Assignment A1 - Temperatures

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Temperature measurements are taken in the same place for a number of weeks. The measurements are done a specific number of times — the same number of measurements each week. At the end of the measurement period the collected data is to be processed; for each week the lowest, highest, and the average temperature is to be determined. The lowest, highest, and average temperature is also determined for the entire measurement period.

Files

The file `Temperatures1.java` contains the class `Temperatures1`, which has the method `main`. The method reads the temperatures from standard input and displays them. The lowest, highest, and average temperature for each week is calculated and stored. These results are printed to the standard output device. Following that, the lowest, highest, and average temperatures for whole measurement period are determined. These temperatures are also printed.

The file `Temperatures2.java` contains the class `Temperatures2` with the methods `main, read, print, min, max,` and `sum`. The `main` method reads the temperatures from standard input and displays them. The lowest, highest, and average temperature for each week is calculated and stored. These results are printed to the standard output device. Following that, the lowest, highest, and average temperatures for the whole measurement period are determined. These temperatures are also printed.

The `main` method in class `Temperatures2` uses the methods `read, print, min, max,` and `sum`. The method `read` reads the temperatures into a given array. The method `print` prints the temperatures in a given array to the standard output device. The method `min` returns the lowest temperature in a given array. The method `max` returns the highest temperature in a given array. The method `sum` returns the sum of the temperatures in a given array.

The file `TemperaturesData.txt` contains data created by an execution of the program `Temperatures1` or the program `Temperatures2`.

The file `TemperaturesProcessing.pdf` shows how temperature data can be specified in a table. In addition it shows how these data are stored in the programs `Temperatures1` and `Temperatures2`.

Assignment

Make complete the classes `Temperatures1` and `Temperatures2` so that they perform the intended work.

Study the given source codes. Create your own procedures to determine the different temperatures instead of relying on methods from the standard library. The temperatures are not to be sorted. Do no create new variables and methods in class `Temperatures1`. The classes `Temperatures1` and `Temperatures2` perform the same work but are independent of each other.

The student shall be able to explain the various operations by referring to the figures in the file `TemperaturesProcessing.pdf`. Custom figures may support the explanations.

Comment

The given programs are not to be altered, only extended. Write your code in the places marked `add code here`.

As a preparation for this assignment, the programs `IntegerSequence` and `IntegerMatrix` shall be studied.