

JAVA PROGRAMMING – FINAL ASSIGNMENT

SCOPE:

This is your final assignment for Java Programming course. You are asked to write a Java program for ONE of the following tasks (your choice). There are three tasks, each of different difficulty level.

- If you solve TASK A, your maximal grade is 3.0.
- If you solve TASK B, your maximal grade is 4.0.
- If you solve TASK C, your maximal grade is 5.0.

Of course, if you fail to write a program (or the code is of bad quality), your grade will be lower.

You can choose only ONE task.

DELIVERY:

Please copy your code to a text editor, and save it as a plain txt file of name taskA.txt, taskB.txt or taskC.txt. In the code, you should specify your first and family name as a comment (preferably at the beginning).

Attach the text file to an email (**as an attachment**). In the message body state your name again (it is easier for me to look for the mail). The subject of the email should be only “**VISTULA JAVA**” (nothing more – this allows my email box rule to properly sort messages).

Please send this email to my address: w.moscibrodzki@gmail.com

DEADLINE:

The final deadline is **31st Jan**, but if you send your work before the end of **21st** (Sunday), your grade will be automatically raised by 0.5 (so you can get 3.5 for TASK A etc.).

Here come the tasks:

TASK A:

Write a code that implements the class Point, which represents the mathematical point in 3D space. Create constructor, setters and getters and method distance() that returns a distance from the center of the space (that is, point $x=0, y=0, z=0$). Write a method that prints the coords of the point and distance on the screen.

TASK B:

Create a base class named `Vehicle` that contains basic characteristics common to all vehicles, such as brand, maximum velocity and year of manufacture. Then create three derived classes: `Car`, `Motorcycle` and `Airplane` which inherit from the `Vehicle` class and add their specific properties. For example, the `Car` class might include an additional field specifying the number of doors, the `Motorcycle` class – the type of motorcycle, and `Plane` – the maximum operational altitude. Each class should have appropriate constructors, accessors (getters and setters), and a method `displayInformation()` that displays information about the vehicle.

TASK C:

Implement two classes: `Square` and `Circle` in a 2D space. `Square` should be defined by two opposite vertexes: points (x,y) , and you can assume that the figure sides are parallel to X-axis and Y-axis. `Circle` is defined by center point and radius. Both classes should inherit a method `area()` from a base class `Shape`. The method should return the proper calculated area of the figure. Prepare setters, getters, constructors and `display()` methods. The `Circle` constructor should fail if the number of `Circles` exceeds the number of `Squares` by 2 (and vice versa) – so the difference between the number of object cannot be higher than 2.

GOOD LUCK!