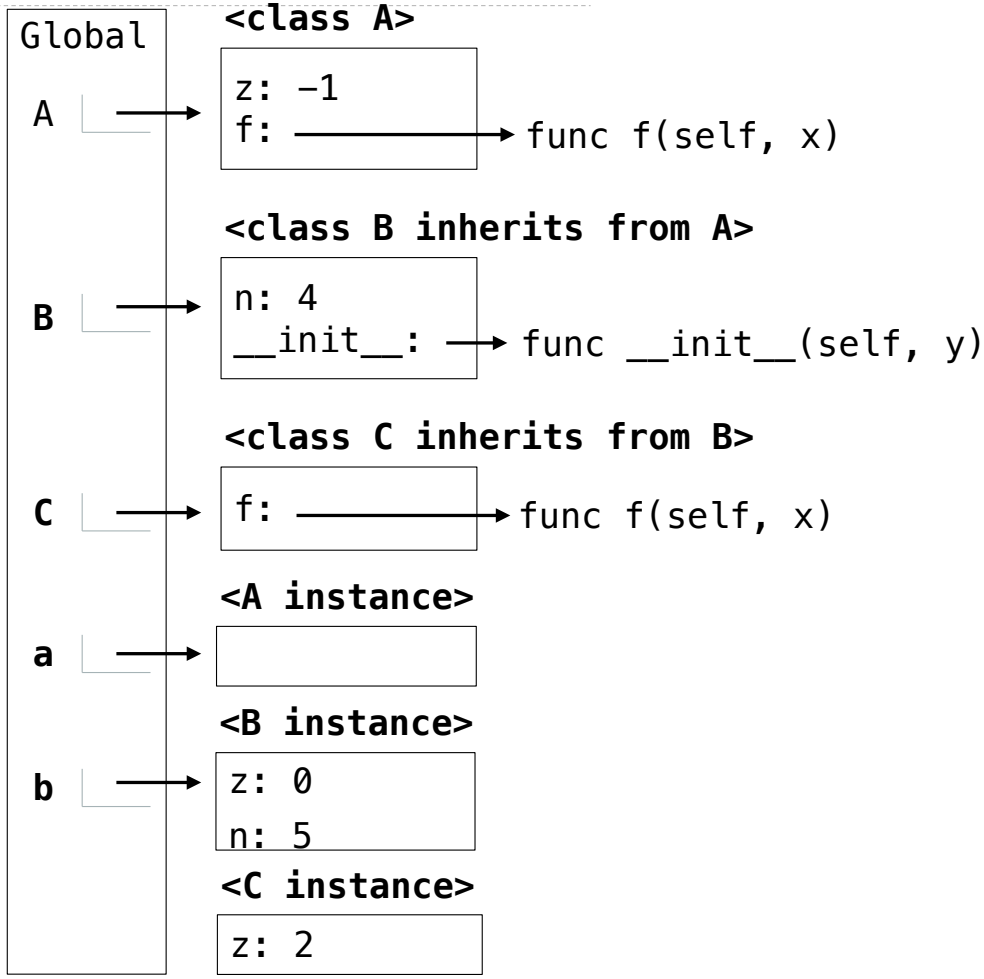

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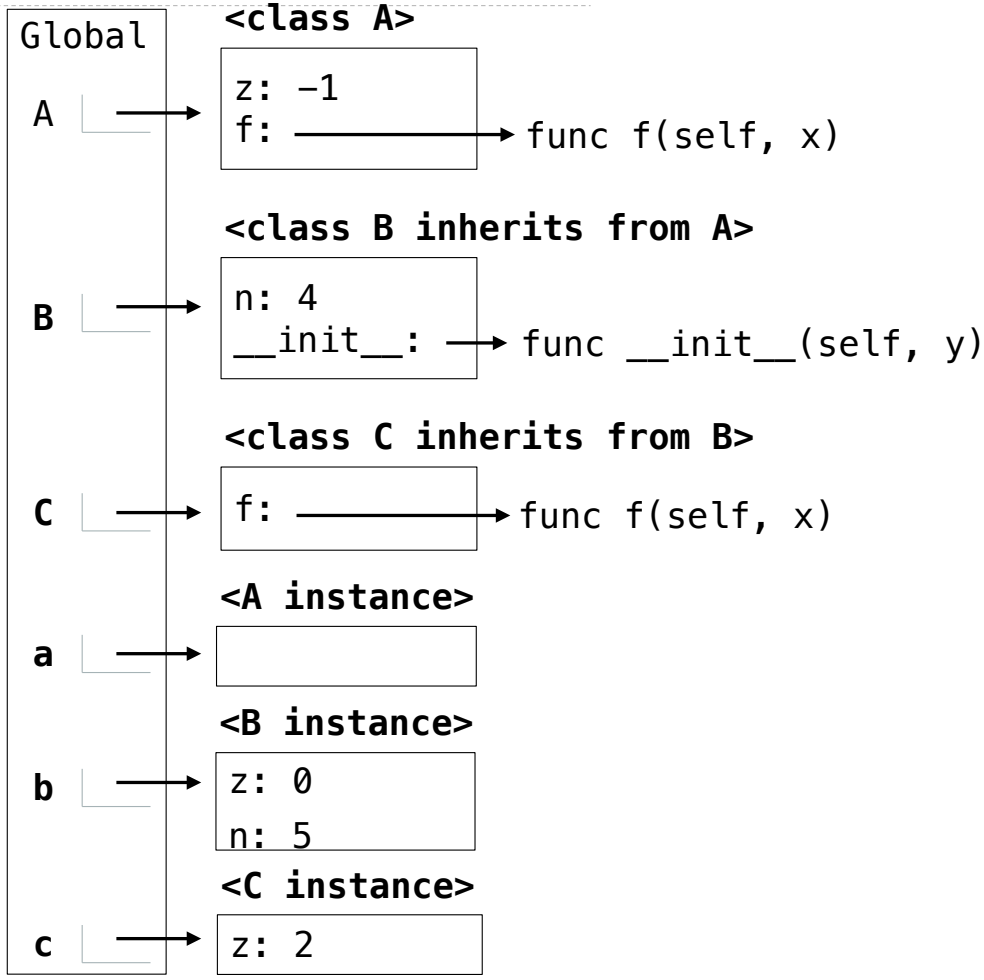

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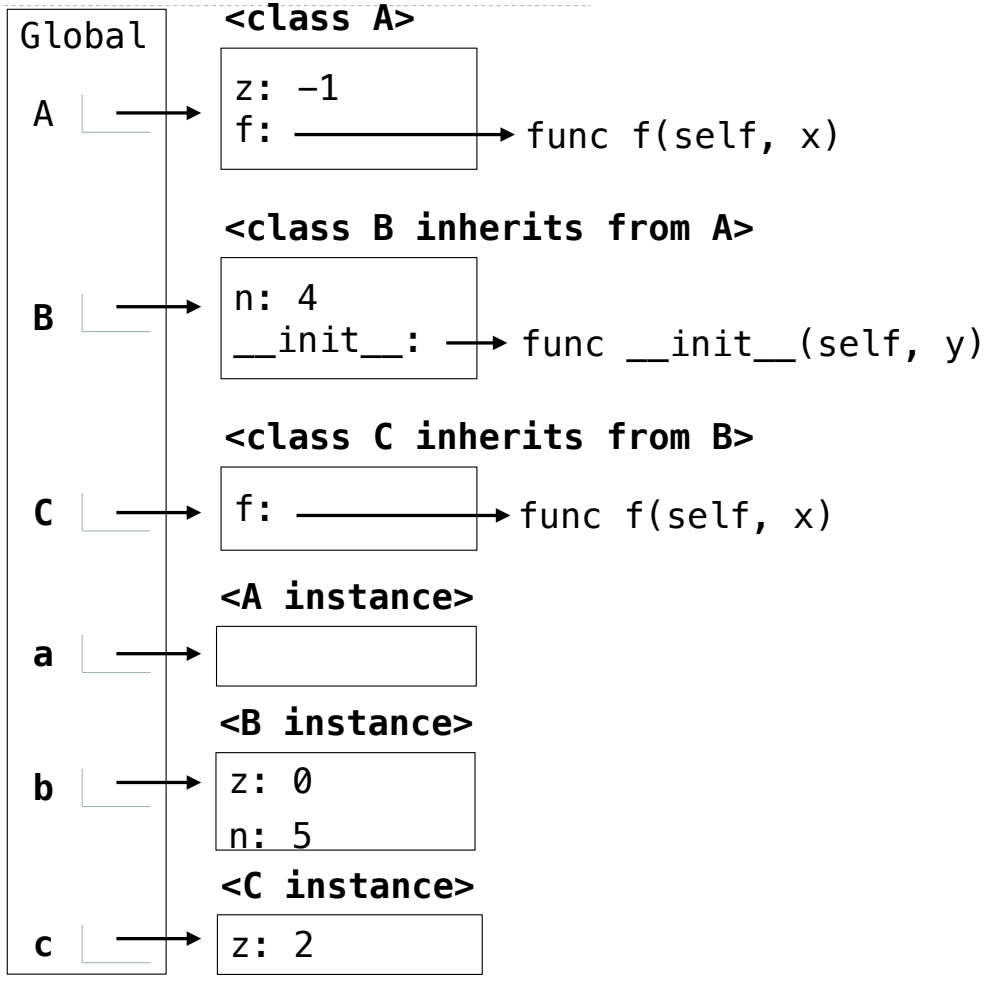
```

```
>>> c.z
   2
>>> c.n

