

# Inheritance

- When we make a new class - we can reuse an existing class and **inherit** all the capabilities of an existing class and then add our own little bit to make our new class
- Another form of store and reuse
- Write once - reuse many times
- The new class (child) has all the capabilities of the old class (parent) - and then some more

# Terminology: Inheritance



‘Subclasses’ are more specialized versions of a class, which **inherit** attributes and behaviors from their parent classes, and can introduce their own.

[http://en.wikipedia.org/wiki/Object-oriented\\_programming](http://en.wikipedia.org/wiki/Object-oriented_programming)

```
class PartyAnimal:

    def __init__(self, nam):
        self.x = 0
        self.name = nam
        print(self.name, "constructed")

    def party(self) :
        self.x = self.x + 1
        print(self.name, "party count", self.x)

class FootballFan(PartyAnimal) :

    def __init__(self, nam) :
        super().__init__(nam)
        self.points = 0

    def touchdown(self):
        self.points = self.points + 7
        self.party()
        print(self.name, "points", self.points)
```

```
s = PartyAnimal("Sally")
s.party()

j = FootballFan("Jim")
j.party()
j.touchdown()
```

FootballFan is a class which extends PartyAnimal. It has all the capabilities of PartyAnimal and more.

party7.py

```
class PartyAnimal:

    def __init__(self, nam):
        self.x = 0
        self.name = nam
        print(self.name, "constructed")

    def party(self) :
        self.x = self.x + 1
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```
class FootballFan(PartyAnimal):

    def __init__(self, nam) :
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        self.points = self.points + 7
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        print(self.name, "points", self.points)
```

→ `s = PartyAnimal("Sally")`  
`s.party()`

`j = FootballFan("Jim")`  
`j.party()`  
`j.touchdown()`

S

x: 0

name: Sally

```
class PartyAnimal:

    def __init__(self, nam):
        self.x = 0
        self.name = nam
        print(self.name, "constructed")

    def party(self) :
        self.x = self.x + 1
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class FootballFan(PartyAnimal):

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```

→

```
s = PartyAnimal("Sally")
s.party()

j = FootballFan("Jim")
j.party()
j.touchdown()
```

S

x: 1

name: Sally

```
class PartyAnimal:

    def __init__(self, nam):
        self.x = 0
        self.name = nam
        print(self.name, "constructed")

    def party(self) :
        self.x = self.x + 1
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class FootballFan(PartyAnimal):

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        self.points = self.points + 7
        self.party()
        print(self.name, "points", self.points)
```

```
s = PartyAnimal("Sally")
s.party()
```

→

```
j = FootballFan("Jim")
j.party()
j.touchdown()
```

j

x: 0

name: Jim

points: 0

```
class PartyAnimal:

    def __init__(self, nam):
        self.x = 0
        self.name = nam
        print(self.name, "constructed")

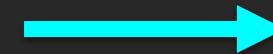
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        self.x = self.x + 1
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```

```
s = PartyAnimal("Sally")
s.party()
```



```
j = FootballFan("Jim")
j.party()
j.touchdown()
```

j

x: 1

name: Jim

points: 0

```
class PartyAnimal:

    def __init__(self, nam):
        self.x = 0
        self.name = nam
        print(self.name, "constructed")

    def party(self) :
        self.x = self.x + 1
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```

```
s = PartyAnimal("Sally")
s.party()
```

```
j = FootballFan("Jim")
j.party()
j.touchdown()
```

j

x: 1

name: Jim

points: 7



# Definitions

**Class** - a template

**Attribute** – A variable within a class

**Method** - A function within a class

**Object** - A particular instance of a class

**Constructor** – Code that runs when an object is created

**Inheritance** - The ability to extend a class to make a new class.



# Summary

- Object Oriented programming is a very structured approach to code reuse.
- We can group data and functionality together and create many independent instances of a class



## Acknowledgements / Contributions



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