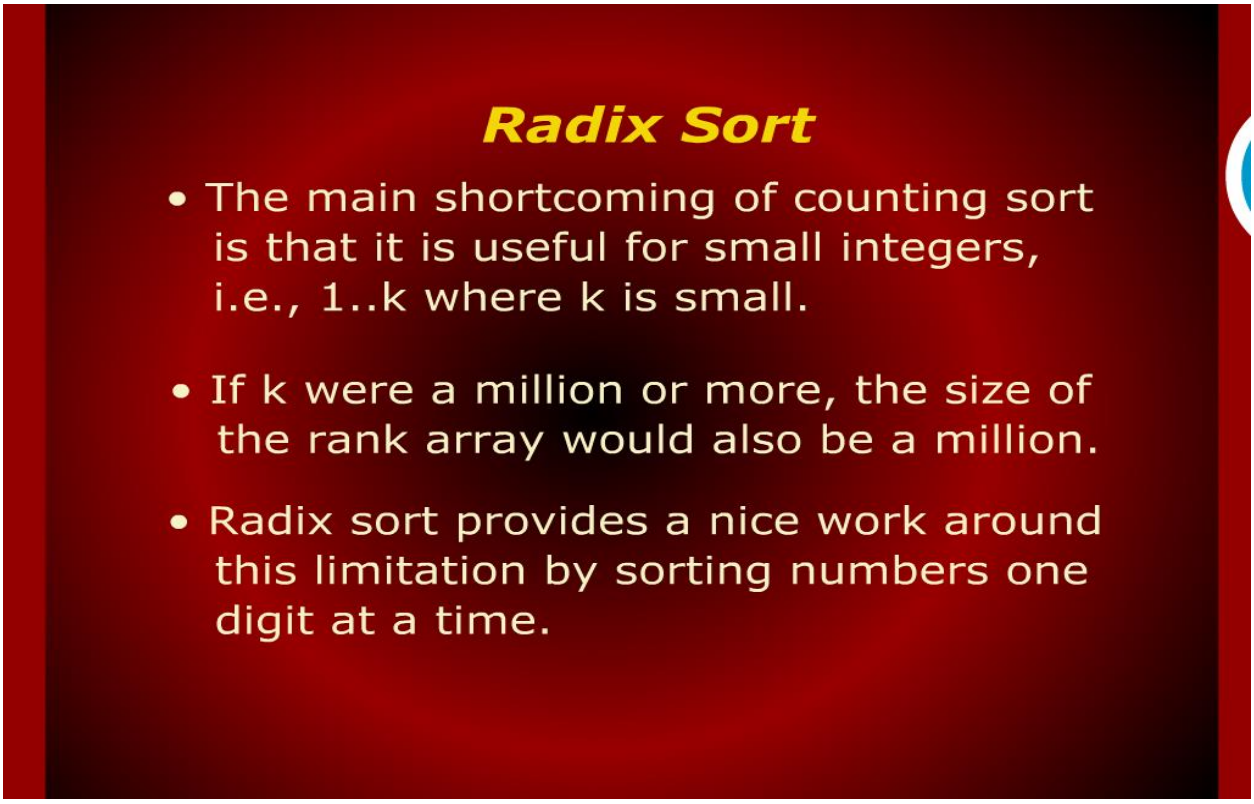

Consider the unsorted input array as

170	45	75	90	802	24	2	66

Now apply the counting sort on the above input array but in a base 10^{th} manner.

1. First consider the one's place

17<u>0</u>	4<u>5</u>	7<u>5</u>	9<u>0</u>	80<u>2</u>	2<u>4</u>	<u>2</u>	6<u>6</u>

Counting sort applied

C=	0	1	2	3	4	5	6
	2	0	2	0	1	2	1

Now do $C[i] = c[i] + c[i-1]$ where $i = 2$ we get

C=	0	1	2	3	4	5	6
	2	2	4	4	5	7	8

Now create output array B of size $B[1..n]$

Starting reading original array 'A' from right to left

170	45	75	90	802	24	2	66
							↑

$$B\left[C\left[A[i]\right]\right] = A[i]$$

B=	1	2	3	4	5	6	7	8
								66

C=	0	1	2	3	4	5	6
	2	2	4	4	5	7	7

170	45	75	90	802	24	2	66
						↑	

$$B\left[C\left[A[i]\right]\right] = A[i]$$

B=	1	2	3	4	5	6	7	8
				2				66

C=	0	1	2	3	4	5	6
	2	2	3	4	5	7	7

170	45	75	90	802	24	2	66

↑

$$B\left[C\left[A[i]\right]\right] = A[i]$$

B=	1	2	3	4	5	6	7	8
				2	24			66

C=	0	1	2	3	4	5	6
	2	2	3	4	4	7	7

170	45	75	90	802	24	2	66

↑

$$B\left[C\left[A[i]\right]\right] = A[i]$$

B=	1	2	3	4	5	6	7	8
			802	2	24			66

C=	0	1	2	3	4	5	6
	2	2	2	4	4	7	7

170	45	75	90	802	24	2	66

↑

$$B\left[C\left[A[i]\right]\right] = A[i]$$

B=	1	2	3	4	5	6	7	8
		90	802	2	24			66

C=	0	1	2	3	4	5	6
	1	2	2	4	4	7	7

170	45	75	90	802	24	2	66

↑

$$B\left[C\left[A[i]\right]\right] = A[i]$$

B=	1	2	3	4	5	6	7	8
		90	802	2	24		75	66

C=	0	1	2	3	4	5	6
	1	2	2	4	4	6	7

170	45	75	90	802	24	2	66

↑

$$B\left[C\left[A[i]\right]\right] = A[i]$$

B=	1	2	3	4	5	6	7	8
		90	802	2	24	45	75	66

C=	0	1	2	3	4	5	6
	1	2	2	4	4	5	7

170	45	75	90	802	24	2	66

↑

$$B\left[C\left[A[i]\right]\right] = A[i]$$

B=	1	2	3	4	5	6	7	8
	170	90	802	2	24	45	75	66

C=	0	1	2	3	4	5	6
	0	2	2	4	4	5	7

Now consider 10th place; consider zero if the number. don't have 10th place

170	90	802	02	24	45	75	66

Again, apply the counting sort for the 10^{th} place, as shown in the grey area, we get

802	2	24	45	66	170	75	90

Now consider 100^{th} place.

802	002	024	045	066	170	075	090

Consider zero if the number, don't have 100^{th} place, again, apply counting sort as shown in the grey area, and we get

2	24	45	66	75	90	170	802

Now the array is sorted

Assignment 2: write the pseudocode of Radix Sort.