>>> a.z == C.z

>>> a.z == b.z
```



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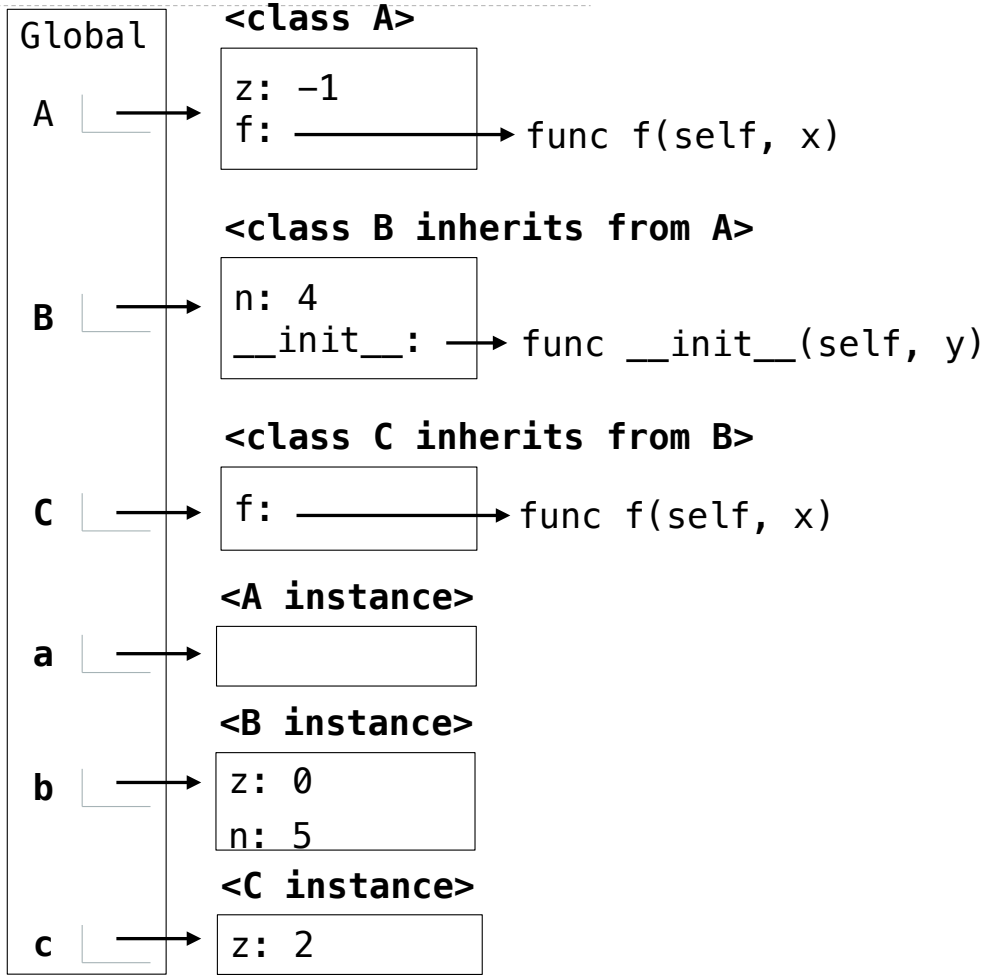

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```

```
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   2
>>> c.n
   4
