

Date: / /

Quatno

-10	3	8	17	11	59	23	-4	0	79	67	12
0	1	2	3	4	5	6	7	8	9	10	11

Pivot = arr[l] = -10 l = 0 h = 11

initially i = l j = h

increment i till value greater than equal to pivot is found

decrement j " less than equal to.

do while j > i

→ Pass 1 : i = 1 j = 0

i > j

-10 is in its correct position

Update Pivot, i, j

Pivot = arr[l++] = 3 l = 1 h = 11
i = l j = h

→ Pass 2 : i = 2 → 8 j = 8 → 0

i < j : swap (arr[2], arr[8])

-10	3	0	17	11	59	23	-4	8	79	67	12
		i						j			

→ Pass 3 : i = 3 → 17 j = 7 → -4

i < j : swap (arr[3], arr[7])

-10	3	0	-4	11	59	23	17	8	79	67	12
			i				j				

i = 4 → 11 j = 3 → -4

i > j - Stop

swap (Pivot, arr[j])

-10	-4	0	3	11	59	23	17	8	79	67	12
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→ Divide and Conquer

l = 0 i = 3 l = j + 1 = 4

h = 11

$[-10 \quad -4 \quad 0 \quad 3]$

Pass 1: $i > j$ -10 is int's correct position

Pivot = -4 $i = 1$ $j = 3$

Pass 2: $[-10 \quad -4 \quad 0 \quad 3]$
 $i \rightarrow$ $\leftarrow j$

$i = 2$ $j = 0$

$i > j$ -4 is int's correct position

Pass 3: Pivot = 0

$i = 3$ $j = 1$

$i > j$

0 is int's correct position

Pass 4: Pivot = 3

$i = 3$ $j = 2$

3 is int's correct position

$[-10 \quad -4 \quad 0 \quad 3]$

$11 \quad 5 \quad 9 \quad 2 \quad 3 \quad 1 \quad 7 \quad 8 \quad 7 \quad 9 \quad 6 \quad 7 \quad 12$

$i = 4$

Pass 1 Pivot = 11

$\leftarrow j = 11$

$i = 5 \rightarrow 9 \quad j = 8 \rightarrow 8$

$i < j$ swap (arr[i], arr[j])

$11 \quad 8 \quad 9 \quad 2 \quad 3 \quad 1 \quad 7 \quad 5 \quad 9 \quad 7 \quad 9 \quad 6 \quad 7 \quad 12$

Pass 2

$i = 6$

$j = 5$

$i > j$

Stop

swap (arr[j], Pivot)

$8 \quad 11 \quad 2 \quad 3 \quad 1 \quad 7 \quad 5 \quad 9 \quad 7 \quad 9 \quad 6 \quad 7 \quad 12$

Divide and Conquer

$i = 4 \rightarrow$

8	11
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 $j = 5 \leftarrow$

Pass 1: Pivot = 8

$i = 5$ $j = 4$

$i > j$ 8 is in its correct position

Pass 2: Pivot = 11

$i = 5$ $j = 7$

$i = j$ it is in its correct position

$i = 6 \rightarrow$

23	17	59	79	67	12
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 $j = 11 \leftarrow$

$i = 6$

$j = 11$

Pass 1: Pivot = 23

$i = 8$

$j = 11$

$i < j$ Swap ($arr[i]$, $arr[j]$)

$i = 6 \rightarrow$

23	17	12	79	67	59
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 $j = 11 \leftarrow$

$i = 8$

$j = 11$

Pass 2: Pivot = 23

$i = 9$

$j = 8$

$i > 8$

Swap ($arr[j]$, Pivot)

12	17	23
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79	67	59
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Divide and Conquer

[12 17 23]

Pivot = 12

Pass 1: 12 is in its correct pos'n

Pass 2: 17 is in its correct pos'n

Pass 3: 23 is in its correct pos'n

[79 67 59]

$i = 9$ $j = 11$
 \rightarrow \leftarrow

Pass 1: Pivot = 79

$j = 11$ $i = 9$

$i < j(x)$ $i = j$

Swap (Pivot, arr[j])

$\begin{array}{c} 9 \qquad 10 \qquad 11 \\ \boxed{59} \mid \boxed{67} \mid \boxed{79} \end{array}$

So in all we have

$\begin{array}{c} 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \\ \boxed{-10 \quad -4 \quad 0 \quad 3} \mid \boxed{8 \quad 11} \end{array}$

$\begin{array}{c} 6 \quad 7 \quad 8 \\ \boxed{12 \quad 17 \quad 23} \end{array}$

$\begin{array}{c} 9 \quad 10 \quad 11 \\ \boxed{59 \quad 67 \quad 79} \end{array}$

Sorted array:

-10 -4 0 3 8 11 12 17 23 59 67 79