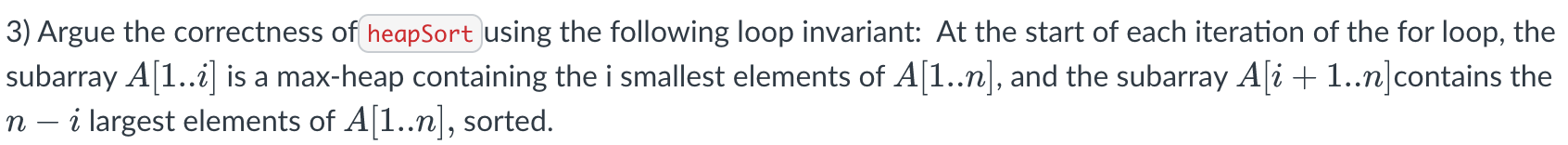
Assignment 3

CS 514 – Algorithms

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***Loop invariant:***

At the start of each iteration of the for loop, the subarray A[a....i] is a max-heap containing the i smallest elements of A[a....n] , and the subarray A[i+1......n] contains the n-i largest elements of A[a....n], sorted.

***Initialization:***

Using the siftDown(arr, start, end) method, a max-heap is constructed from the input array prior to the first iteration of the for loop in heapSort(arr). By doing this, the greatest element is guaranteed to be at the root. The largest member of the array is at the root, and the invariant holds since the max-heap constraint is upheld.

Maintenance: