Sort the following number by Quick sort algorithm. Consider the last element as pivot element. 14,16,7,2,5,9,10,4,20,80,60,50 If the elements are the given in reverse order what will be the complexity of quick sort. Explain with an example Given: 14 16 2 5 10 4 20 80 **60** PASS 1: 1 Initialize Left =0, Right = Max-1 and as given Pivot = last element 14 7 2 5 9 10 80 16 4 20 **60** Left 2 Compare, if a[left]<a[pivot] a[left] < a[pivot] Pivot=50

	14	16	7	2	5	9	10	4	20	50	60	80
Left=	<b>80</b>	<	50	FALSE	Swap L	eft and I	Pivot and	d Set Piv	ot = Lef	ì		
Left=	= 20	<	50	TRUE	Left++							
Left=	<b>=</b> 4	<	50	TRUE	Left++							
Left=	= 10	<	50	TRUE	Left++							
Left=	- 9	<	50	TRUE	Left++							
Left=	= 5	<	50	TRUE	Left++							
Left=	= 2	<	50	TRUE	Left++							
Left=	- 7	<	50	TRUE	Left++							
Left=	- 16	<	50	TRUE	Left++							
Left=	- 14	<	50	TRUE	Left++							

**50** 

**50** 

Right

Left+Pivot

Right+Pivot

3 Compare, if a[right]>a[pivot]

a[right] > a[pivot] Pivot=50 Right= 80 50 TRUE Right--Right= 60 50 TRUE Right--Right= 50 Here, right=pivot=50. Terminate the loop and end Pass 1 After Pass 1, Pivot=50 is at its best position 2 14 16 7 10 20 50 80 60

Sub-array 1 Sub-array 2

## PASS 2: Consider the left Sub-array i.e. sub-array 1

1 Initialize Left =0, Right = Max-1 and as given Pivot = last element

14	16	7	2	5	9	10	4	20
Left+Pivot								

2 Compare, if a[right]>a[pivot]

 $\begin{array}{ccc} a[right] > & & a[pivot] & \textbf{Pivot=14} \\ Right= 20 & > & 14 & TRUE & Right-- \end{array}$ 

 Right= 4
 >
 14
 FALSE Swap Right and Pivot and Set Pivot = Right

 4
 16
 7
 2
 5
 9
 10
 14
 20

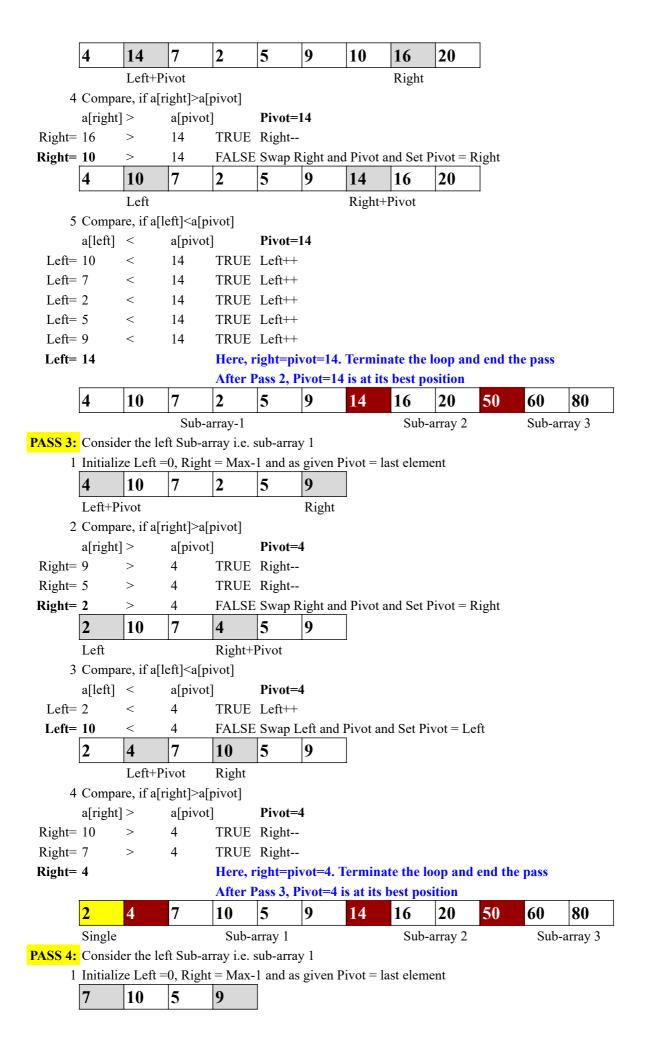
 Left
 Right+Pivot

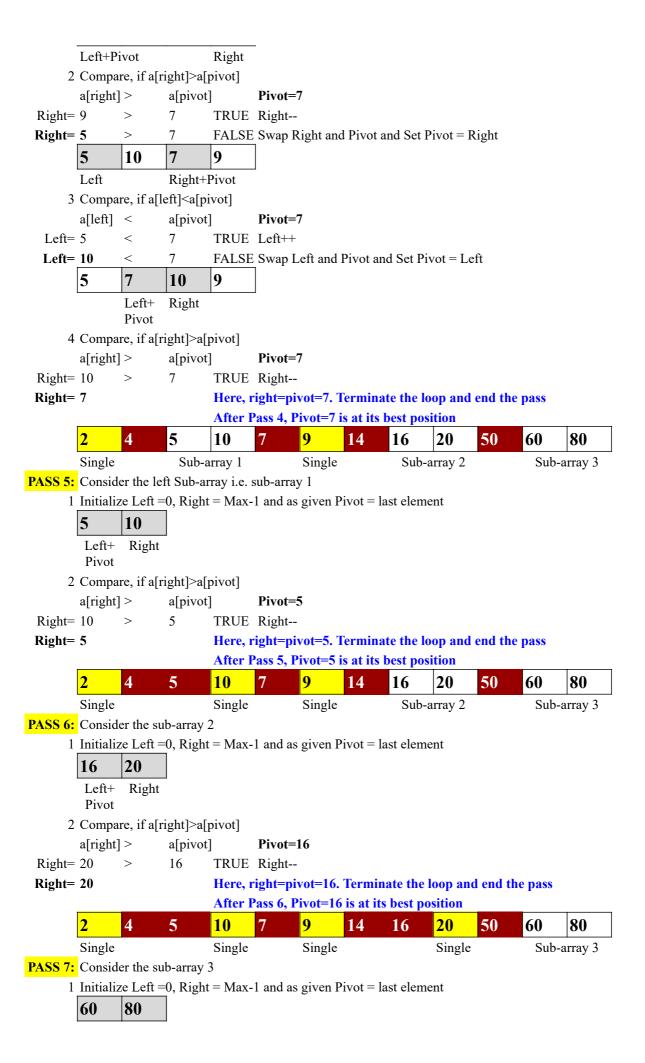
3 Compare, if a[left]<a[pivot]

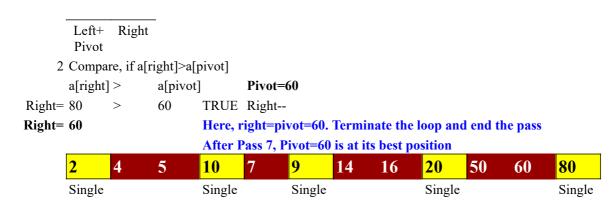
 a[left]
 4
 a[pivot]
 Pivot=14

 Left= 4
 14
 TRUE
 Left++

 Left= 16
 4
 FALSE Swap Left and Pivot and Set Pivot = Left







After Pass 7, the array is sorted as shown.