Search in a rotated array explanation

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0.1 Problem Statement

We are given a sorted array rotated at a random pivot point. The goal is to find a given target's value index and if not present return -1. We assume no duplicates are given and are constrained to a time complexity of `O(log n)`.

0.1.1 Design considerations

Due to the constraint given of time complexity of `O(log n)`. I decided to use the binary search algorithm to solve the problem. It was the same algorithm however I needed to pay close attention to elements immediately before and after the mid element.

0.1.2 Time and Space Complexity

Space complexity used in this algorithm is `O(1)`, since the binary search implemented is in-place.

Time complexity for the solution is `O(log n)`. since we half the input size every time as in every binary search algorithm.