



# Python Inheritance

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## Python Inheritance

Inheritance allows us to define a class that inherits all the methods and properties from another class.

**Parent class** is the class being inherited from, also called base class.

**Child class** is the class that inherits from another class, also called derived class.

## Create a Parent Class

Any class can be a parent class, so the syntax is the same as creating any other class:

### Example

Create a class named **Person** , with **firstname** and **lastname** properties, and a **printname** method:

```
class Person:
    def __init__(self, fname, lname):
        self.firstname = fname
        self.lastname = lname

    def printname(self):
```

```
print(self.firstname, self.lastname)
```

#Use the Person class to create an object, and then execute the printname method:

```
x = Person("John", "Doe")  
x.printname()
```

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## Create a Child Class

To create a class that inherits the functionality from another class, send the parent class as a parameter when creating the child class:

### Example

Create a class named **Student**, which will inherit the properties and methods from the **Person** class:

```
class Student(Person):  
    pass
```

**Note:** Use the **pass** keyword when you do not want to add any other properties or methods to the class.

Now the Student class has the same properties and methods as the Person class.

### Example

Use the **Student** class to create an object, and then execute the **printname** method:

```
x = Student("Mike", "Olsen")  
x.printname()
```

## Add the `__init__()` Function

So far we have created a child class that inherits the properties and methods from its parent.

We want to add the `__init__()` function to the child class (instead of the `pass` keyword).

**Note:** The `__init__()` function is called automatically every time the class is being used to create a new object.

### Example

Add the `__init__()` function to the `Student` class:

```
class Student(Person):  
    def __init__(self, fname, lname):  
        #add properties etc.
```

When you add the `__init__()` function, the child class will no longer inherit the parent's `__init__()` function.

**Note:** The child's `__init__()` function **overrides** the inheritance of the parent's `__init__()` function.

To keep the inheritance of the parent's `__init__()` function, add a call to the parent's `__init__()` function:

## Example

```
class Student(Person):  
    def __init__(self, fname, lname):  
        Person.__init__(self, fname, lname)
```

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Now we have successfully added the `__init__()` function, and kept the inheritance of the parent class, and we are ready to add functionality in the `__init__()` function.

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## Use the super() Function

Python also has a `super()` function that will make the child class inherit all the methods and properties from its parent:

## Example

```
class Student(Person):  
    def __init__(self, fname, lname):  
        super().__init__(fname, lname)
```

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By using the `super()` function, you do not have to use the name of the parent element, it will automatically inherit the methods and properties from its parent.

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## Add Properties

## Example

Add a property called `graduationyear` to the `Student` class:

```
class Student(Person):
    def __init__(self, fname, lname):
        super().__init__(fname, lname)
        self.graduationyear = 2019
```

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In the example below, the year **2019** should be a variable, and passed into the **Student** class when creating student objects. To do so, add another parameter in the `__init__()` function:

## Example

Add a **year** parameter, and pass the correct year when creating objects:

```
class Student(Person):
    def __init__(self, fname, lname, year):
        super().__init__(fname, lname)
        self.graduationyear = year

x = Student("Mike", "Olsen", 2019)
```

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# Add Methods

## Example

Add a method called **welcome** to the **Student** class:

```
class Student(Person):
    def __init__(self, fname, lname, year):
        super().__init__(fname, lname)
        self.graduationyear = year

    def welcome(self):
```

```
print("Welcome", self.firstname, self.lastname, "to the class of",
self.graduationyear)
```

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If you add a method in the child class with the same name as a function in the parent class, the inheritance of the parent method will be overridden.

## Test Yourself With Exercises

## Exercise:

What is the correct syntax to create a class named Student that will inherit properties and methods from a class named Person?

```
class      :
```

Submit Answer »

### Start the Exercise

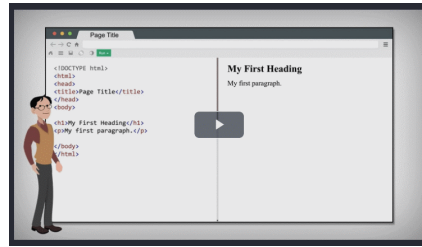
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