Thinh Nguyen
CSC130

1)

	0	1	2	3	4	5	6	7	8
Input	3	4	5	6	1	9	2	5	6
i=0	3								
i=1		4							
i=2			5						
i=3				6					
i=4					1				
Insert	1	3	4	5	6				
i=5						9			
i=6							2		
Insert	1	2	3	4	5	6	9		
i=7								5	
i=8									6
output (insert)	1	2	3	4	5	5	6	6	9

Answer: → 1, 2, 3, 4, 5, 5, 6, 6, 9

3)

original input: (3, 4, 5, 6, 1, 9, 2, 5, 6, 5, 3)

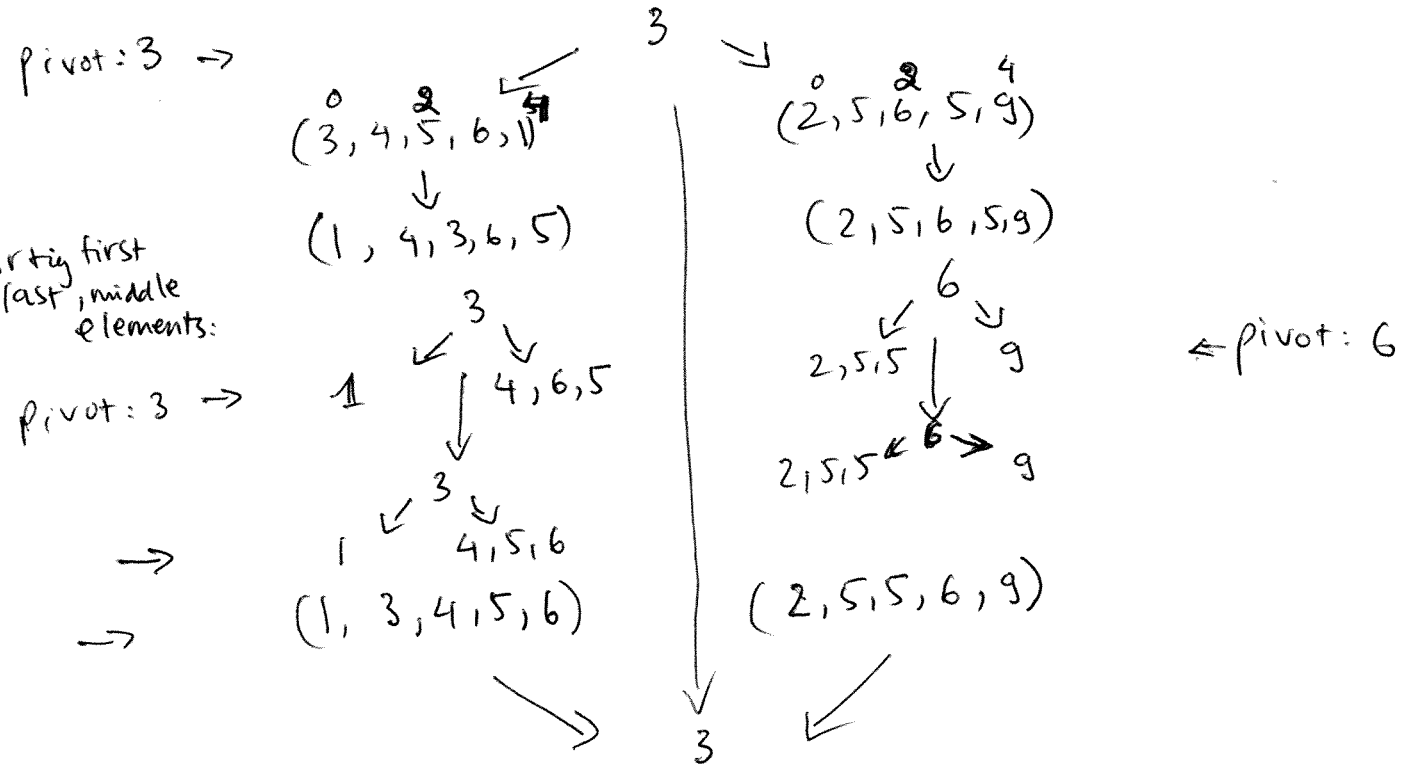
index 0 : 3

index 5 : 9

index 10 : 3

Sorting first, last, middle elements :

