Object Oriented Programming

Making Your Own Data Types
A simple class can be defined like so:

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    def __init__(self, x, y):
        self.x, self.y = x, y
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A few things to notice:

- __init__ is the initializes the object. It’s actually what is called a **magic method**
- All the methods of the class take a parameter self, the object you are working on
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Properties

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In Java, it’s nearly impossible to make everything public, since changing a class to use getters and setters would require a change of everything that interfaces with it. Python’s properties allow you to make your variable public to begin with, and then write getters and setters only once they are needed to actually check something.
Using Properties

class CameraSensor:
    def __init__(self):
        self.brightness = 10

    def take_picture(self):
        # do something
        return image

camera = CameraSensor()
camera.brightness = 40
camera.take_picture()
Using Properties

class CameraSensor:
    def __init__(self):
        self._brightness = 10

    def take_picture(self):
        # do something
        return image

@property
def brightness(self):
    return self._brightness

@brightness.setter
def brightness(self, value):
    if not 0 <= value <= 100:
        raise ValueError
    self._brightness = value

camera = CameraSensor()
camera.brightness = 40
camera.take_picture()