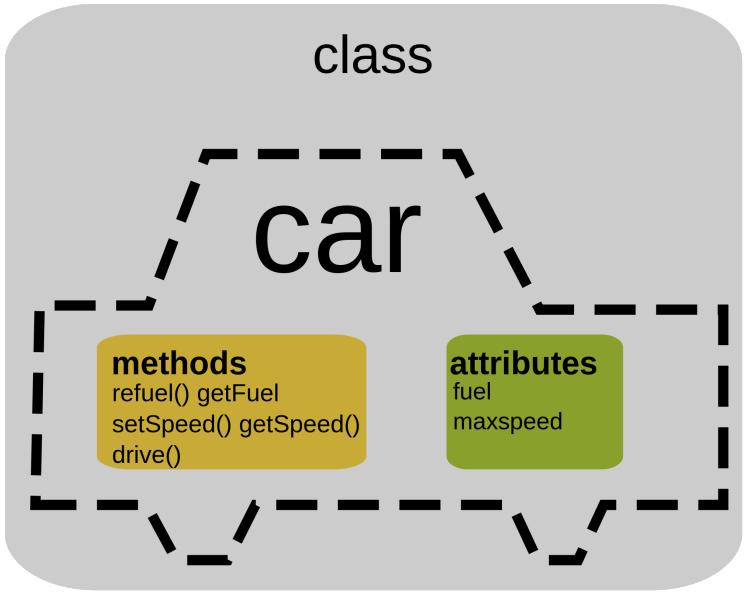



# Python Introduction

MODERN DATA ANALYTICS [G0Z39A]

PROF. DR. IR. JAN DE SPIEGELEER

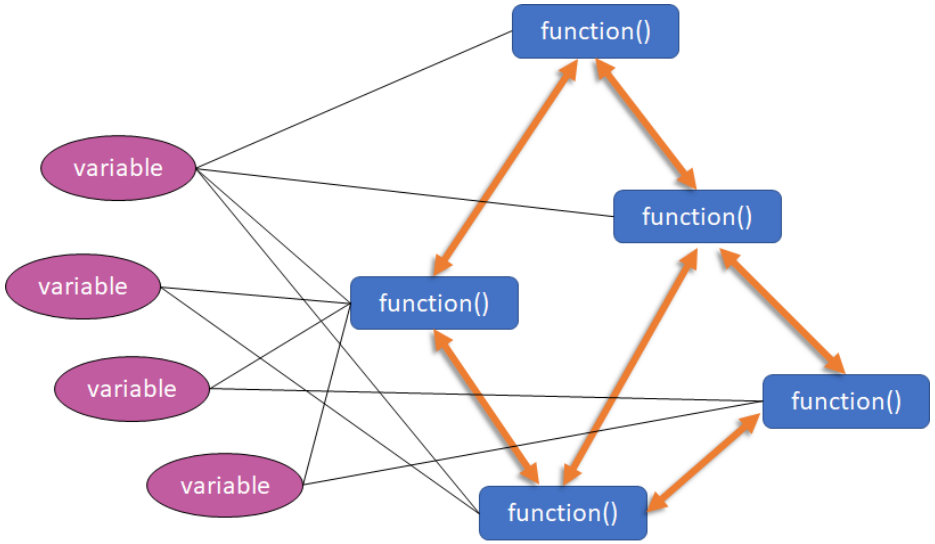
# Object Oriented Programming

HTTPS://GITHUB.COM/DESPIEGJ/GOZ39A. (MASTER BRANCH)


# List of tutorials

- https://bit.ly/38AE7Rj
- https://bit.ly/3ryOqOa
- https://bit.ly/3poTrHq
- …

# Without Object Oriented Programming



# Classes and Objects

Python uses a programming pattern called object-oriented programming, which models concepts using classes and objects

- **classes** represent concepts
- **objects** are instances of classes

# Classes and Objects

CAR


# Classes and Objects

CAR

*class Car:*

*class BMW(Car):*

*class Peugeot(Car):*

Inheritance of Classes

Mycar = BMW(grey,diesel,series 7)

Mycar = Peugeot(white,diesel,3008)

