Search Algorithms - Worksheet

1. Binary Search

Write the methods **iterativeBinarySearch()** and **recursiveBinarySearch()** into the given template.

Test them for the following cases:

- The searched item is the first item in the list.
- The searched item is in the middle of the list.
- The searched item is the last item in the list.
- The searched item is smaller than everything in the list.
- The searched item is larger than everything in the list.
- The list has no items (empty).
- The list has only one item.

2. Algorithm Comparison

The template uses an **ordered** list of 1 million numbers and measures the execution time for the worst case scenario – when the searched item is at the end of the list. The execution time is measured as **continuous average execution time** – each method is executed 100 times and the overall duration is divided by 100.

Time all search algorithms for the three cases below, and fill out the table:

execution time when value is:	**Linear search with while-loop**	**Linear search with for-loop**	**Linear search with sentinel**	**Iterative binary search**	**Recursive binary search**	**indexOf() search**
beginning						
middle						
end						

Conclusions?

What searching approach is likely applied in the method `indexOf()` ?

Find the source code for ArrayList and check!