Adding Classes to a Package

SOFTWARE ENGINEERING FOR DATA SCIENTISTS IN PYTHON

Adam Spannbauer
Machine Learning Engineer at Eastman

Multilevel inheritance

SOFTWARE ENGINEERING FOR DATA SCIENTISTS IN PYTHON

Adam Spannbauer

Machine Learning Engineer at Eastman

Leveraging Classes

SOFTWARE ENGINEERING FOR DATA SCIENTISTS IN PYTHON

Adam Spannbauer

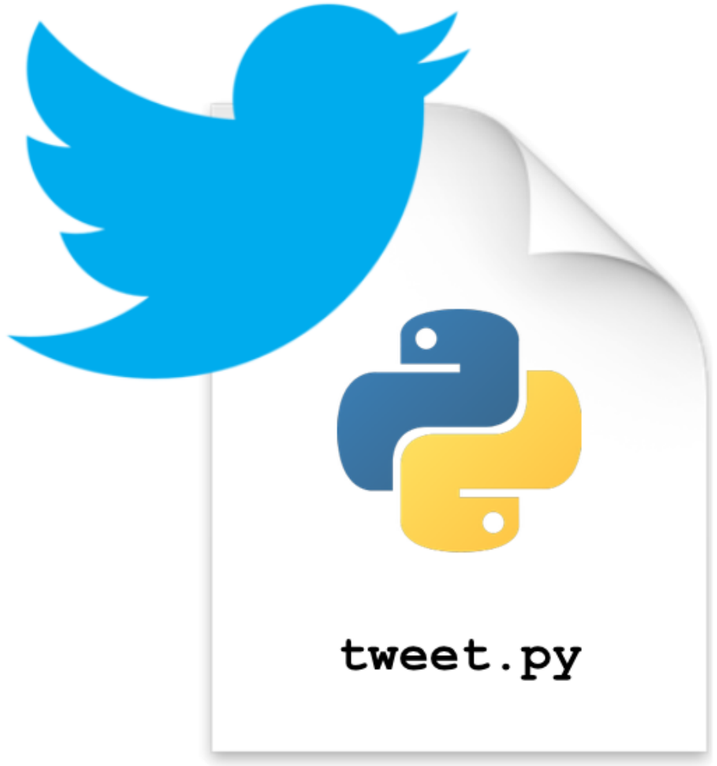
Machine Learning Engineer at Eastman

Classes and the DRY principle

SOFTWARE ENGINEERING FOR DATA SCIENTISTS IN PYTHON

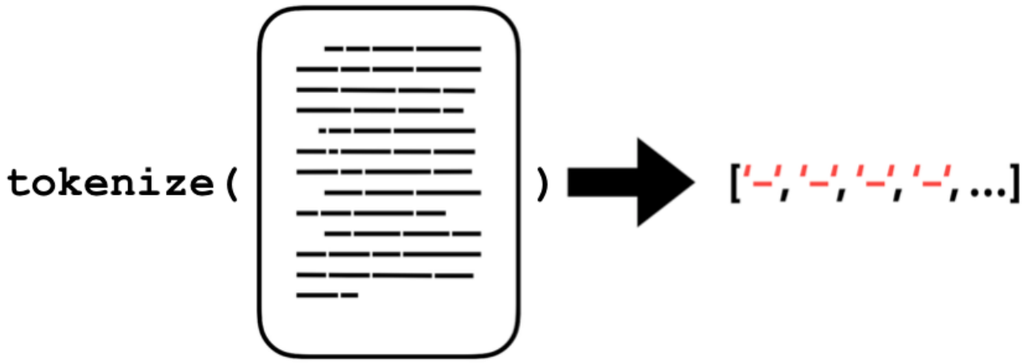
Adam Spannbauer
Machine Learning Engineer at Eastman

