Assignment 3

Table of contents

Problem 1

Define a class with the name particle with a constructor that initializes the property D with twice the value supplied as an argument to the constructor.

```
class particle:
    def __init__(self,R):
        self.D=2*R
```

Problem 2

Write a class particle that has a class variable id. Implement a constructor that assigns a unique id property to each instance from the class id, increasing by 1 each time an instance (object) is created. The first created object id should be 1.

```
class particle:
    id = 0
    def __init__(self):
        particle.id+=1
        self.id = particle.id

    def __del__(self):
        particle.id-=1
```

Problem 3

Write a class particle that is constructed with two parameters that are stored in the properties R and type_t of the object (R goes first). The type_t property should be of type string and be either “circle” or “square”.

Write a class method area that calculates the area of the object from the parameter R depending on the property type_t. The result of the area calculation should be stored in the property A, which should be 0 initially.

Create an object c which is a circle and compute its area. Create an object s which is a square without computing its area. The R parameter of these objects can be an arbitrary positive number.

You have two answer attempts without penalty.

```
from math import pi

class particle:
    def __init__(self, R, type_t):
        self.R = R
        self.type_t = type_t
        self.A = 0

    def area(self):
        if self.type_t == "square":
            self.A = self.R**2
        elif self.type_t == "circle":
            self.A = pi*self.R**2
        else:
            self.A = 0

c=particle(3,"circle")
c.area()
s=particle(3,"square")
```

```
c.A
```

```
28.274333882308138
```