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   True
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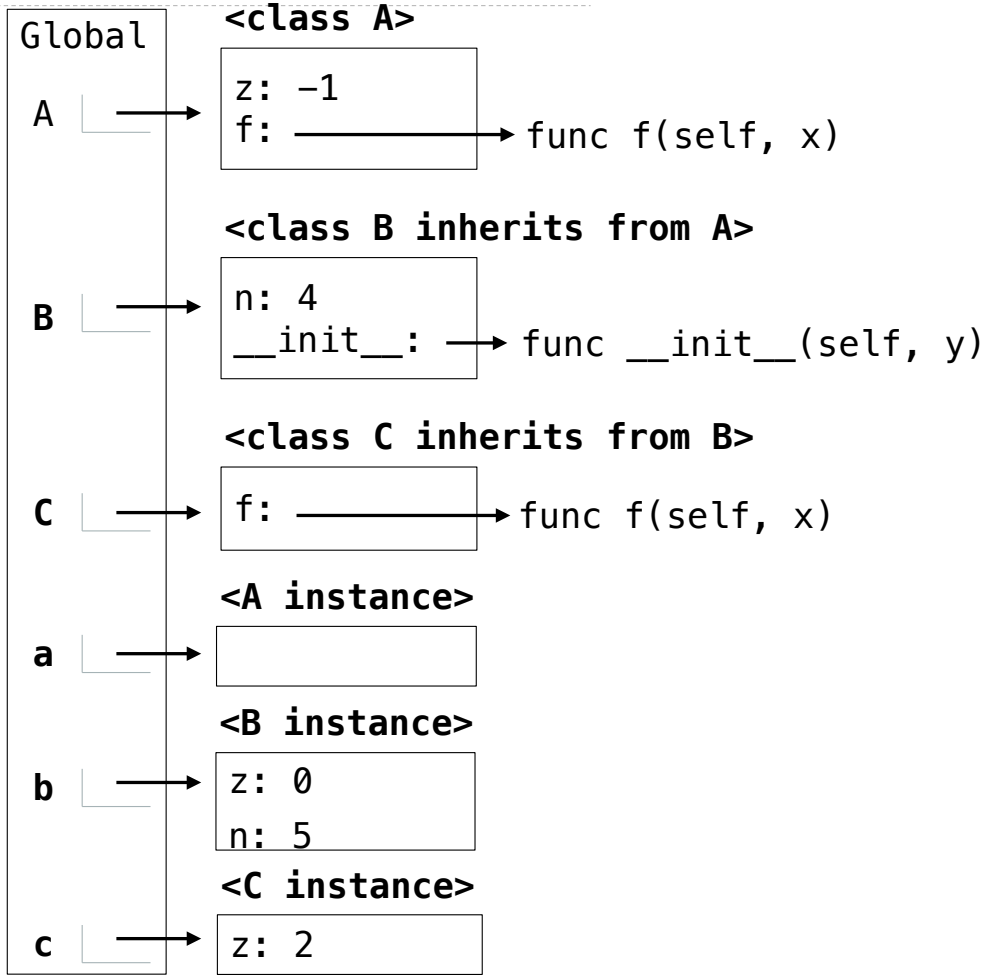
```



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```
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