Creating a Tweet class

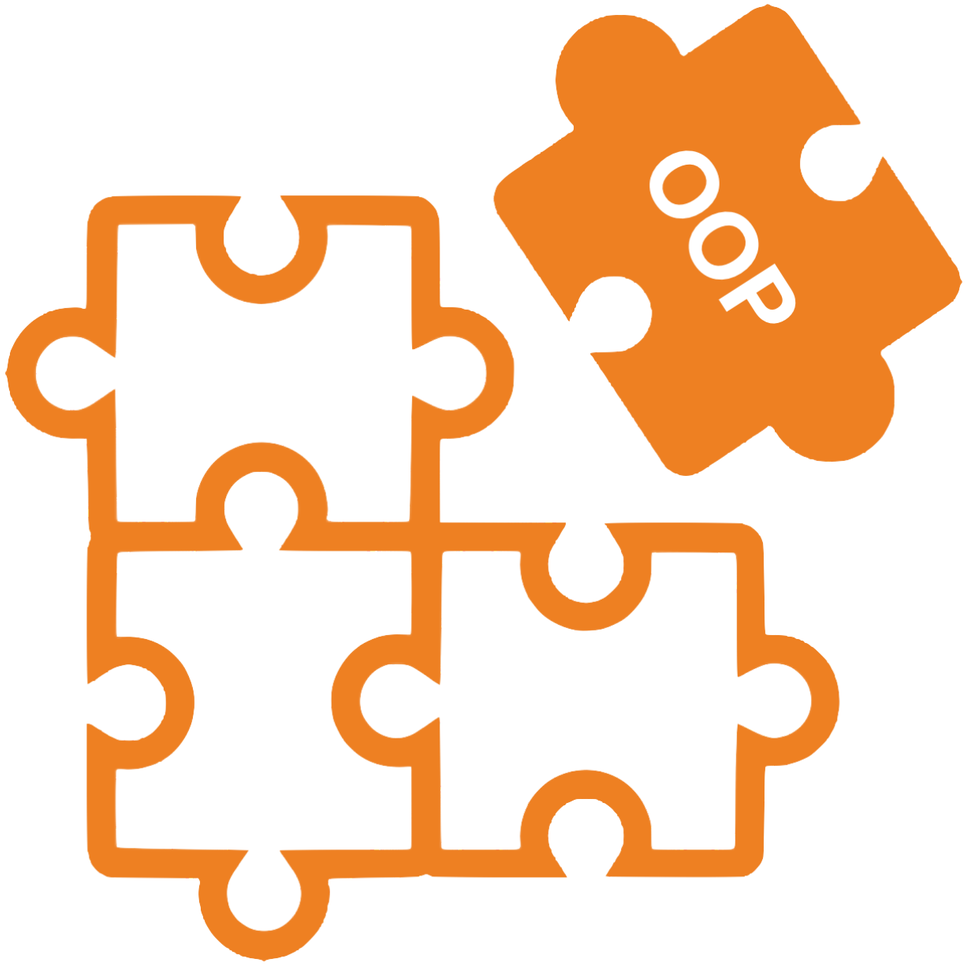


Extending Document class

```
class Document:
    def __init__(self, text):
        self.text = text
```



Object oriented programming

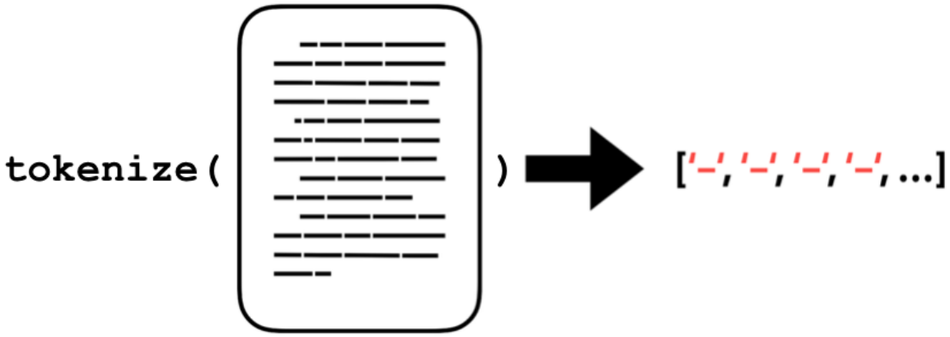


Creating a SocialMedia Class

Current document class

```
class Document:
    def __init__(self, text):
        self.text = text
```

```
def __init__():
    ...
```

