

LB 1 2 3 4 5 6 7 8 9 UB
 65 70 75 80 85 60 55 50 45
 $j = UB + 1$
 $j = 10$

Before we start comparison,

increment i by 1. so $i = 2$

LB 1 2 3 4 5 6 7 8 9 UB
 65 70 75 80 85 60 55 50 45

Compare pivot with i element,

~~If i element $<$ pivot, stop i~~
 If i element $<$ pivot, then $i = i + 1$ else stop i
 If i element $>$ pivot, then $i = i + 1$ else stop i
 70 $<$ 65. so we stop i at position 2
 $\hookrightarrow$ False

Once you stop i , start comparing j element with pivot.

Before we start comparison,

decrement j by 1. so $j = 9$.

LB 1 2 3 4 5 6 7 8 9 UB
 65 70 75 80 85 60 55 50 45

compare pivot with j element,

if j element $>$ pivot, then $j = j - 1$
 else stop j

45 $>$ 65 - False so stop j at position 9

	i							j
LB	2	3	4	5	6	7	8	9 UB
65	70	75	80	85	60	55	50	45

Once we stop both i and j ,
check $i < j$.

↓
True then swap i element
with j element.

Here, $i = 2$ $j = 9$

$i < j$ cond true. so swap 70 and 45

	i							j
LB	2	3	4	5	6	7	8	9 UB
<u>65</u>	45	75	80	85	60	55	50	70

Again start comparison of i and pivot.

Before we start comparison increment i
by 1.

	i							j
1	2	3	4	5	6	7	8	9 UB
<u>65</u>	45	75	80	85	60	55	50	70

$75 < 65$ - False stop i

Before you compare j element, ~~increment~~
decrement j by 1. and then compare.

LB	1	2	^{i} 3	4	5	6	7	^{j} 8	9	UB
	65	45	75	80	85	60	55	50	70	

$50 > 65$ — False so stop j .

Once we stop i and j ,

check $i < j$; $3 < 8$ — True

swap i element with j element

LB	1	2	^{i} 3	4	5	6	7	^{j} 8	9	UB
	65	45	75	80	85	60	55	50	70	

	65	45	50	80	85	60	55	75	70
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$80 < 65$ — False stop i

	65	45	50	80	85	60	55	75	70
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$55 > 65$ — False stop j

$i = 4$ $j = 7$ $i < j$ — T swap

65	45	50	80	85	60	80	75	70
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Increment i and compare

1	2	3	4	5	6	7	8	9	...
<u>65</u>	45	50	55	85	60	80	75	70	

$85 < 65$ - F stop i

Decrement j by 1 and start comparison

$60 > 65$ - F stop j

$i = 5$ $j = 6$ $i < j$ - T swap

1	2	3	4	5	6	7	8	9
<u>65</u>	45	50	55	85	60	80	75	70

Increment i and compare.

1	2	3	4	5	6	7	8	9
<u>65</u>	45	50	55	60	85	80	75	70

$85 \neq 65$ - False stop i

Decrement j and compare.

1	2	3	4	5	6	7	8	9
<u>65</u>	45	50	55	60	85	80	75	70

$60 > 65$ - False stop j

$i < j$ - False. $i = 6$ $j = 5$

so swap j element with pivot.

1	2	3	4	5	6	7	8	9
<u>60</u>	45	50	55	<u>65</u>	85	80	75	70

S1

S2

i_1 i_2 i_3 i_4 UB j
 60 45 50 55

stop i , decrement j and compare.

$55 > \text{pivot}$ - False stop.

$i < j$ cond False. swap j ele with piv

1 2 3 4
 55 45 50 60

31

82 empty.

i_1 i_2 i_3 j
 55 45 50

1 2 3
 50 45 55

31

32 empty.

LB i j UB j
 50 45

1 2
 45 50

31 32

LB < UB - False
so terminate.