

RADIX SORT AND BUCKET SORT

PRESENTED BY

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Definition:

Radix sort is a sorting algorithm that sorts the elements by first grouping the individual digits of the same place value.

The radix is the base of a number system

Characteristics:

- ▶ Radix sort is a non-comparative sorting algorithm. This sorting algorithm works on the integer keys by grouping digits which share the same position and value.
- ▶ Start from least significant digit and then move towards most significant digit.

Steps:

Find

After taking an array of integers ,find the maximum number.



Calculate

Calculate, how many digits are there in maximum number.



Make

Third step is to make three digit number (depending on the number of digits in the maximum number).

EXAMPLE

254,25,100,45,99,200,35,44,9

- ▶ Step 1: Find the maximum number
- ▶ 254
- ▶ Step 2: Find the number of digits in the maximum number
- ▶ 3
- ▶ Step 3: Add 0's to the numbers on Most Significant Digit(MSD) positions based on maximum number
- ▶ 254,025,100,045,099,200,035,044,009

254,025,100,045,099,200,035,044,009

- Step 4: Create 10 buckets, numbered from 0 to 9

0	
1	
2	
3	
4	
5	
6	
7	
8	
9	

254, 025, 100, 045, 099, 200, 035, 044,
009

0	100	200			
1					
2					
3					
4	254	044			
5	025	045	035		
6					
7					
8					
9	099	009			

100, 200, 254, 044, 025, 045, 035, 099,
009

0	100	200	009		
1					
2	025				
3	035				
4	044	045			
5	254				
6					
7					
8					
9	099				

100, 200, 009, 025, 035, 044, 045, 254,
099

0	009	025	035	044	045	099
1	100					
2	200	254				
3						
4						
5						
6						
7						
8						
9						

RADIX SORT

- ▶ Step 6:
- ▶ Arrange the numbers from bucket 0 to 9
- ▶ 009,025,035,044,045,099,100,200,254
- ▶ Sorted Elements
- ▶ 9,25,35,44,45,99,100,200,254