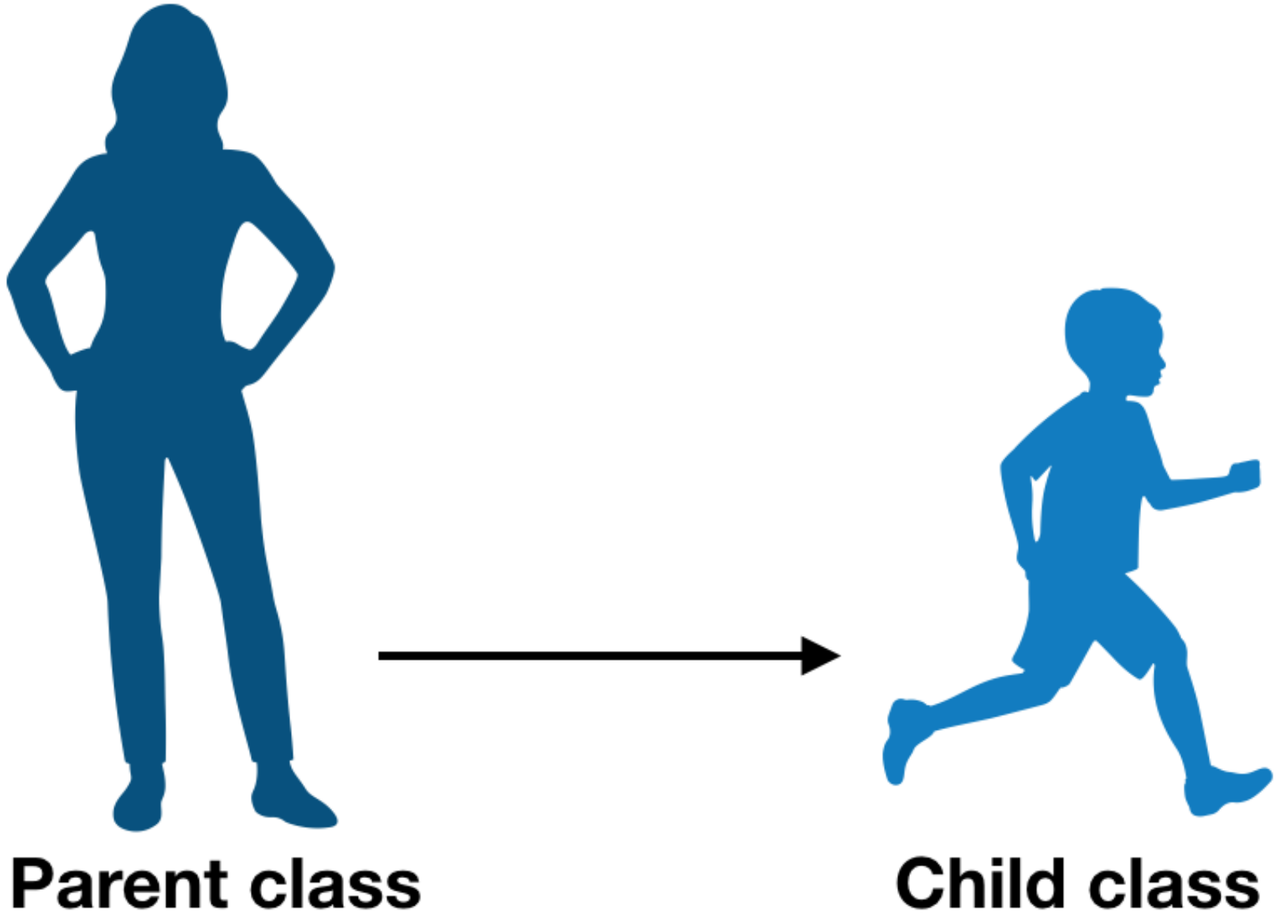


Anatomy of a class

working in `work_dir/my_package/my_class.py`

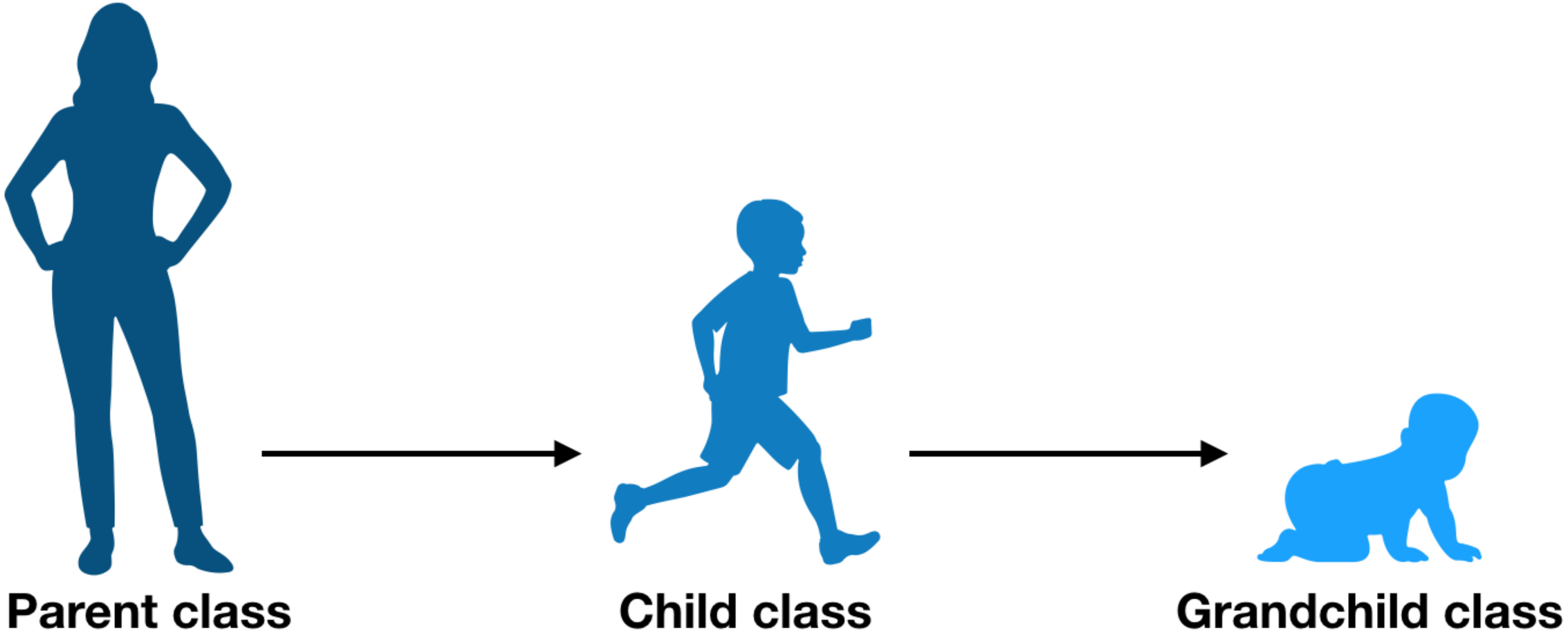
```
# Define a minimal class with an attribute
class MyClass:

    """A minimal example class

    :param value: value to set as the ``attribute`` attribute
    :ivar attribute: contains the contents of ``value`` passed in init
    """



    # Method to create a new instance of MyClass
    def __init__(self, value):
```

Multilevel inheritance



The DRY principle

Multilevel inheritance



Revising `__init__`

```
class Document:
    def __init__(self, text):
        self.text = text
        self.tokens = self._tokenize()


doc = Document('test doc')
print(doc.tokens)
```

```
['test', 'doc']
```

The DRY principle

Using a class in a package

working in `work_dir/my_package/__init__.py`

```
from .my_class import MyClass
```

