5

Lecture 5

Abstraction with Data Structures and Objects

Any lingering questions?

Let's look at a simple game

- Noughts and Crosses
- Very simple
- Already a bit messy!

Let’s look at a simple game

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- Where do we already have abstraction?

Data (Lists) as Abstraction

Lists EXPOSED

```
my_list = [2, 5, 7]


x_1 = 2
x_2 = 5
x_3 = 7


print(my_list[2])
print(x_3)
```

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How to survive a Python Lecture

GOOD HEALTH STARTS PAGES 36-37

Daily Mail

TUESDAY, MAY 17, 2016 www.dailymail.co.uk DAILY NEWSPAPER OF THE YEAR 65p

Can Lloyd's Wardrobe get any warmer? EXCLUSIVE fashion tips + 12 ways to not scrape YOUR stick on the wall!

EXPOSED: LISTS

Magical box or just an abstraction?

Imperial Secrets
53 mins ·

#ImperialSecret_4139

[2nd Year Bio]

Lloyd is such a cutie he wear the same jumper to every Bio Python lesson. It looks so warm, I wish he wore warmer colours and didn't scratch the wall with the stick.

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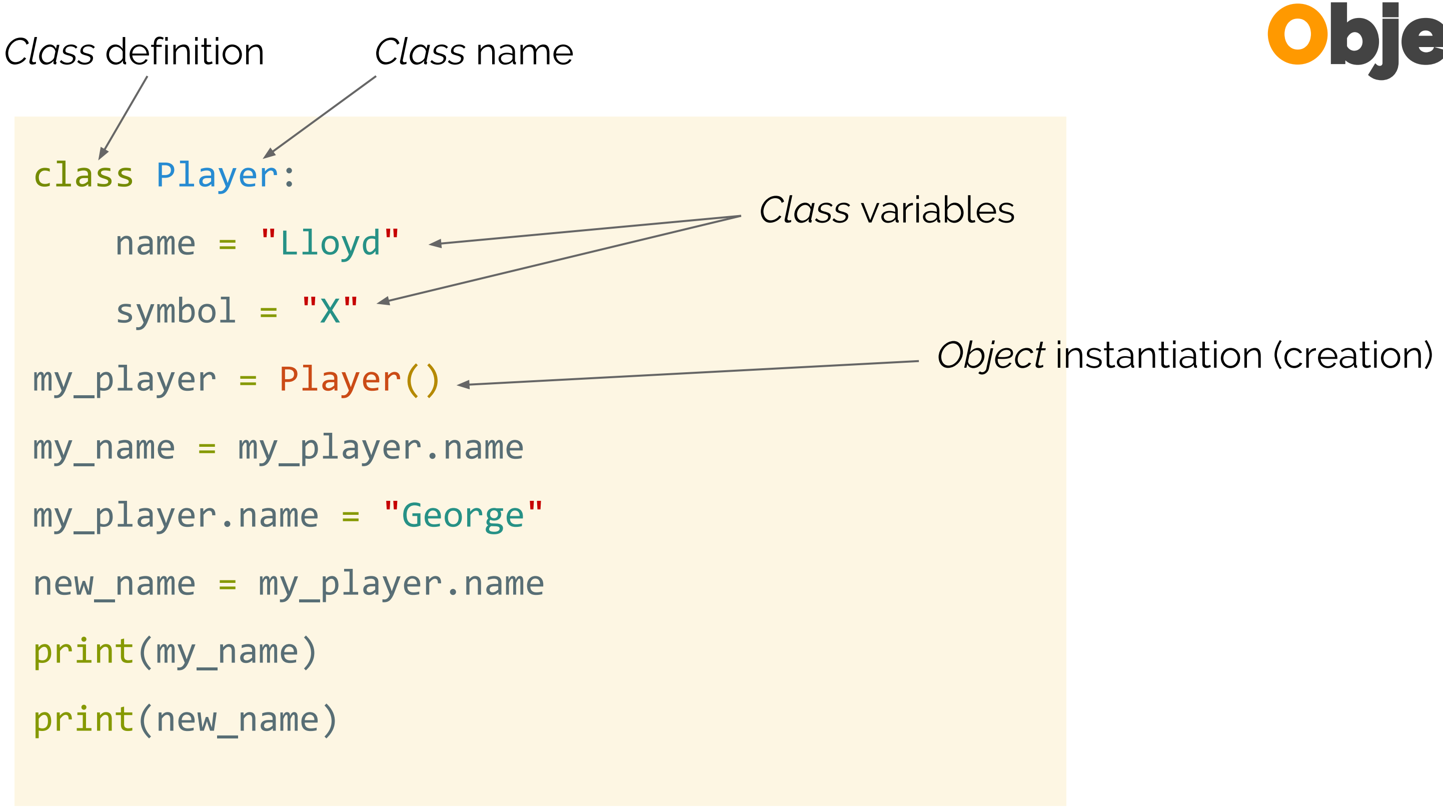
- What if we want to make a similar, extended game?

We’re going to need some more *Abstraction* to improve this!

