**COSC 3304 – Algorithms Design and Analysis**

**Assignment 5**

**Due: 23:59:00pm, 02/20/2024**

1. Please create an array with 11 elements, which is the best case at the first iteration of QUICKSORT and then the worst case for the second iteration of QUICKSORT. The last element is used as a Pivot (25 points).

* [0, 1, 2, 3, 4, 10, 7, 8, 9, 6, 5]

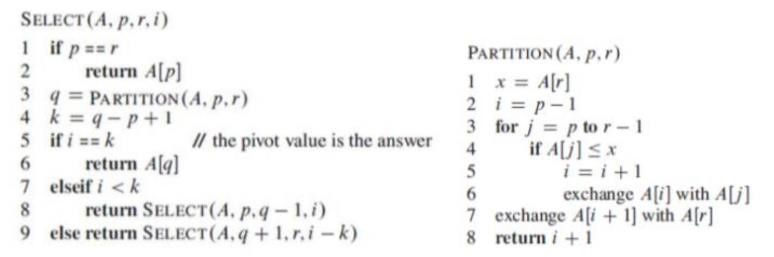
1. Please explain why your array is the best case and the worst case for the first and second iterations (25 points).

* This would be the best case for the first iteration as 5 is the exact middle of the elements of the array, resulting in an even split for both sub arrays.
* This would be the worst case for the second iteration as 10 as the pivot would result in 0 elements in one sub-array and all the other elements in the other sub-array. \*\*\*\*Using swap, 10 would have to be the middle element initially, which would leave it in the right spot to get swapped for the last element (the pivot), leading to the worst case.\*\*\*

1. Please use the given SELECT to select the 4th smallest element from the array

[6, 0, 2, 4, 7, -2, -4, 3]

(50 points, please show detailed steps for full credits).



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