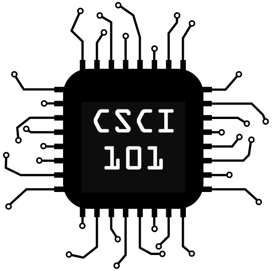
Object Oriented Programming

Making Your Own Data Types



Classes

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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

Magic Methods

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Why do this rather than `.equals()`, `.length()` and such?

In the face of ambiguity, refuse the temptation to guess. There should be one – and preferably only one – obvious way to do it.

Avoid `.length()`, `.getLength()`, `.size()` inconsistencies

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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()
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