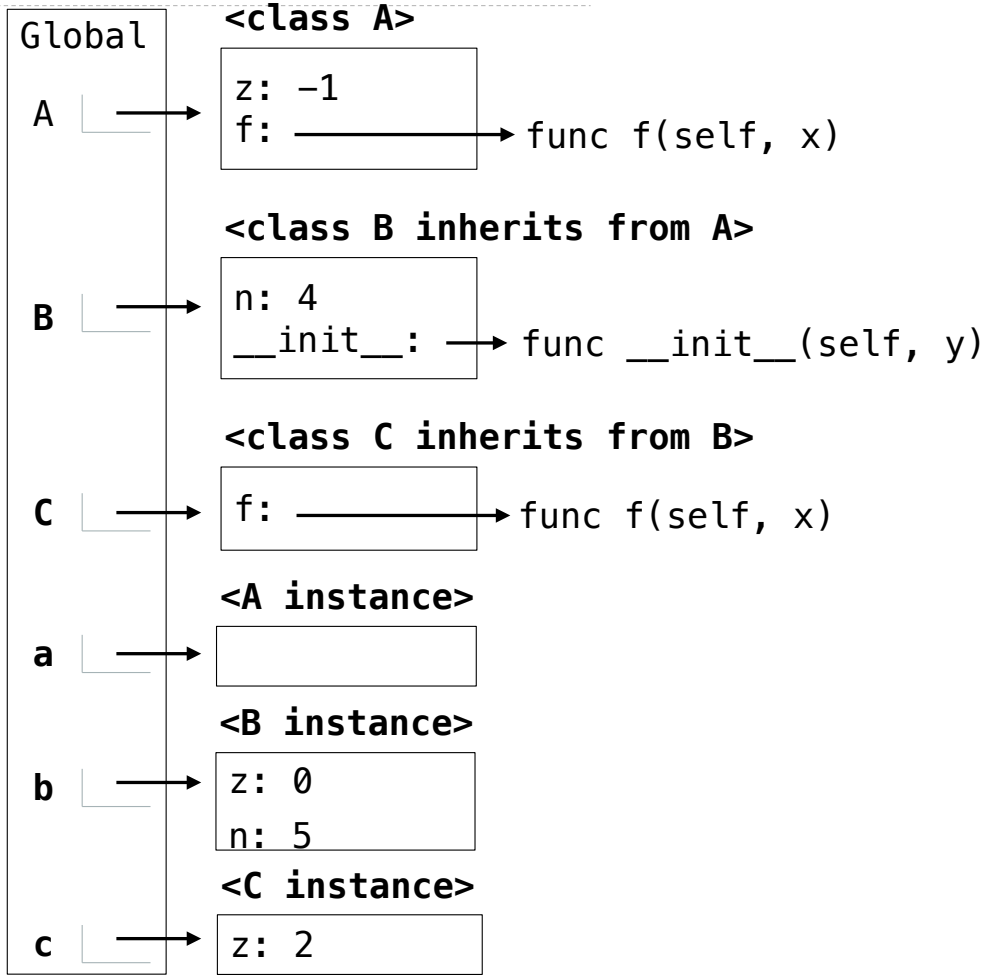

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Multiple Inheritance

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class SavingsAccount(Account):
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    def deposit(self, amount):
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```
class AsSeenOnTVAccount(CheckingAccount, SavingsAccount):
    def __init__(self, account_holder):
        self.holder = account_holder
        self.balance = 1                 # A free dollar!
