

## Objects

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# Announcements

# Object-Oriented Programming

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A method for organizing programs

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A method for organizing programs

- Data abstraction

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- Data abstraction
- Bundling together information and related behavior

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- Each object has its own local state

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- Each object also knows how to manage its own local state, based on method calls

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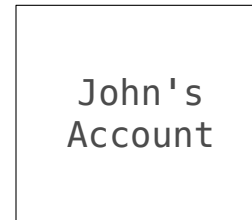
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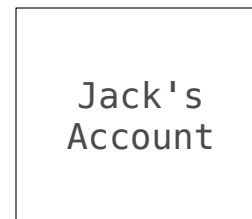
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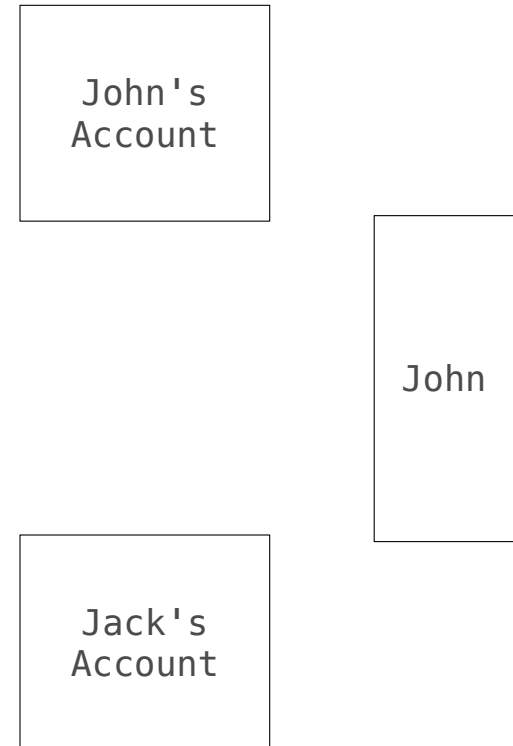
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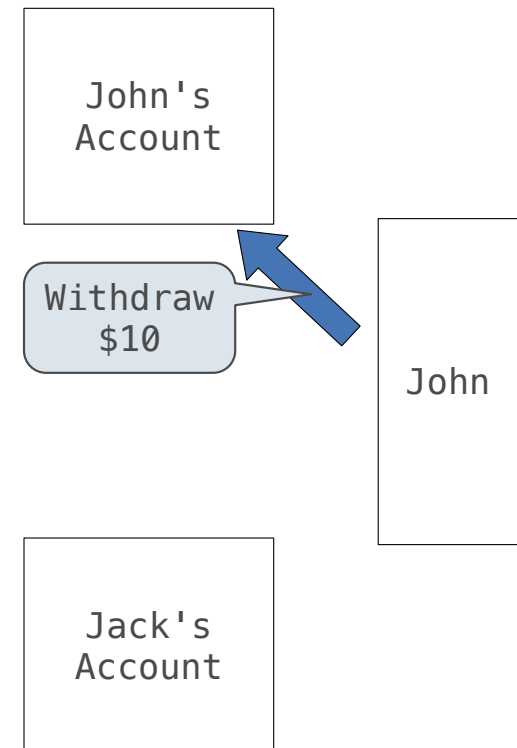
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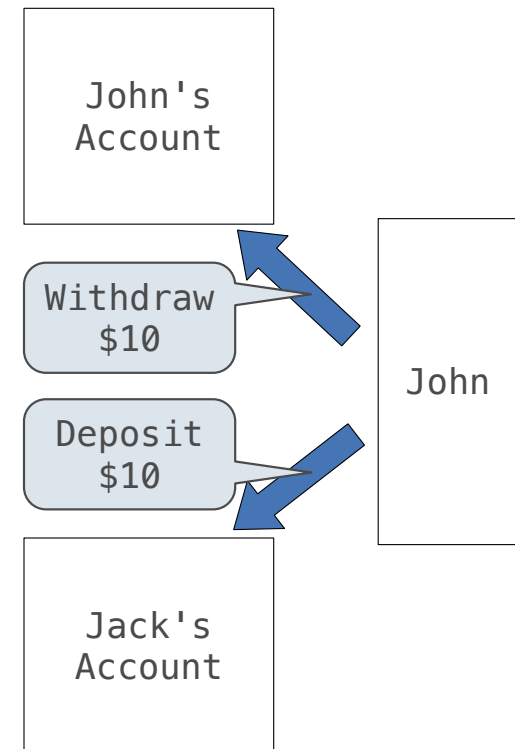
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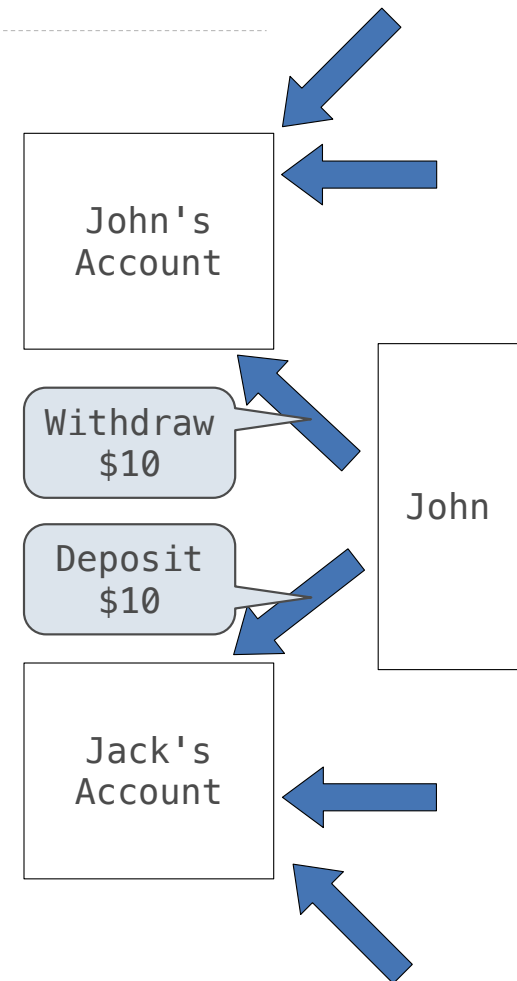
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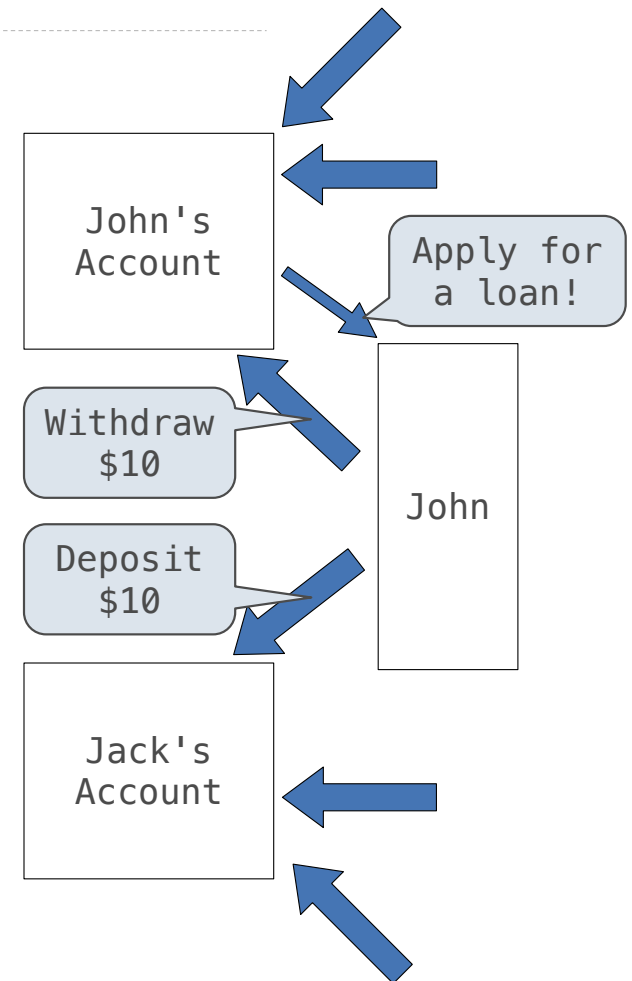
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>>> a.holder
'John'
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**Idea:** All bank accounts have a `balance` and an account `holder`; the `Account` class should add those attributes to each newly created instance

```
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>>> a.holder
'John'
>>> a.balance
0
```

