Assignment Day 4

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Question 1

In the Binary Search algorithm, it is suggested to calculate the mid as beg + (end - beg) / 2 instead of (beg + end) / 2. Why is it so?.

ANSWER:-

Exactly. There's no guarantee that beg+end is representable; but in the second case the intermediate values, as well as the expected result, are no larger than end, so there is no danger of overflow.

The second form can also be used for affine types like pointers and other random-access iterators, which can be subtracted to give a distance, but not added together.

Question 2 Write the algorithm/function for Ternary Search.

ANSWER:-

Ternary search is a divide and conquer algorithm that can be used to find an element in an array. It is similar to binary search where we divide the array into two parts but in this algorithm, we divide the given array into three parts and determine which has the key (searched element). We can divide the array into three parts by taking mid1 and mid2 which can be calculated as shown below. Initially, l and r will be equal to 0 and n-1 respectively, where n is the length of the array.
mid1 = l + (r-l)/3
mid2 = r – (r-l)/3