10.11.2021

1. Using any random number generator, generate a sequence of 100 numbers. Write a program to calculate the average, maximum, minimum for that sequence, calculate and print the average values for every ten numbers.
2. Find information on the exchange rates for the last year and load this information into the program in accordance with your variant. Display the result as a graph using any available graphical output program.

Variant 3) take USD and CNY

*Remark:* the variant number depends on the student's number in the Moodle list. The variant number is equal to the remainder of dividing the student's number by six. For example, if the student's number is 9 in the group list in the Moodle system, the remainder from dividing 9 by 6 is 3, then the student solves Variant 3. The solution to the wrong variant won’t be accepted!

1. Find the maximum, minimum and average rate for the considered period. Find the median. (Median is such value that there is equal amount of entries above and below that value presented in the set).
2. Calculate the average rates of the currencies for each month and display the results in the form of graphs. Place daily rate charts and monthly averages on the same picture.
3. Compute parameters a and b and draw a graph of the linear function Y (k) = ak + b, which best approximates the graphs of the exchange rates (build the so-called linear regression) by the formulas:

, 

Overlined symbols indicate the following average values:

 , , .

**Problem 6.** Interpolate the given values. Use interpolation methods described below. To solve the problem you need to find all the interpolated values for all indices with some small step, for example 0.01. Set the random values not bigger than 100 by absolute value:

3) Given array of 10 points in square on segments [0,1] on both x and y axes (set the random points), there are some colours attached to this points. Find closest neighbour interpolation of the square to this set of points and draw the square where each pixel coloured according the colour of the closest point. (To perform this task consider square not continuous but as a grid of small step, for example 0,01)