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**Idea:** All bank accounts have a `balance` and an account `holder`; the `Account` class should add those attributes to each newly created instance

```
>>> a = Account('John')
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**Idea:** All bank accounts should have `withdraw` and `deposit` behaviors that all work in the same way

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```
>>> a.deposit(15)
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**Idea:** All bank accounts have a `balance` and an account `holder`; the `Account` class should add those attributes to each newly created instance

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0
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**Idea:** All bank accounts should have `withdraw` and `deposit` behaviors that all work in the same way

```
>>> a.deposit(15)
15
>>> a.withdraw(10)
5
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**Idea:** All bank accounts have a `balance` and an account `holder`; the `Account` class should add those attributes to each newly created instance

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>>> a.holder
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**Idea:** All bank accounts should have `withdraw` and `deposit` behaviors that all work in the same way

**Better idea:** All bank accounts share a `withdraw` method and a `deposit` method

```
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## Class Statements

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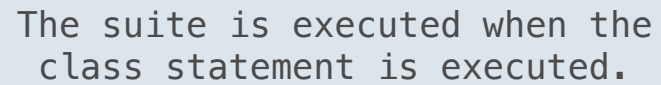
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## The Class Statement

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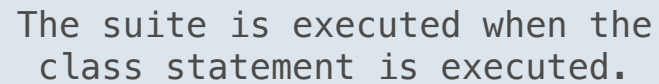
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Every call to `Account` creates a new `Account` instance. There is only one `Account` class.



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>>> a is a
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>>> a is not b
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Binding an object to a new name using assignment does not create a new object:

```
>>> c = a
>>> c is a
True
```

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    def deposit(self, amount):
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class Account:  
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        self.balance = 0  
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```

self should always be bound to an instance of the Account class

```
def deposit(self, amount):
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class Account:
    def __init__(self, account_holder):
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self should always be bound to an instance of the Account class

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Methods are functions defined in the suite of a class statement

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    def __init__(self, account_holder):  
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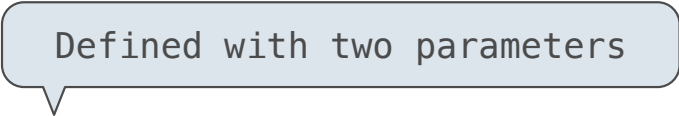
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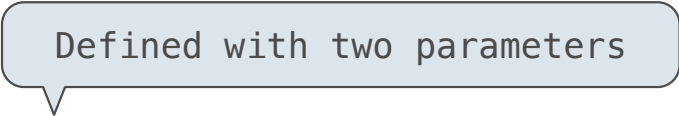
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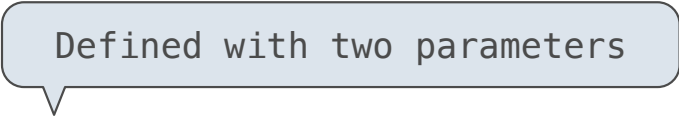
Invoked with one argument

## Invoking Methods

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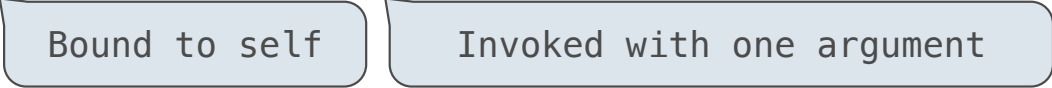
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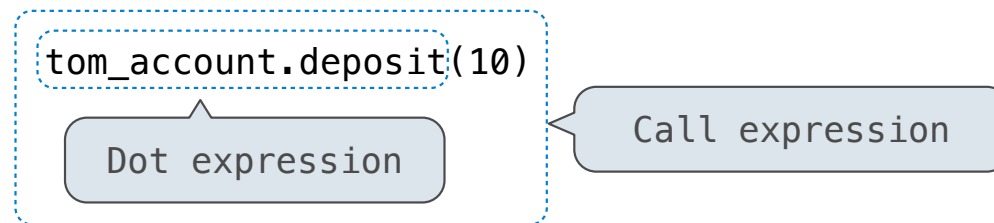
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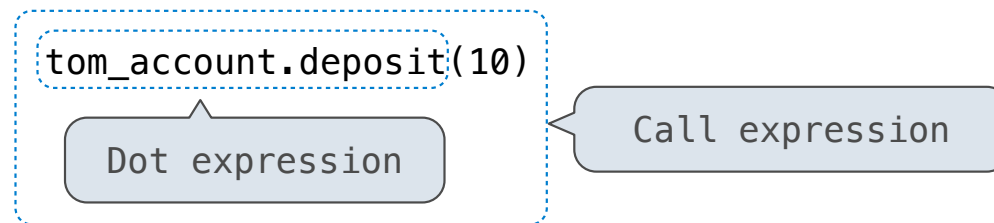
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(Demo)

# Attributes

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**Function:** all arguments within parentheses

**Method:** One object before the dot and other arguments within parentheses



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

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