working in `work_dir/my_script.py`

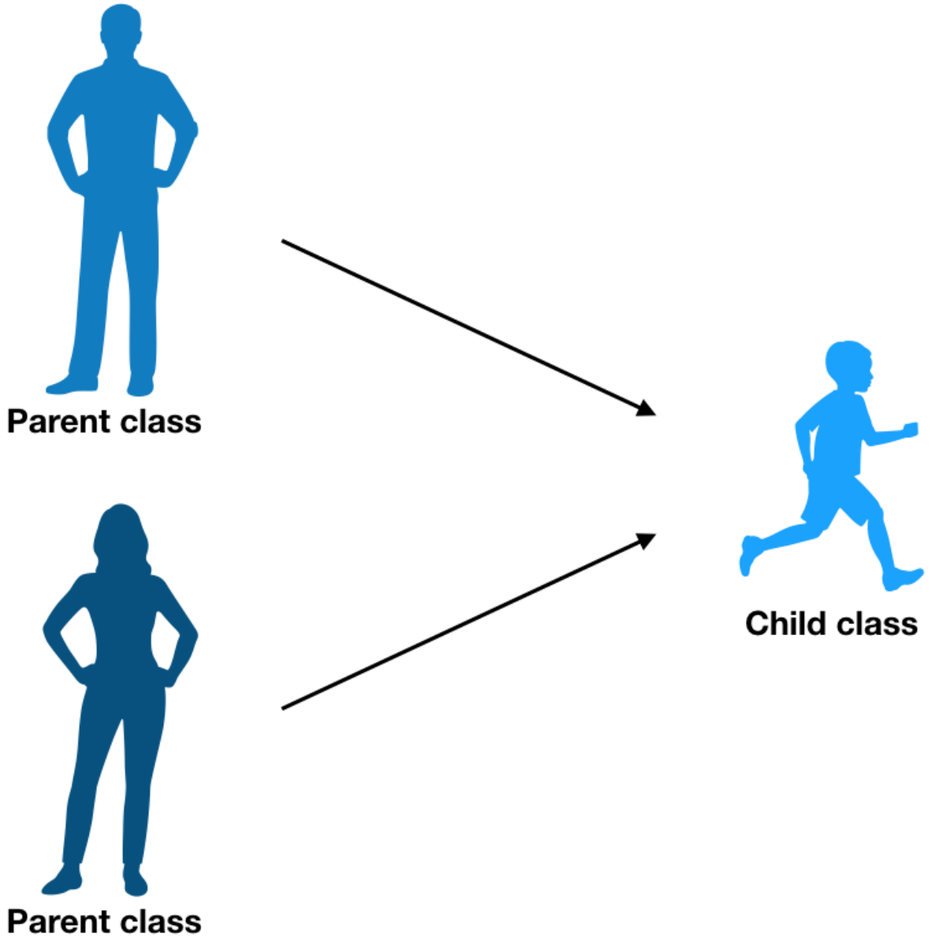
```
import my_package

# Create instance of MyClass
my_instance = my_package.MyClass(value='class attribute value')

# Print out class attribute value
print(my_instance.attribute)
```

The DRY principle

Adding `_tokenize()` method

```
# Import function to perform tokenization
from .token_utils import tokenize

class Document:
    def __init__(self, text, token_regex=r'[a-zA-z]+'):
        self.text = text
        self.tokens = self._tokenize()

    def _tokenize(self):
        return tokenize(self.text)
```

Multiple inheritance



The self convention

working in `work_dir/my_package/my_class.py`

```
# Define a minimal class with an attribute
class MyClass:
    """A minimal example class

    :param value: value to set as the ``attribute`` attribute
    :ivar attribute: contains the contents of ``value`` passed in init
    """

    # Method to create a new instance of MyClass
    def __init__(self, value):
        # Define attribute with the contents of the value param
        self.attribute = value
```

The DRY principle

Let's Practice

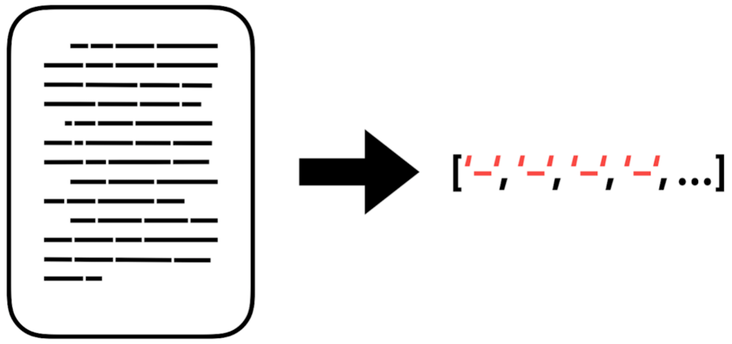
SOFTWARE ENGINEERING FOR DATA SCIENTISTS IN PYTHON

Multilevel inheritance and super

```
class Parent:
    def __init__(self):
        print("I'm a parent!")


class Child(Parent):
    def __init__(self):
        Parent.__init__()
        print("I'm a child!")


class SuperChild(Parent):
    def __init__(self):
        super().__init__()
        print("I'm a super child!")
```

