Element count: 20

Order	Quicksort (ms)	Heap sort(ms)	Bubble sort (ms)	Insertion sort(ms)
random	0.916887	0.989334	0.943554	0.86222
ascending	0.589776	0.591556	0.540888	0.529777
descending	0.611554	0.572445	0.575998	0.561777

Element count: 100000

Order	Quicksort (ms)	Heap sort(ms)	Bubble sort (ms)	Insertion sort(ms)
random	34.449701	32.866696	25799.162669	9374.500501
ascending	StackOverflowError	26.216912	1715.519743	1953.898769
descending	StackOverflowError	23.212909	4714.834411	4714.111746

Discussion

- Quicksort is faster but got `StackOverflowError` for 100K elements except in random order. This error occurred because of the recursive implementation.

  It occurred because arr[left] was selected as the pivot, so time complexity was increased to O(n^2) in ascending and descending orders.

- Bubble sort and Insertion sort have worst time complexity but managed to sort even for 100K elements. In best case time complexity, O(n) (ascending order), both of these algorithms took less amount of time than other orders. It's clearly visible in 100K elements.

- Heap sort performed well for 100K elements in all orders, because time complexity is O(n*log n) for all orders.

- All algorithms are suitable for smaller arrays. For larger arrays, Heap sort or Quick sort (with random pivot) can be used.