# Training Assignment 09

NUMA01: Computational Programming with Python

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In this exercise we study inheritance of classes.

## Tasks

This assignment has 4 tasks.

## Task 1

Define an abstract `class PolyGon`. It should have a method `plot` which plots the polygon by drawing its edges. It should also have an `__init__` method, which takes a list of corner points as input. Corner points are described by arrays with shape `(2,)` describing the coordinates of the corners. The `__init__` method assigns this corner list as an attribute and also computes the edges. (See also the corresponding method in the triangle example (course book p. 121 and p. 126).

## Task 2

Define a class `Rectangle` which inherits as much as possible from the parent class PolyGon. Provide it also with a method to compute the area.

## Task 3

Define a third class `SpecialRectangle` which describes Rectangles which have all its edges parallel to the coordinate axes. It should be constructed by inheritance from the class `Rectangle`.

## Task 4

Give this class a method `__contains__` such that for two given SpecialRectangles $A$ and $B$ the statement `A in B` evaluates to `True` if $A$ is contained in $B$ and `False` otherwise.