Problem 1

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 2

Write a program which reads four integer numbers and prints the difference between the largest and the smallest of them. Don't use arrays, strings or collections.

Problem 3

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 4

Write a program reading (using a **Scanner**) three values of type **boolean** and storing them in three variables (e.g., a, b and c). Then define five additional logical variables and set their values according to the following interpretation (abbreviation *iff* stands for *if, and only if*):

- allThree: **true** *iff* all three values are **true**;
- exactlyOne: **true** *iff* exactly one of them is **true**;
- exactlyTwo: **true** *iff* exactly two are **true**;
- atLeastOne: **true** *iff* at least one of them is **true**;
- atLeastTwo: **true** *iff* at least two of them are **true**;

NOTE: entering a logical value from the keyboard, type the word *true* or *false*.

The following program

download *Bools.java*

```
import java.util.Scanner;

public class Bools {
    public static void main(String[] args) {
        Scanner sca = new Scanner(System.in);
        System.out.print("Enter three boolean " +
                         "values (true or false) ");
        boolean a = sca.nextBoolean();
```

```
            boolean b = sca.nextBoolean();
            boolean c = sca.nextBoolean();
            sca.close();

            boolean allThree   = ...
            boolean exactlyOne = ...
            boolean exactlyTwo = ...
            boolean atLeastOne = ...
            boolean atLeastTwo = ...

            System.out.println("a, b, c = " + a + ", " + b +
                    ", " + c + "\nallThree:   " + allThree +
                    "\nexactlyOne: " + exactlyOne +
                    "\nexactlyTwo: " + exactlyTwo +
                    "\natLeastOne: " + atLeastOne +
                    "\natLeastTwo: " + atLeastTwo);
        }
    }
```

should, for some combinations of input values, print

```
a, b, c = false, true, false
allThree:   false
exactlyOne: true
exactlyTwo: false
atLeastOne: true
atLeastTwo: false

a, b, c = true, true, false
allThree:   false
exactlyOne: false
exactlyTwo: true
atLeastOne: true
atLeastTwo: true

a, b, c = true, true, true
allThree:   true
exactlyOne: false
exactlyTwo: false
atLeastOne: true
atLeastTwo: true
```
