**Exercise for searching**

1. By using the sequential search algorithm, write a Java program to search for an element of an integer array of 100 elements. (Generate the 100 elements randomly)
2. By using the sequential search algorithm, write a Java program to search for an element of an String array.
3. Implement linear search algorithm for generic type.
4. Modify the Java code in exercise 1 to search for an element of the array by using binary search algorithm.
5. Modify the Java code in exercise 2 to search for an element of the array by using recursive binary search algorithm.
6. Compare the linear search and binary search algorithm on int array values of 1000. Take ex 1 and ex 4, create a comparison table with target value to find and number of comparison and time taken by each method. Use the following code to measure execution time. Put your comment about both the algorithms

Instant start = Instant.now();

Instant end = Instant.now();

System.out.println(Duration.between(start, end));

1. Given a sorted array and a number x, find a pair in array whose sum is closest to x.

Examples:

Input: arr[] = {10, 22, 28, 29, 30, 40}, x = 54

Output: 22 and 30

Input: arr[] = {1, 3, 4, 7, 10}, x = 15

Output: 4 and 10