SEPTEMBER 02,2020

DESIGN AND ANALYSIS OF ALGORITHMS

(VIVA 1: QUESTION- 2 & 5)

SUBMITTED BY-
NAME - RAJ KRISHNA
ROLL NO - 1805233
BATCH - CSE-G1
GROUP - B

Algorithms Lab

Viva 1 (Task)

I. **Type your answers in this file.**
II. **Answer ONLY the question numbers informed to you in the email.**

III. **IMPORTANT: Submit on or before Monday, 14-Sep-2020 by email as attachment.**
Just use the two letters V1 as the subject of the email you send.

How to answer the questions

For random input: Generate an array of 100 (or 1000 or 10000) random integers. Sort it using the given algorithm and fill the number of steps in the table as counted by your program.

For sorted input (increasing): Sort an array of given size by any algorithm. Then sort it again using the given algorithm and fill the number of steps in the table.

For sorted (decreasing): Reverse the sign of a sorted array (`sortedArray | Intf(x) {x=-x;};`). Then sort it again using the given algorithm and fill the number of steps in the table.

Each question carries 5 marks.

Complexity of Sorting Algorithms					
Question No.	**Algorithm**	**Input Type**	**Input Size**		
			100	**1000**	**10000**
1	**Insertion Sort**	Random			
		Sorted (increasing)			
2	**Insertion Sort**	Random	2537	242945	24916219
		Sorted (decreasing)	5005	495513	49504605

3	**Merge Sort**	Random			
		Sorted (increasing)			
4	**Merge Sort**	Random			
		Sorted (decreasing)			
5	**Quicksort**	Random	457	5205	58748
		Sorted (increasing)	534	6870	71446
6	**Quicksort**	Random			
		Sorted (decreasing)			
7	**Heapsort**	Random			
		Sorted (increasing)			
8	**Heapsort**	Random			
		Sorted (decreasing)			

// In Quick-Sort, pivot element i have used is-

```
int pivotIndex = left + (right - left) / 2;
```