Introduction to Programming using PYTHON

Session 7

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INESC-ID

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Part I

Object-oriented Programming

Implement a class `Person` that keeps track of the population size. An instance of `Person` should have a name, be able to greet someone `sayHi()` , to tell the size of the population `howMany()` and say something when dying including how many people are left using the special method `__del__()`

```
class Person:
  '''Represents a person.'''
  population = 0
  def __init__(self, name):
    '''Initializes the person's data.'''
    self.name = name
    print '(Initializing %s)' % self.name
    Person.population += 1
  def __del__(self):
    '''I am dying.'''
    print '%s says bye.'  % self.name
    Person.population -= 1
    if Person.population == 0:
      print 'I am the last one.'
    else:
      print 'There are still %d people left.'  % Person.population
  def sayHi(self):
    '''Greeting by the person.'''
    print 'Hi, my name is %s.'  % self.name
  def howMany(self):
    '''Prints the current population.'''
    if Person.population == 1:
      print 'I am the only person here.'
    else:
      print 'We have %d persons here.'  % Person.population
```

Implement the classes `Toll`, `Vehicle`, `Car` and `Truck`. A `Vehicle` should have an identification. A `Car` and a `Truck` should know how much they need to pay at the `Toll` and the `Toll` should keep a record of how much it has charged and how many vehicles have crossed it, alogside a complete log of their identification. (Make sure the identification is unique). Write a program where you create 1000 vehicles. You create a car with probability 0.8 and a truck with probability 0.2.

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`Proposed resolutin at http://algos.inesc-id.pt/~ndm/documents/python/exercise/`