PROGRAMMING PARADIGMS AND LANGUAGES – HASKELL – test A-En-20

Task solutions should be saved in one file with the .hs extension named according to the sample: SurnameName-DUIa.hs (e.g. LazinskaA-DUIa.hs).

Put your first and last name at the beginning of the file (as a comment).

The file should be sent via the Moodle platform as the part of the current assignment on 22.04.2020 between 18:00 and 19:30.

NOTE: The file must be compileable. Commands that generate errors should be commented out or deleted.

Grading scale: 0-7 p. – 2; 8-10 p. – 3; 11 p. – 3+; 12-13 p. – 4; 14 p. – 4+; 15-16 p. – 5.
Positive grade provided that at least 3 points for at least one exercise have been obtained.

1) (0–4 p.)

a) Define the sequence $(a_n)_{n=1,2,\ldots}$ such that $a_n = 2(n-1)^2$ when n is divisible by 3, and $a_n = 1$ in other cases.

b) Define a function that for an argument n creates the list of n initial numbers of the sequence $(a_n)_{n=1,2,\ldots}$.

2) (0–4 p.) Define a function that for a list of numbers, given as an argument, creates a list of elements of given list multiplied by 5.

a) Present a solution in which the defined function is not recursive.

b) Present a solution in which the defined function is recursive.

3) (0–4 p.) Define a recursive function which removes empty sub-lists from the list of lists.
Example: for the list [[2,9],[],[5,6,7],[],[0]] we obtain [[2,9],[5,6,7],[0]]. NOTE - elements of sub-lists do not have to be numbers.

4) (0–4 p.) Define a function that reads 2 real numbers given by an user and then displays the arithmetic mean of these numbers. Display instructions for an user.