Objects

```python
class Player:
    name = "Lloyd"
    symbol = "X"
```

Objects



Class definition

Class name

Class variables

Object instantiation (creation)

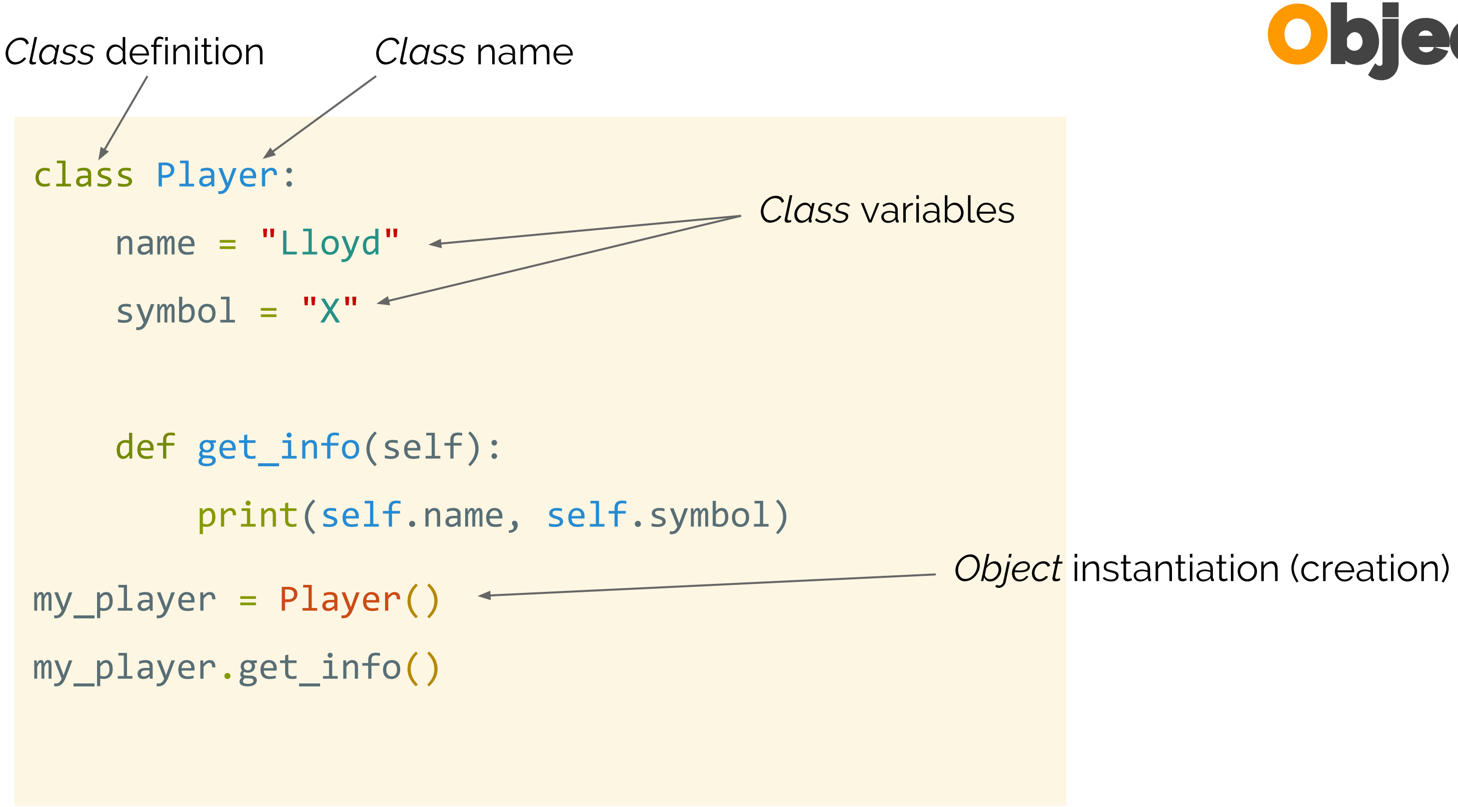
```
class Player:
    name = "Lloyd"
    symbol = "X"
my_player = Player()
my_name = my_player.name
my_player.name = "George"
new_name = my_player.name
print(my_name)
print(new_name)
```

Objects

```
class Player:
    name = "Lloyd"
    symbol = "X"

    def get_info(self):
        print(self.name, self.symbol)
my_player = Player()
my_player.get_info()
```

Objects



Class definition

Class name

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class Player:
    name = "Lloyd"
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Class variables

Object instantiation (creation)

Objects

```
class Player:
    name = "Lloyd"
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    def get_info(self):
        print(self.name, self.symbol)
my_player = Player()
my_player.get_info()
```

Method definition

Method call

Objects

```
class Player:
    name = "Lloyd"
    symbol = "X"

    def get_info(self):
        print(self.name, self.symbol)

    def __init__(self, new_name, new_symbol):
        self.name = new_name
        self.symbol = new_symbol

my_player = Player("George", "O")
my_player.get_info()
```