

ASSIGNMENT 2

We only accept programs that are written using the algorithmic patterns. The program should not use any datatype (for example arrays, vectors, strings) whose size is proportional to the length of the file. The program cannot have loops within loops, define functions to achieve this (you can call a function which has a loop from within a loop). Use the enumerator algorithmic patterns and implement custom enumerators as classes.

1. At every competition of the National Angling Championship, the results of the competitors were recorded and put into a text file. Every line of the file contains the name of the angler the ID of the competition (string without spaces), and the species and the size of the caught fishes (pair of a string without spaces and a natural number). Data is separated by space or tab. The lines of the file are ordered by contest ID. The file is assumed to be in the correct form. Sample line in the file:

Peter LAC0512 carp 45 carp 53 catfish 96

- (1) Give the first angler with the contest ID, who had at least one contest without catch.
- (2) On which contest were the most fishes caught?

2. At every competition of the National Angling Championship, the results of the competitors were recorded and put into a text file. Every line of the file contains the name of the angler the ID of the competition (string without spaces), and the species and the size of the caught fishes (pair of a string without spaces and a natural number). Data is separated by space or tab. The lines of the file are ordered by contest ID. The file is assumed to be in the correct form. Sample line in the file:

Peter LAC0512 carp 45 carp 53 catfish 96

- (1) Give the angler who has caught the most fishes on one contest. Give the ID of the contest and the number of caught fishes, too.
- (2) How many contests there are where no fishes were caught?

3. At every competition of the National Angling Championship, the results of the competitors were recorded and put into a text file. Every line of the file contains the name of the angler the ID of the competition (string without spaces), and the species and the size of the caught fishes (pair of a string without spaces and a natural number). Data is separated by space or tab. The lines of the file are ordered by contest ID. The file is assumed to be in the correct form. Sample line in the file:

Peter LAC0512 carp 45 carp 53 catfish 96

- (1) Give the angler with the corresponding contest ID who has caught the biggest catfish (it is possible that no one has caught catfish).
- (2) List those contests where catfishes bigger than 30 cm were caught.

4. At every competition of the National Angling Championship, the results of the competitors were recorded and put into a text file. Every line of the file contains the name of the angler the ID of the competition (string without spaces), and the species and the size of the caught fishes (pair of a string without spaces and a natural number). Data is separated by space or tab. The lines of the file are ordered by contest ID. The file is assumed to be in the correct form. Sample line in the file:

Peter LAC0512 carp 45 carp 53 catfish 96

- (1) List those competitions with anglers where carps were caught.
- (2) Is there any competition where at least two anglers have caught carp?

5. At every competition of the National Angling Championship, the results of the competitors were recorded and put into a text file. Every line of the file contains the name of the angler the ID of the competition (string without spaces), and the species and the size of the caught fishes (pair of a string without spaces and a natural number). Data is separated by space or tab. The lines of the file are ordered by contest ID. The file is assumed to be in the correct form. Sample line in the file:

Peter LAC0512 carp 45 carp 53 catfish 96

(1) Is there an angler who has caught only and at least three catfishes on one of his contests? Give the contest ID, too.

(2) How many contests there are where at least one angler has caught only and at least three catfishes?

6. At every competition of the National Angling Championship, the results of the competitors were recorded and put into a text file. Every line of the file contains the name of the angler the ID of the competition (string without spaces), and the species and the size of the caught fishes (pair of a string without spaces and a natural number). Data is separated by space or tab. The lines of the file are ordered by the name of the anglers. The file is assumed to be in the correct form. Sample line in the file:

Peter LAC0512 carp 45 carp 53 catfish 96

(1) How many lines there are in the file where catfish is caught?

(2) Is there an angler who has caught catfish on all of his contests?

7. At every competition of the National Angling Championship, the results of the competitors were recorded and put into a text file. Every line of the file contains the name of the angler the ID of the competition (string without spaces), and the species and the size of the caught fishes (pair of a string without spaces and a natural number). Data is separated by space or tab. The lines of the file are ordered by the name of the anglers. The file is assumed to be in the correct form. Sample line in the file:

Peter LAC0512 carp 45 carp 53 catfish 96

(1) List those angler name-contest ID pairs, where the average size of the fishes is higher than 3.0. Write out the average size, too. If the angler has not caught anything, the average is zero.

(2) Which angler has participated on the most competitions without catching anything?

8. At every competition of the National Angling Championship, the results of the competitors were recorded and put into a text file. Every line of the file contains the name of the angler the ID of the competition (string without spaces), and the species and the size of the caught fishes (pair of a string without spaces and a natural number). Data is separated by space or tab. The lines of the file are ordered by the name of the anglers. The file is assumed to be in the correct form. Sample line in the file:

Peter LAC0512 carp 45 carp 53 catfish 96

(1) Give the biggest caught catfish with its size, the contest ID and the angler's name.

(2) Has every angler caught a catfish bigger than 30 cm?

9. At every competition of the National Angling Championship, the results of the competitors were recorded and put into a text file. Every line of the file contains the name of the angler the ID of the competition (string without spaces), and the species and the size of the caught fishes (pair of a string without spaces and a natural number). Data is separated by space or tab. The lines of the file are ordered by the name of the anglers. The file is assumed to be in the correct form. Sample line in the file:

Peter LAC0512 carp 45 carp 53 catfish 96

- (1) Give the average number of caught catfishes. If no catfish is caught, the average is zero.
- (2) Name the angler who has caught the biggest number of catfishes.
10. At every competition of the National Angling Championship, the results of the competitors were recorded and put into a text file. Every line of the file contains the name of the angler the ID of the competition (string without spaces), and the species and the size of the caught fishes (pair of a string without spaces and a natural number). Data is separated by space or tab. The lines of the file are ordered by the name of the anglers. The file is assumed to be in the correct form. Sample line in the file:
- Peter LAC0512 carp 45 carp 53 catfish 96
- (1) Give the size of the smallest caught catfish with the corresponding angler and contest ID. Be aware that it is not shure that catfish was caught at all.
- (2) Has every angler caught catfish on at least two contests?