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```

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Instance attribute

```
>>> such_a_deal = AsSeenOnTVAccount('John')
>>> such_a_deal.balance
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>>> such_a_deal.deposit(20)
19
```

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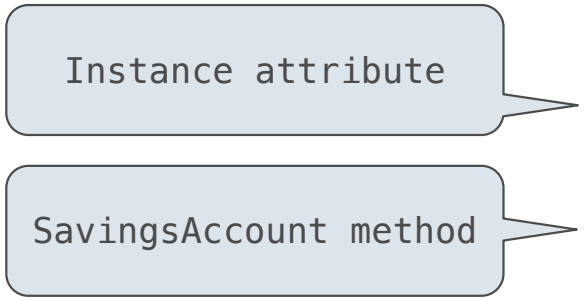


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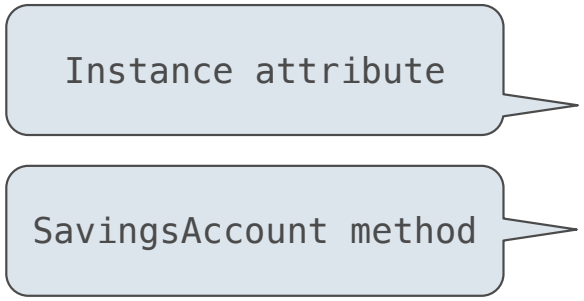


```
>>> such_a_deal = AsSeenOnTVAccount('John')
