Course Code _____ Course Name _____ Date _____

Mid I, II, III / Section _____ Invigilator Signature _____

Question No.	1 A	1 B	1 C	1 D	1 E	2	3	4	5	6	Total Marks
Marks											

Sort the below elements using Quick Sort

Quick Sort

23	17	45	34	68	42	75	69
0	1	2	3	4	5	6	7

pivot

69 > 23

75 > 23

42 > 23

68 > 23

34 > 23

45 > 23

17 ≤ 23

45 ≤ 23

23 ≤ 23

Swap pivot with A[j]

The array after swapping, ~~index~~ j

17	23	45	34	68	42	75	69
0	1	2	3	4	5	6	7

part 1

part 2.

23 (pivot element) is at index 1

partition.

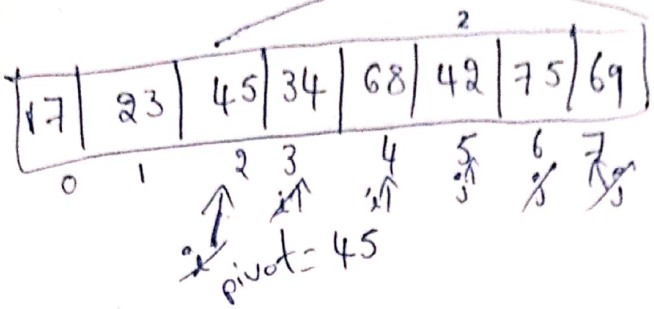
part 1 has one element, so no need to work on.

part 2 has 6 elements

Note: ~~index 0 et~~

Note value at index 0, and 1 are related

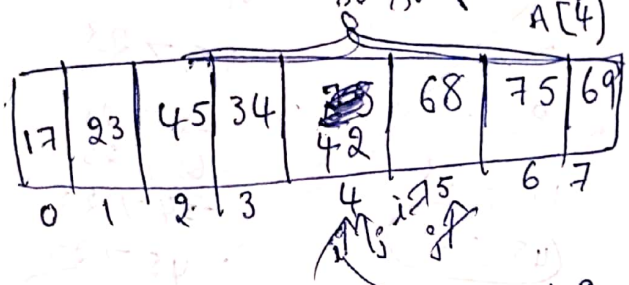
part 2.



45 ≤ 45
34 ≤ 45
68 ≤ 45

69 > 45
75 > 45
42 ≤ 45

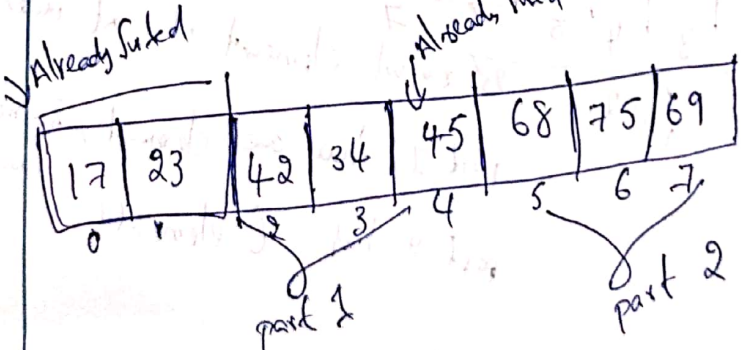
4 < 5
i < j, True
so swap A[i] with A[j] and A[5] and continue again from the same place



42 ≤ 45
68 ≤ 45

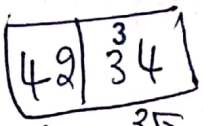
68 > 45
42 ≤ 45

5 4
i < j, false so swap pivot with A[j]
42
45
and next split for both i j



Note: values at indexes 0, 1, and 4 are sorted. we need to get correct values for indexes 2, 3, 5, 6, 7.

part 1:



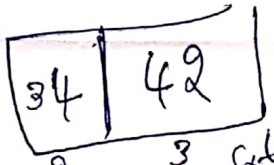
pivot = 42

$42 \leq 42$,

$34 \leq 42$.

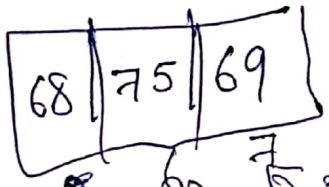
$34 > 42$

Swap pivot with A[j], i.e 34



Sorted (index 2 & 3)

part 2:



pivot = 68

$68 \leq 68$

$75 \leq 68$

$69 > 68$

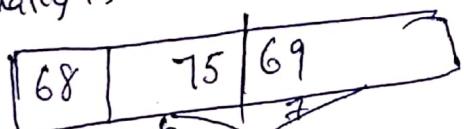
$75 > 68$

$68 > 68$

Swap pivot with A[j]:

But both are same.

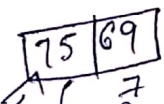
Array finally is



Already sorted

part (we need to work)

Value at index 5 is sorted



pivot

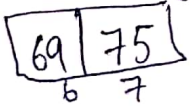
$75 \leq 75$,

$69 \leq 75$

$69 > 75$

i < j false,

So swap pivot with A[j]



Complete Sorted.

Note: index 6 and 7 are sorted

Final Sorted Array is

17	23	34	42	45	68	69	75
0	1	2	3	4	5	6	7