

Exercises: Streams Part 1

For all the exercises, start with a List of Strings similar to this:

- `List<String> words = Arrays.asList("hi", "hello", ...);`

- 1.** Loop down the words and print each on a separate line, with two spaces in front of each word. Don't use map.
- 2.** Repeat the previous problem, but without the two spaces in front. This is trivial if you use the same approach as in #1, so the point is to use a method reference here, as opposed to an explicit lambda in problem 1.
- 3.** In the previous exercise, we produced transformed lists like this:
 - `List<String> excitingWords = StringUtils.transformedList(words, s -> s + "!");`
 - `List<String> eyeWords = StringUtils.transformedList(words, s -> s.replace("i", "eye"));`
 - `List<String> upperCaseWords = StringUtils.transformedList(words, String::toUpperCase);`Produce the same lists as above, but this time use streams and the builtin “map” method.
- 4.** In the previous exercise, we produced filtered lists like this:
 - `List<String> shortWords = StringUtils.allMatches(words, s -> s.length() < 4);`
 - `List<String> wordsWithB = StringUtils.allMatches(words, s -> s.contains("b"));`
 - `List<String> evenLengthWords = StringUtils.allMatches(words, s -> (s.length() % 2) == 0);`Produce the same lists as above, but this time use “filter”.
- 5.** Turn the strings into uppercase, keep only the ones that are shorter than 4 characters, of what is remaining, keep only the ones that contain “E”, and print the first result. Repeat the process, except checking for a “Q” instead of an “E”. When checking for the “Q”, try to avoid repeating all the code from when you checked for an “E”.
- 6.** The above example uses lazy evaluation, but it is not easy to see that it is doing so. Make a variation of the above example that proves that it is doing lazy evaluation. One way to do this is to track which entries are turned into upper case.
- 7.** Take one of the previous examples where you produced a List, but this time output the final result as an array instead of a List. This is super-easy once you know how, and the class notes show this. But, the syntax looks *very* odd when you first see it.