

Workshop 4 Exercises

August 11, 2018

In this week, the following exercises are to be discussed.

1. Modify the [WS4.binary.search.c](#) program to measure the runtime and number of basic operations executed by the binary search algorithm for different input sizes. You may use [gettimeofday.c](#) from the Sample Programs on Homepage.
2. Is it possible to apply binary search to linked lists? Discuss!
3. What is the worst case input for Insertion sort? For the worst case input where does this summation come from?

$$\sum_{i=0}^{n-1} i = \frac{n(n-1)}{2} \in O(n^2)$$

4. A sorting algorithm is stable if the original array order is preserved among items with equal sort key.
 - (a) Show that Quicksort is not stable
 - (b) How might it be modified so that it becomes stable?