3, 4, 5, 6, 1, 3, 2, 5, 6, 5, 9

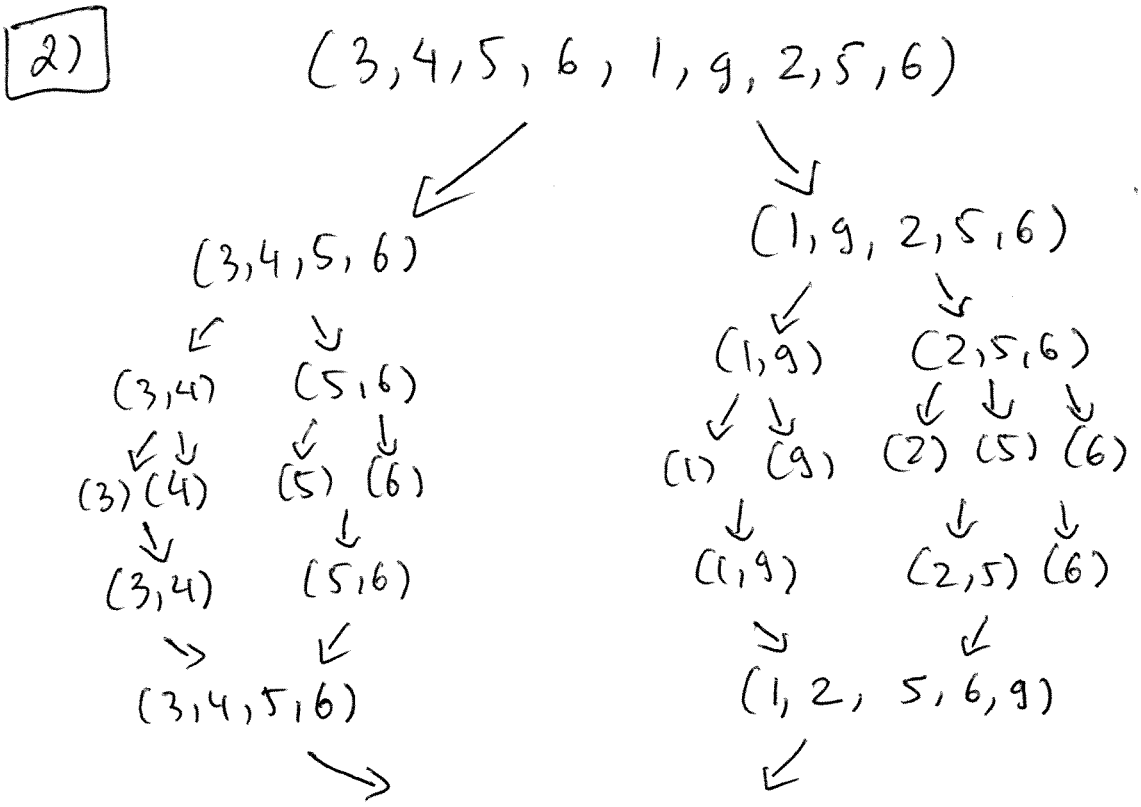


Answer: Using insertion sort: → (1, 2, 3, 3, 4, 5, 5, 5, 6, 6, 9)

5)

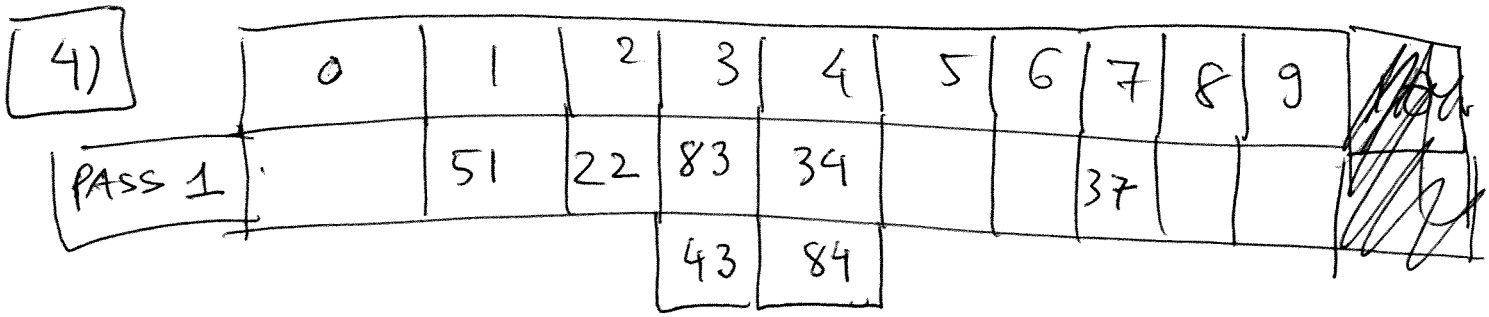
	Identical	Sorted	Reverse-sorted
Insertion Sort	$O(n)$	$O(n)$	$O(n^2)$
Selection Sort	$O(n^2)$	$O(n^2)$	$O(n^2)$
HeapSort	$O(n)$	$O(n \log n)$	$O(n \log n)$
MergeSort	$O(n \log n)$	$O(n \log n)$	$O(n \log n)$
Quick sort	$O(n^2)$	$O(n \log n)$	$O(n \log n)$
Bucket Sort	$O(n+k)$	$O(n+k)$	$O(n+k)$
Radix Sort	$O(P(B+n))$	$O(P(B+n))$	$O(P(B+n))$

2)

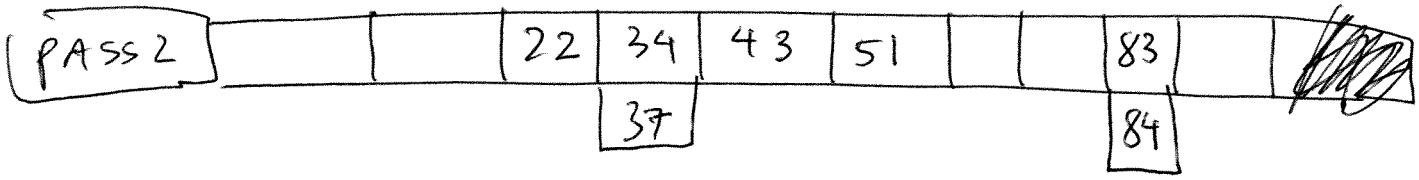


Answer: (1, 2, 3, 4, 5, 5, 6, 6, 9)

4)



PASS 1: 51, 22, 83, 43, 34, 84, 37



Answer: → (22, 34, 37, 43, 51, 83, 84)