Problem A: It's Hot! It's Cold!

A meteorologist is curious to see how temperature changes from one day to another in Chicago. Does it mostly go down or up? Or does it mostly stay the same? For this problem, you will write a function to help answer those questions. To help us find this out, the University of Chicago Weather Service has been dutifully taking a daily temperature measurement from the top of Ryerson Physical Laboratory. So, suppose we were given the following temperature measurements:

Day	1	2	3	4	5
Temperature	10	15	15	20	5
Change	–	Up	Same	Up	Down

We are concerned with how temperature changes relative to the previous day and wish to count the number of days when the temperature goes down, the number of days it stays the same, and the number of days it goes up. So, in this case, there is one day when it went down (from 20 to 5 in day 5), one day where it stayed the same (day 3's temperature is the same as the previous day's), and two days where the temperature went up (from 10 to 15 in day 2, and from 15 to 20 in day 4). Notice how we can't compute a change for day 1, since we have no data about the previous day's temperature.

Here are some sample inputs and outputs:

Sample Input	Sample Output
10 15 15 20 -5	1 1 2
-1 -10 -1 -10 -10	2 1 1
10 9 8 8 8 20 25	2 2 2

The output is listed in the following order:

- the number of times the temperature went down,
- the number of times it stayed the same, and
- the number of times it went up.

Your task is to complete the function `itshotitscold`. Here is the skeleton code for this task:

```
import java.util.List;

public class Problem1 {
    /**
     * This function takes a list of temperatures. It returns a list
     * of three integers: the number of times the temperature went
     * down, the number of times the temperature remained the same,
     * and the number of times the temperature went up.
     *
     * temperatures: a list of temperatures represented as integers
     *
     * Returns: A list of three integers representing the number of
     *   times the temperature went down, the number of times the
     *   temperature remained the same, and the number of times the
     *   temperature went up.
     */
    public static List<Integer> itshotitscold(List<Integer> temperatures) {
        // YOUR CODE HERE
        // Return included to allow the skeleton code to compile
        return null;
    }
}
```

When you take the placement exam, you will be expected to copy the skeleton code into a file and then complete the function. For the practice problems, we have provided a file named `Problem1.java` that includes the above header for your convenience.