Non-public methods

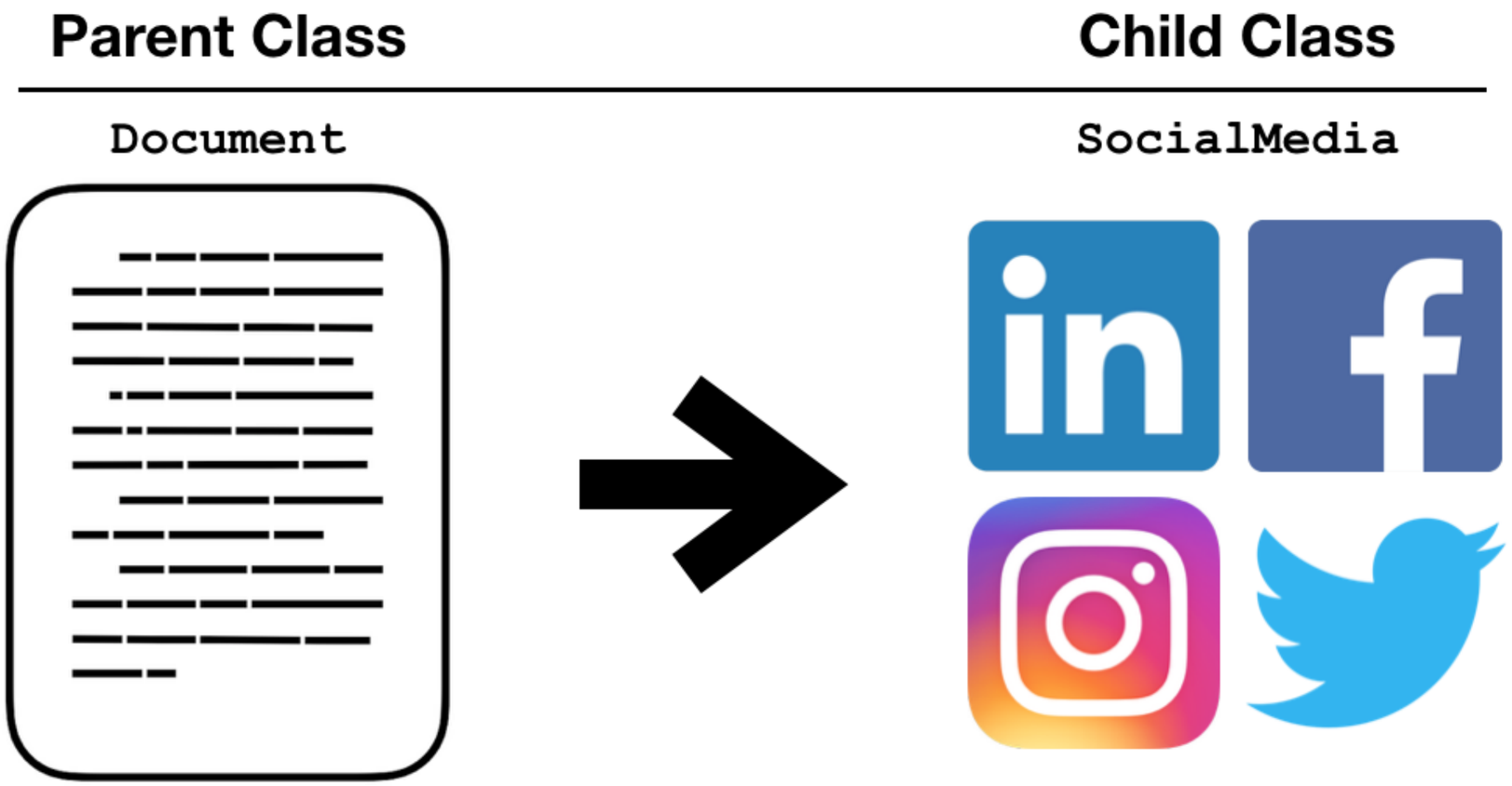
```
def __init__():
    ...
```



The risks of non-public methods

- Lack of documentation
- Unpredictability

Intro to inheritance



Multilevel inheritance and super

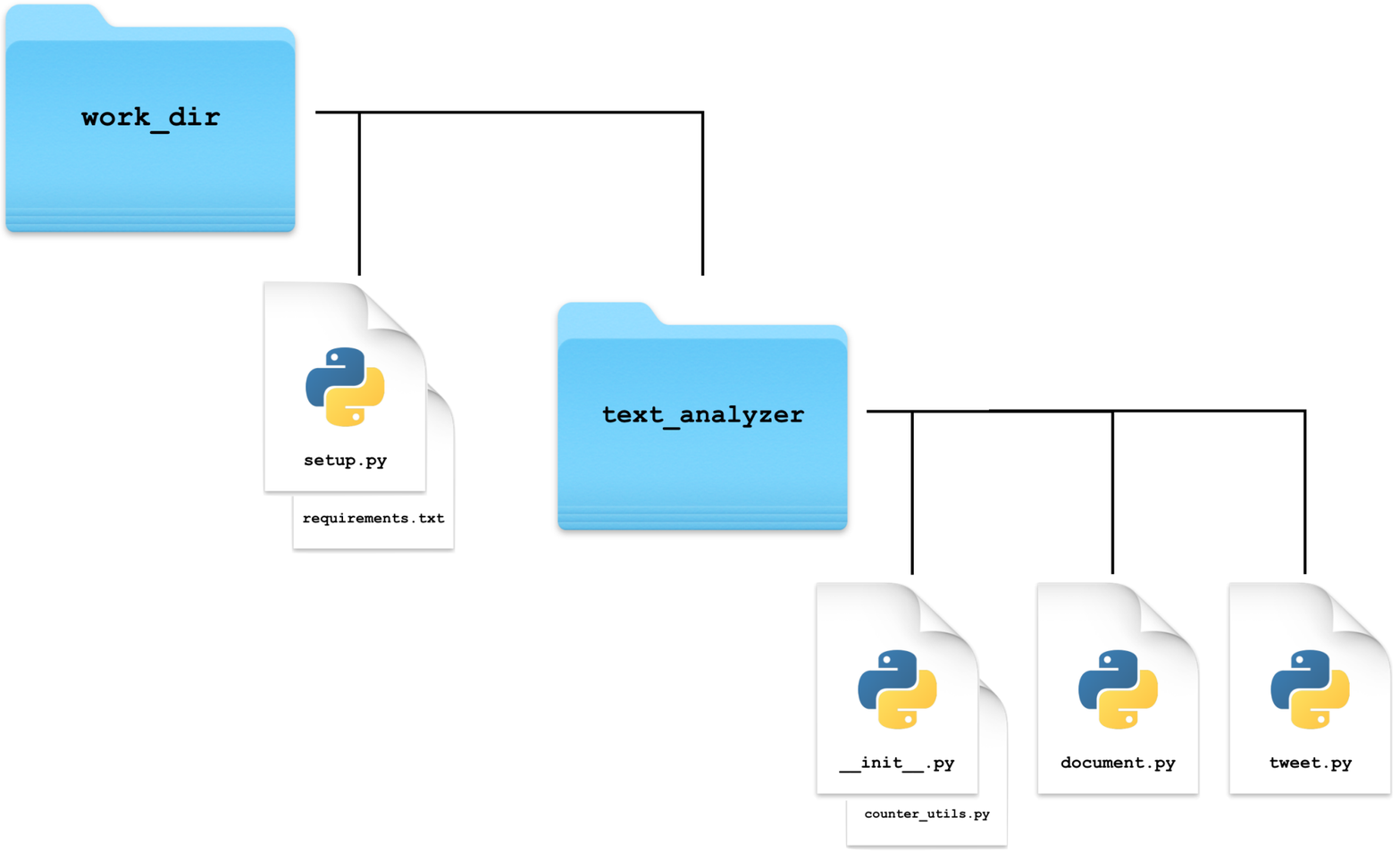
```
class Parent:
    def __init__(self):
        print("I'm a parent!")


class SuperChild(Parent):
    def __init__(self):
        super().__init__()
        print("I'm a super child!")


class Grandchild(SuperChild):
    def __init__(self):
        super().__init__()
        print("I'm a grandchild!")
```

Keeping track of inherited attributes

```
# Create an instance of SocialMedia
sm = SocialMedia('@DataCamp #DataScience #Python #sklearn')

# What methods does sm have?  ¯\_(?)_/¯
dir(sm)
```

```
['__class__', '__delattr__', '__dict__', '__dir__', '__doc__', '__eq__',
'__format__', '__ge__', '__getattribute__', '__gt__', '__hash__', '__init__',
'__init_subclass__', '__le__', '__lt__', '__module__', '__ne__', '__new__',
'__reduce__', '__reduce_ex__', '__repr__', '__setattr__', '__sizeof__',
'__str__', '__subclasshook__', '__weakref__', '_count_hashtags',
'_count_mentions', '_count_words', '_tokenize', 'hashtag_counts',
'mention_counts', 'text', 'tokens', 'word_counts']
```

