Problem 1

1. Print the same natural number (of the order of a few hundreds) defined by a literal in the binary, octal, decimal and hexadecimal system.
2. Print the value of the character literal `'A'` and then the value of the expression `'A'+0`. Explain the result.
3. Print the value of the expressions `'!'+'!'` and `(char)('!'+'!')`. Explain the result.
4. Print the word Żółć character by character (using **print** instead of **println**) given as character literals in the form `'\uXXXX'`.
5. Define two variables, `a` and `b`, of the logical type (**boolean**) and then assigning to them all possible values print the values of expressions `a && b`, `a || b` and `a ^ b`. Try to deduce the meaning of the operations denoted by symbols `&&`, `||` and `^`.
6. Define two variables, `a` and `b`, of type **int** and then print the values of the expressions `a < b` and `a <= b`. Of what type are these expressions?
7. Print tha value of the expression $4/3$ – why is it what it is? What to change to get the expected result?
8. Does the following snippet compile?

```
short a = 5, b = 6;
short c = a + b;
System.out.println(c);
```

   What to change to get the expected result?
9. Define two variables, `a` and `b`, of type **int** and initialise them with the value `1_500_000_000`. Then print their sum `a+b`. What to change to get the expected result?
10. What are the minimum and maximum numbers which are five-digit numbers in the decimal system. Define a variable `a` of type **int** from this range and print, from the last to the first, its digits in the decimal system (each digit in a separate line). Print also the sum of these digits.
11. What are the minimum and maximum numbers which are five-digit numbers in the binary system. Define a variable `a` of type **int** from this range and print, from the last to the first, its digits in the binary system (each digit in a separate line). Print also the sum of these digits.

12. What are the minimum and maximum numbers which are four-digit numbers in the octal system. Define a variable `a` of type **int** from this range and print, from the last to the first, its digits in the octal system (each digit in a separate line). Print also the sum of these digits.

13. What are the minimum and maximum numbers which are three-digit numbers in the hexadecimal system. Define a variable `a` of type **int** from this range and print, from the last to the first, its digits in the hexadecimal system (each digit in a separate line, digits greater than 9 can be written in the decimal system). Print also the sum of these digits.

Problem 2

Write a program which reads three integers (say, `a`, `b` and `c`), then prints these three numbers

```
System.out.println(a + " " + b + " " + c);
```

and then rearranges the values in these variables in such a way that `a` contains the smallest of the three numbers, `b` — the middle one, and `c` — the largest. Print again

```
System.out.println(a + " " + b + " " + c);
```

and you shoud see the same three numbers, but in ascending order.

Any two (or all three) numbers may be equal. **Do not use arrays or Strings!**

Problem 3

Write a program which reads three numbers, `a`, `b` and `c`, and then finds and prints the middle (by value) of them. Variables `a`, `b` and `c` should not be modified.

Problem 4

Write a program which reads five numbers of type **int** and after reading the third, fourth and fifth prints the sum of three numbers last read. You can define at most three variables of type **int**. Do not use loops or arrays.

Problem 5

Write a program which reads four integer numbers and prints the difference between the largest and the smallest of them. You can create only three **int** variables.

Don't use arrays, strings or collections.

Problem 6

Write a program which reads in a loop a sequence of integral numbers until the user enters 0, which just signals the end of data and is not then taken into account. After that, the program prints the value of the smallest and the largest element of the sequence and the number of occurrences of these values in the whole sequence.
For example, for the sequence $(2, 3, 4, 2, 7, 4, 7, 2)$, the program should print:

```
Min = 2, 3 times
Max = 7, 2 times
```

Note: do *not* use arrays or any other collections!