Streams in Java

E.g.

```
catNames=myCats.stream().map(Cat::getName).sorted().collect(Collectors.toList());
```

Lambda expressions examples:

- ( ) -> 123;
- (String s) -> s.length()
- s -> s + " ! "
- names -> names.replace("brodicico", "tiplea")
- x -> x.length() < 5
- s -> s.contains("idk")

Intermediate operations:

- *map* - map the items in the collection to other objects according to the Predicate passed as argument; e.g. map(s->s+";")
- *filter* - select elements as per the Predicate passed as argument; e.g. filter(s->s.contains("abc"))
- *sorted* - sort the stream; e.g. sorted(), sorted(Comparator.reverseOrder())
- *distinct* - find unique elements in a stream; e.g. distinct(); distinct(p.getName())
- *limit* - limit the number of elements to be processed in the stream; e.g. limit(3)
- *skip* - skips the first n elements e.g. skip(1)

Terminal operations:

- *forEach* - loops over the stream elements, calling the supplied function on each element; e.g. forEach(System.out::println)
- *collect* -return the result of the intermediate operations performed on the stream; e.g. collect(Collectors.toList())
- *reduce* - performs a reduction on the elements of the stream; e.g. reduce((x,y) -> x+y)
- *min* - returns the minimum element of the stream based on the provided Comparator
- *max* – *e.g.* max(Comparator.*comparing*(Integer::*valueOf*)).get()
- *count*
- *concat*

Exercises

Solve the following exercises using streams:

Given the list of String, write a method that:

1. Gets as parameter a list and prints its elements
2. Returns a sorted list of the lengths of the elements ([“ana”, “petra”] => [3, 5])
3. Gets as parameter a list and adds to each element its length (e.g. getNamesAndLengths([“ana”,”petra”] => [“ana 3”, “petra 5”]))
4. Gets as parameter a list and returns a list where each occurrence of letter ‘a’ is replaced by ‘*’ (e.g. getListAfterReplace([“ana”,”petra”] => [“*n*”, “petr*”]))
5. Returns the list with uppercase letters
6. Returns only the elements whose length is less that 6
7. Prints the first 2 elements whose length is odd and that end with letter ‘a’

Given a list of Integers, write a method that:

8. Returns the sorted list in descending order without duplicates
9. Returns the sum of the elements
10. Returns the number of palindromes in the list
11. Returns the number of even numbers in the list

Given the file message.txt

12. Generate a list of Message
13. Using the list of messages from ex. 12, print the people to whom Petra sends messages
14. Using the list of messages from ex. 12, print the messages that contain questions
15. Using the list of messages from ex. 12, print the questions sent by ana to petra