Exercise 2 :

In the given Java method the time complexity of first loop(which is of size N and having loop variable i) will be O(N) and the time complexity of lower loop( which is of size 1000000 and having loop variable j) will be of O(1) or the loop will take constant time. So,

* If the value of N is much greater than 1000000 then we can say that the time complexity of the method will be O(N) as it will only depend on the first loop.
* If the value of N is comparable to or less than 1000000 then time complexity of the method will tend to be of constant order or O(1) and time complexity solely depend on lower loop i.e. it will not differ whatever be the value of N.

Exercise 3

Here this loop runs for N times because user passes the value N in the function.So the time complexity of this java code will be O(n).

Exercise 4

Iteration 1:

Array={1, 14, 15, 24, 55, 59, 73, 90, 94, 99}

left= 0, right=9, mid=4

Iteration 2:

Array={59, 73, 90, 94, 99}

left= 5, right=9, mid=7

Iteration 3:

Array={59, 73}

left= 5, right=6, mid=5

Iteration 4:

Array={73}

left= 6, right=6, mid=6