

3<sup>rd</sup> Oct 2024

Quiz 12

Roll number:

BSS23058

## Q1. MCQ'S

i. In Radix Sort, if an array contains the numbers [3, 5, 2, 9, 1], what will be the intermediate output after sorting by the least significant digit? 1 2 3 5 9

- A) [1, 2, 3, 5, 9]
- B) [3, 2, 5, 9, 1]
- C) [1, 3, 5, 2, 9]
- D) [2, 1, 3, 5, 9]

ii. Which of the following conditions is not required for Radix Sort to be applicable?

- A) The array contains only positive integers. ✓
- B) The numbers have a fixed number of digits. ✓
- C) The input array can have varying digit lengths. ✓
- D) The array is unsorted. ✓

iii. In Radix Sort, what is the role of the Counting Sort function?

- A) It generates random numbers.
- B) It sorts the array based on a specific digit. ✓
- C) It calculates the maximum value in the array. ✓
- D) It initializes the array.

Q2. Sort the following array by using Radix sort. Explain and highlight the changes in each step.

0	1	2	3	4	5	6	7
170	45	75	90	802	24	2	66

b) What is the time complexity of Radix sort?

$O(nk)$

using counting sort

0	1	2	3	4	5	6	7	8	9
1	0	2	0	1	2	1	0	0	0

Find Max number. first which is 802.

- calculate the number of unit places which is 3
- sort until hundred unit place.

Checking ones place

0	1	2	3	4	5	6	7
170	90	802	2	24	45	75	66

Second tens place

0	1	2	3	4	5	6	7
802	02	24	45	66	170	275	090

Data Structures and Algorithms

SE200T-Fall 2024