1.

Code is available in the src folder “Searching.java” . The screenshots are attached.

2.

Interpolation search performs much faster than linear search because it uses an estimation of the position of the key value, instead of checking each element in the array one by one. However, interpolation search requires that the array be sorted. Moreover, interpolation search requires that the input array be uniformly distributed.

3.

The improvedLinearSearch () takes in sorted array and compares the difference between key and starting and ending values of the array, after which it decides the end from which it will start iteration. Hence performs much better than usual linear search, when the array is uniformly distributed and sorted.