General problems

Bear in mind that the primary goal is not to develop highly computational efficient solutions to the problems below. The intention is, on the contrary, to reason on the *right* application of the object oriented paradigm to the design of solutions and their implementation in Java.

Thus, specific features of Java which are appropriate to code the solutions to these problems, will be discussed in tutorials. You should, however, develop your own solutions first.

1. Write a program that, given a string read from the keyboard, checks if it is a *palindrome* (a special word which reads the same, whether one starts from the left and moves to the right, or the other way around).

   Suggestion – Build your solution using a *FIFO* and a *stack*.

2. Write a program that runs the solution of *Towers of Hanoi* and prints on the screen all the movements that take place.

   Suggestion – Use in your solution a *stack* to implement the functionality of a *tower*.

3. Build a library which has functions to carry out the arithmetic operations of addition and multiplication on non negative operands of any length (meaning that there is no upper limit to the number of decimal digits present).

   Suggestion – In order to test the library, write a program that reads the operands from the keyboard and prints the result on the screen.

4. Build a library which has functions to carry out the four basic arithmetic operations indiscriminately on double precision FP operands, either real or complex.

   Suggestion – In order to test the library, write a program that reads the operands from the keyboard and prints the result on the screen.