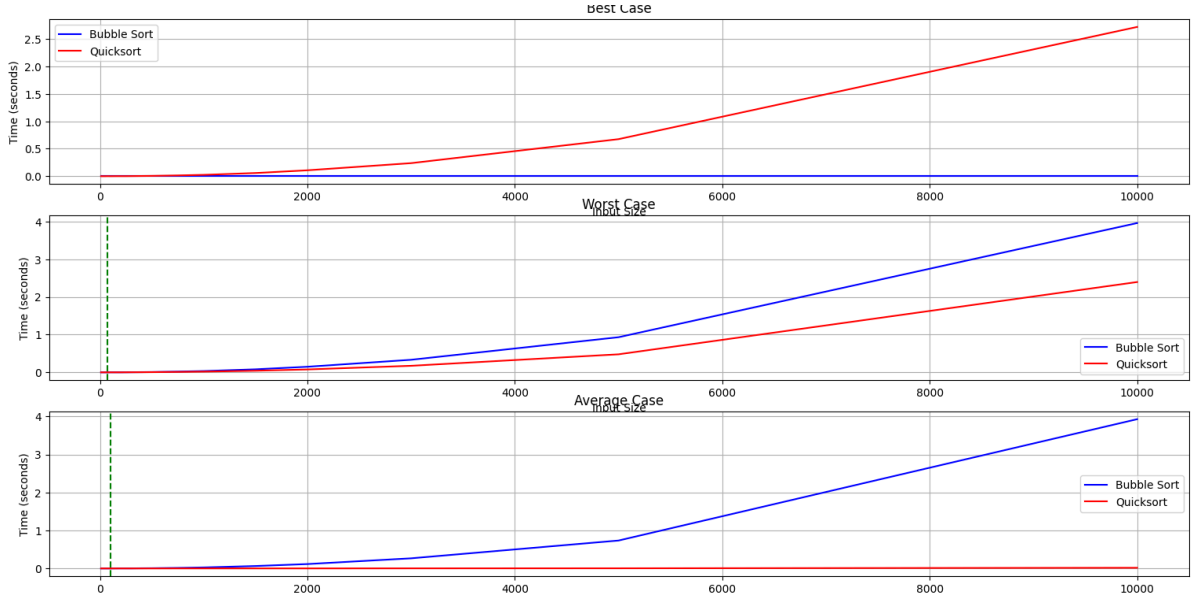
EX 2



3.

Based on the performance plots, we can observe that:

1. Best case: Bubble sort performs better for very small arrays because it has less overhead.
   For already sorted arrays, bubble sort's best case is O(n) which can outperform quicksort
   O(n log n) for small inputs.

2. Worst case: Bubble sort's O(n²) complexity quickly becomes worse than quicksort, even when
   quicksort hits its own worst-case O(n²) scenario, because quicksort's constant factors are smaller.

3. Average case: This is the most important case for practical applications. Bubble sort generally
   becomes slower than quicksort when the array size exceeds around 50-100 elements (the exact
   threshold varies based on the specific implementation and hardware).

4.I would recommend using bubble sort for arrays with fewer than 50 elements, and quicksort for larger arrays. This threshold provides a good balance between:

- Taking advantage of bubble sort's simplicity and low overhead for small arrays

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    - Leveraging quicksort's superior O(n log n) performance for larger
arrays
    - Accounting for the fact that the average case is the most common
scenario in practice
```