>>> such_a_deal.balance
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>>> such_a_deal.deposit(20)
19
>>> such_a_deal.withdraw(5)
13
```

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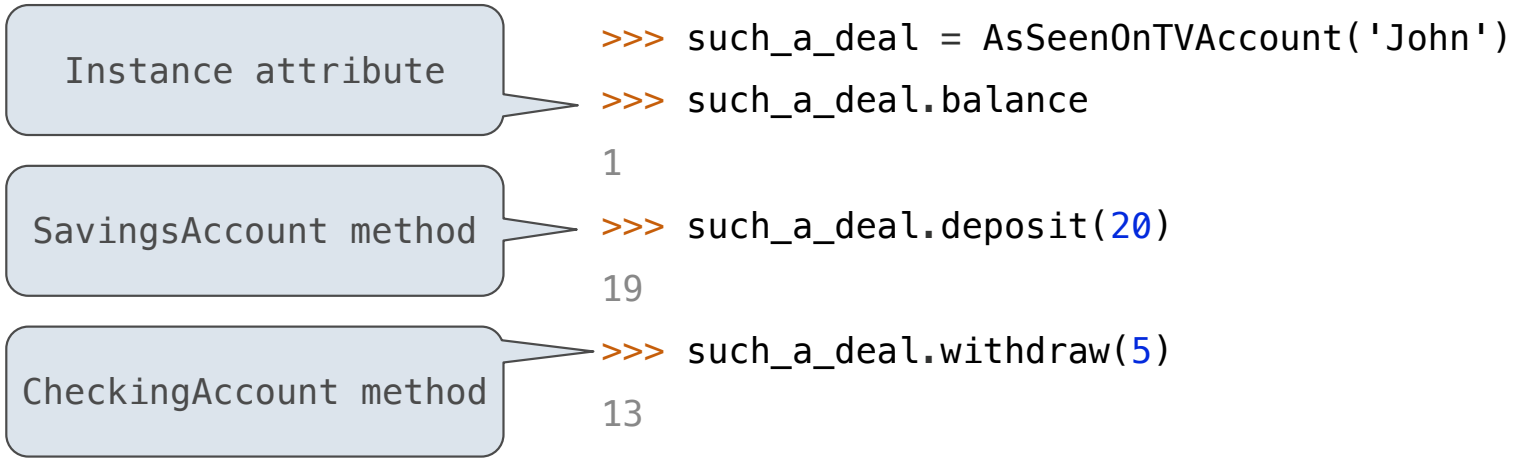
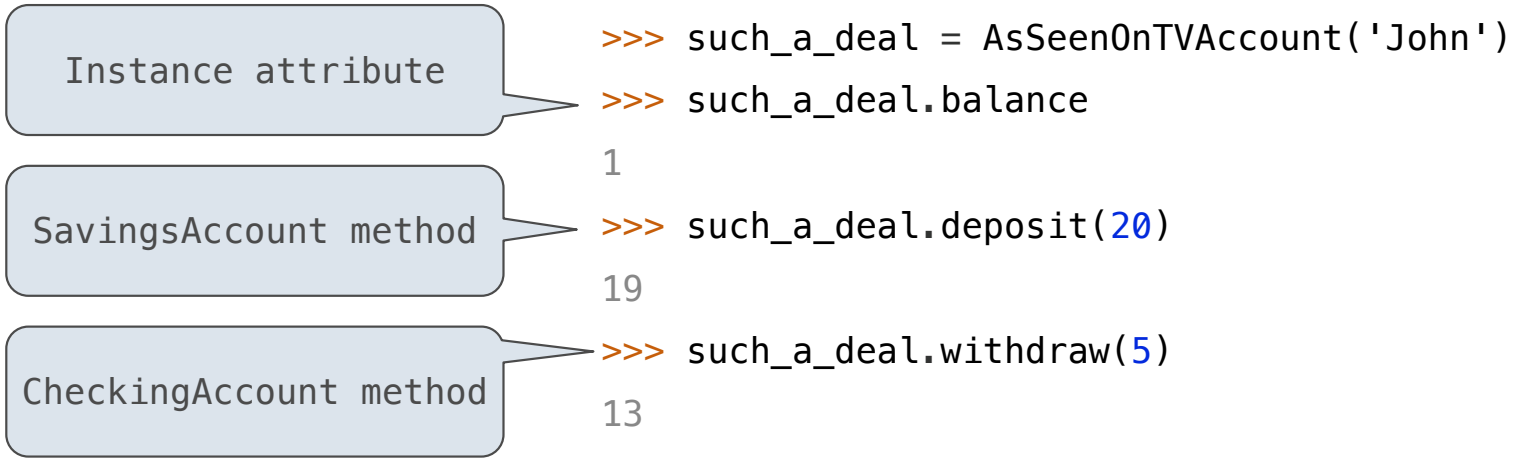


Resolving Ambiguous Class Attribute Names



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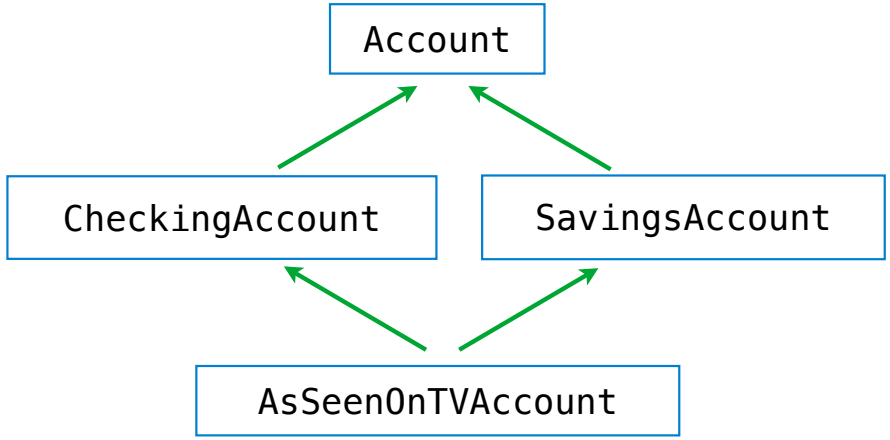

Instance attribute

SavingsAccount method

CheckingAccount method

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