1. Write the implementation of a class Person which has fields:
string name; unsigned int age; unsigned int height,

and methods:

void printAge(); void printHeight(); void print().

2. Propose methods to obtain and modify fields without breaking their private status.

3. Propose an implementation of class Address and add it as a field to the class Person together with appropriate methods.

4. In this exercise we will write a library of simple geometrical objects and operations defined on them.

Propose implementations of the following 2D objects:

Point
  - distance between two points
  - support for Cartesian and polar coordinates (two constructors and print method with conversion)
  - translation
Vector
  - scalar product
  - addition
- subtraction
  - L^2-norm (Euclidean norm)
  - cosine similarity (<A,B>/||A||||B||)
Line segment
  - length
Circle
  - diameter
  - perimeter
  - area
Rectangle
  - area
  - perimeter
  - diagonal
Polygon
  - list of inner angles defined by its sides
  - perimeter
  - assume that the first vertex is also the last one

Moreover, all the classes should contain methods: print(), get*() and set*(). Try to build complex objects while using geometrical primitives such as points.

5. Modify your implementation of class Vector in such a way that it should become a subclass of your class Point.

6. Change your implementation of classes Circle and Rectangle in such a way that they will inherit from an abstract class GeoObject – what kind of common methods this class should have? Propose an implementation of an abstract class GeoObject.

7. Explain the difference between structures (defined with the protected work `struct`) and classes (defined with the protected work `class`) in C++. Try to figure this out experimentally. Do not search over the Internet! Send your explanation to: kacper.pluta@esiee.fr