Objects

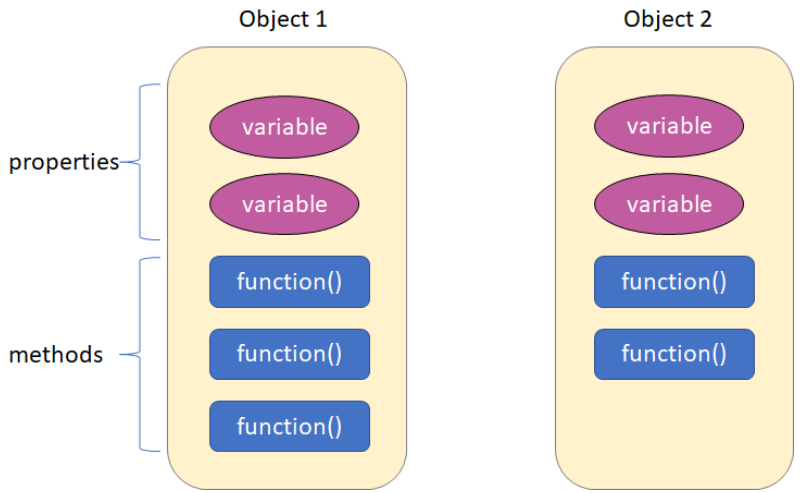
# Methods and Attributes

The core concept of object-oriented programming comes down to **attributes** and **methods** associated with a class:

- **Attributes/Properties** are the characteristics of a class.
- **Methods** are the functions associated to a class.

In the car example

- **Attributes/Properties** : color, fuel type....
- **Methods** : break(), turn(), start(),....



# Why OOP for a data-scientist ?

In Python everything is a class

Key data science libraries, such as pandas, numpy, and scikit-learn all heavily rely on OOP.

In scikit-learn a regression model (for example) is as an instance of a class, and it has a fit() method to train your machine learning model or a predict() method for forecasts.

Object oriented code allows for reusable and extendable code. You can use these functions and classes in repeated analyses, or create new projects that utilize some of the existing code, reducing time to produce results.

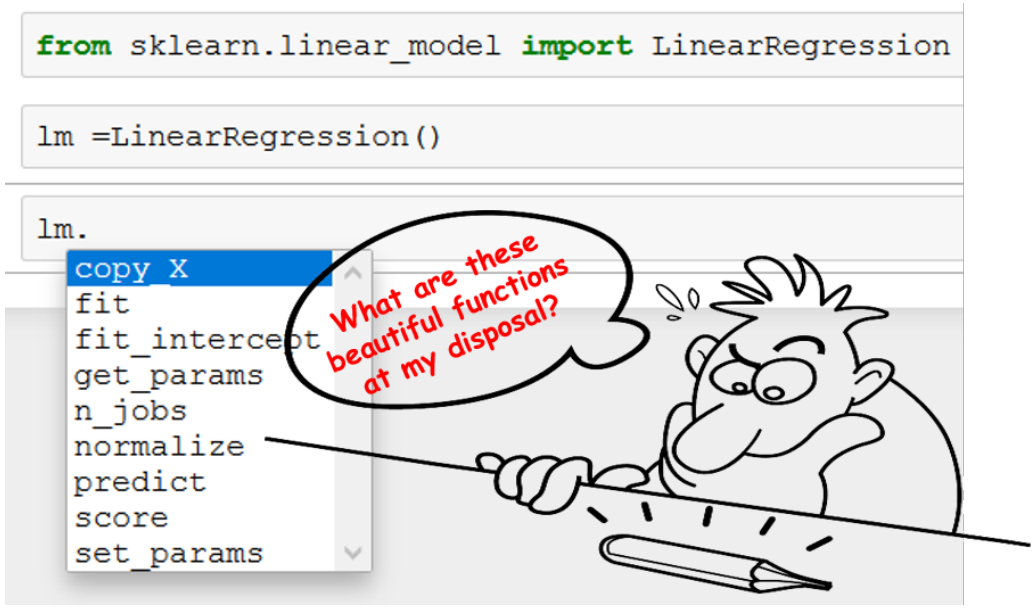
It can be much easier to spot bugs if you write clean, object oriented code.

It makes it easier to test and debug code when the pieces are more modular and broken down.

Object oriented programming allows for parallel development between multiple data scientists who want to work with the same codebase for their projects.

**Cons**
There can be a learning curve when starting to utilize object oriented programming and may take some time to get used to.

# Why OOP for a data-scientist ?



# Let’s get convinced with a simple example

BUILD A LINEAR REGRESSION MODEL (AS YOU ALWAYS DO) OR USING OBJECT ORIENT PROGRAMMING.

Linear_regression.ipynb