Inheritance in Python



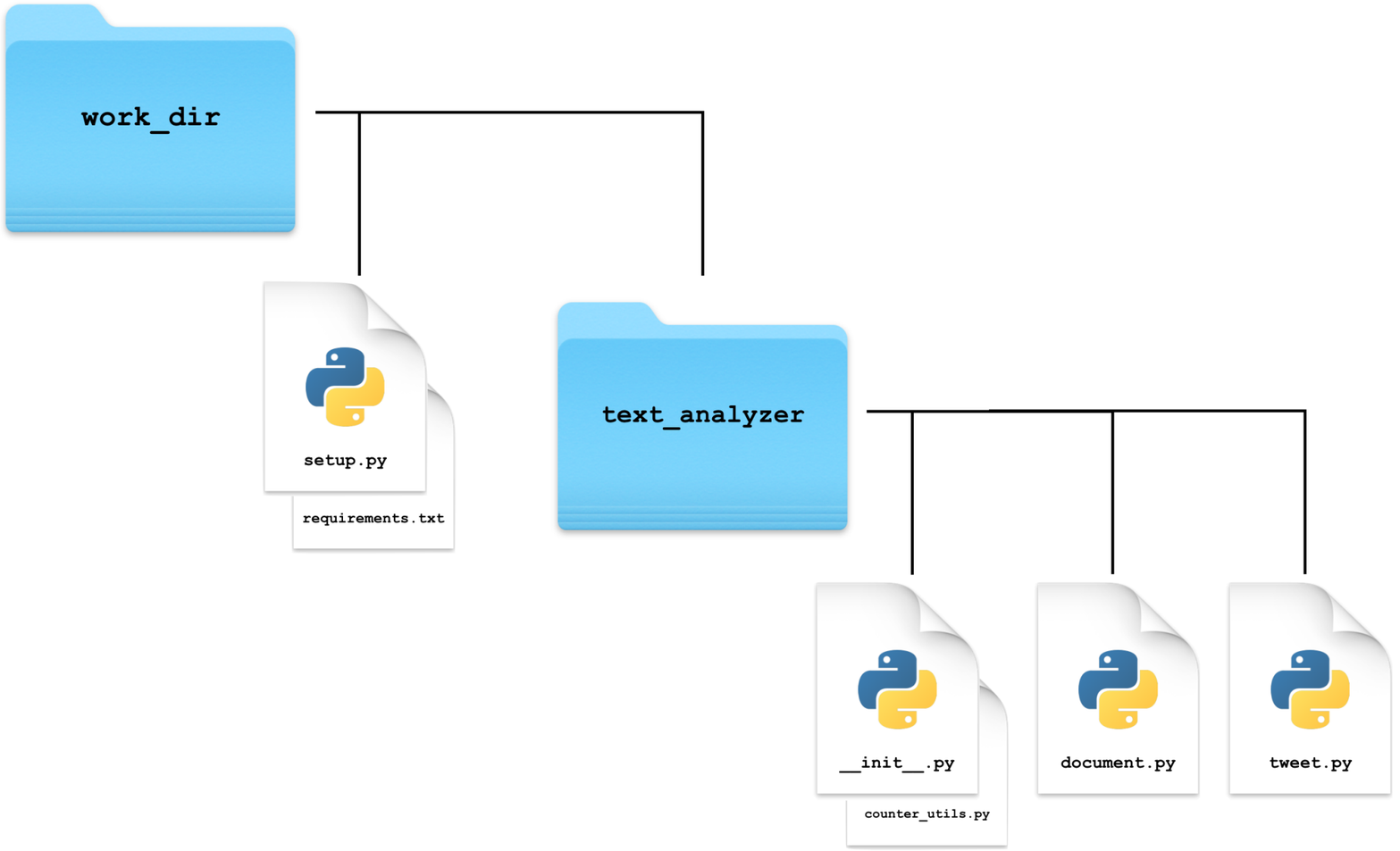
Let's Practice

SOFTWARE ENGINEERING FOR DATA SCIENTISTS IN PYTHON

Let's Practice

SOFTWARE ENGINEERING FOR DATA SCIENTISTS IN PYTHON

Inheritance in Python



Let's Practice

SOFTWARE ENGINEERING FOR DATA SCIENTISTS IN PYTHON