## DSA Assignment 2

## **Bubble Sort**

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9	9	9	9	9	9	9	9	9	9	9	9	9	456
345	345	345	345	345	345	345	345	345	345	345	345	456	9
196	196	196	196	196	196	196	196	196	196	196	456	345	345
308	308	308	308	308	308	308	308	308	308	456	196	196	196
200	200	200	200	200	200	200	200	200	456	308	308	308	308
7	7	7	7	7	7	7		456	200	200	200	200	200
6	6	6	6	6	6	6	456	2	2	7	2	2	7
23	23	23	23	23	23	456	6	6	6	6	6	6	6
123	123	123	123	123	456	23	23	23	23	23	23	23	23
456	456	456	456	456	123	123	123	123	123	123	123	123	123
68	89	89	68	68	89	68	68	68	68	68	68	68	68
78	78	78	78	78	78	78	78	78	78	78	78	78	78
- 2	2	2	2	5	5	2	2	2	2	2	2	2	5
3	3	3	3	3	3	3	3	3	3	3	3	3	3
	5         78         89         456         123         23         9         7         200         308         196         345	5         78         89         456         123         23         9         7         200         308         196         345           5         78         89         456         123         23         9         7         200         308         196         345	5         78         89         456         123         23         9         7         200         308         196         345         7           5         78         89         456         123         23         9         7         200         308         196         345         7           6         7         89         456         123         23         9         7         200         308         196         345         7	5         78         89         456         123         23         9         7         200         308         196         345         345           5         78         78         89         456         123         23         9         7         200         308         196         345           5         78         89         456         123         23         9         7         200         308         196         345           6         7         89         456         123         23         9         7         200         308         196         345	5         78         89         456         123         23         9         7         200         308         196         345         345           5         78         89         456         123         23         9         7         200         308         196         345           5         78         89         456         123         23         9         7         200         308         196         345           5         78         89         456         123         23         9         7         200         308         196         345           6         78         89         456         123         23         9         7         200         308         196         345	5         78         89         456         123         23         9         7         200         308         196         345         456           5         78         89         456         123         23         9         7         200         308         196         345           6         78         89         456         123         23         9         7         200         308         196         345           7         78         78         89         456         123         23         9         7         200         308         196         345           8         78         89         123         456         23         9         7         200         308         196         345           8         78         89         123         456         23         9         7         200         308         196         345	5         78         89         456         123         23         9         7         200         308         196         345         345           5         78         89         456         123         23         9         7         200         308         196         345         345           5         78         89         456         123         23         9         7         200         308         196         345           6         78         89         456         123         23         9         7         200         308         196         345         7           7         78         78         89         123         456         23         9         7         200         308         196         345         9           8         78         89         123         23         9         7         200         308         196         345         9           8         78         89         123         23         456         7         200         308         196         345         9	5         78         89         456         123         23         9         7         200         308         196         345         345           5         78         89         456         123         23         9         7         200         308         196         345         345           5         78         89         456         123         23         9         7         200         308         196         345           6         78         89         456         123         23         9         7         200         308         196         345           7         78         78         89         123         456         23         9         7         200         308         196         345           8         78         89         123         23         456         7         200         308         196         345           8         78         89         123         23         456         7         200         308         196         345           8         7         89         7         80         7         80         196         345	5         78         89         456         123         23         9         7         200         308         196         345         345           5         78         89         456         123         23         9         7         200         308         196         345         7           6         78         89         456         123         23         9         7         200         308         196         345         7           7         78         89         123         23         9         7         200         308         196         345         7           8         78         89         123         456         23         9         7         200         308         196         345           8         78         89         123         23         456         7         200         308         196         345           8         78         89         123         23         456         7         200         308         196         345           9         78         78         80         78         89         123         32         456	5         78         89         456         123         23         9         7         200         308         196         345         345           5         78         89         456         123         23         9         7         200         308         196         345         23           5         78         89         456         123         23         9         7         200         308         196         345         23           5         78         89         456         23         9         7         200         308         196         345           6         78         78         89         123         456         23         9         7         200         308         196         345           7         78         78         89         123         23         456         7         200         308         196         345           8         78         89         123         23         9         7         200         308         196         345           8         78         89         73         89         7         80         9	5         78         89         456         123         23         9         7         200         308         196         345         345           5         78         89         456         123         23         9         7         200         308         196         345         345           5         78         89         456         123         23         9         7         200         308         196         345         345           6         78         89         456         123         23         9         7         200         308         196         345         7           7         78         78         89         123         23         9         7         200         308         196         345         7           8         78         89         123         23         456         7         200         308         196         345         9           8         78         89         123         23         9         7         200         308         196         345         9           8         78         89         123         23	5         78         89         456         123         23         9         7         200         308         196         345         345           5         78         89         456         123         23         9         7         200         308         196         345         345           5         78         89         456         123         23         9         7         200         308         196         345         345           6         78         89         456         123         23         9         7         200         308         196         345           7         78         78         89         123         23         9         7         200         308         196         345           8         78         89         123         23         456         7         200         308         196         345           8         78         89         123         23         9         7         200         308         196         345           8         78         89         73         20         20         30         30         30	5         78         89         456         123         23         9         7         200         308         196         345

	456	456	456	456	456	456	456	456	456	456	456	456	456
	9	9	9	9	9	9	9	9	9	9	9	6	345
	345	345	345	345	345	345	345	345	345	345	345	345	9
	196	196	196	196	196	196	196	196	196	196	308	308	308
	308	308	308	308	308	308	308	308	308	308	196	196	196
	200	200	200	200	200	200	200	200	200	200	200	200	200
s 2	7	7	7	7	2	7	7	123	123	123	123	123	123
Pass 2	6	6	6	6	6	6	123	2	7	7	7	7	7
	23	23	23	23	23	123	6	6	6	6	6	6	6
	123	123	123	123	123	23	23	23	23	23	23	23	23
	89	89	89	89	89	68	89	68	89	89	68	89	89
	78	78	78	78	78	78	78	78	78	78	78	78	78
	2	2	2	2	2	2	2	2	2	2	5	2	5
	3	3	3	3	3	3	3	3	3	3	3	3	3

Legend	= Swap	= No Swap

**Bubble Sort** 

	456	456	456	456	456	456	456	456	456	456	456	456
	345	345	345	345	345	345	345	345	345	345	345	345
	9	9	9	9	9	9	9	9	9	9	9	308
	308	308	308	308	308	308	308	308	308	308	308	9
	196	196	196	196	196	196	196	196	196	200	200	200
	200	200	200	200	200	200	200	200	200	196	196	196
is 3	123	123	123	123	123	123	123	123	123	123	123	123
Pass 3	7	7	7	7	7	7	89	89	68	68	89	89
	6	6	6	6	6	89	7	7	7	7	7	7
	23	23	23	23	89	6	6	6	6	6	6	6
	68	89	89	89	23	23	23	23	23	23	23	23
	82	82	78	78	78	78	78	78	78	78	78	78
	2	2	2	2	2	2	2	5	2	2	5	5
	3	3	3	3	3	3	3	3	3	3	3	3

	456	456	456	456	456	456	456	456	456	456	456
	345	345	345	345	345	345	345	345	345	345	345
	308	308	308	308	308	308	308	308	308	308	308
	9	9	9	9	9	9	9	9	9	9	700
	200	200	200	200	200	200	200	200	200	200	9
	196	196	196	196	196	196	196	196	196	196	196
s 4	123	123	123	123	123	123	123	123	123	123	123
Pass 4	68	89	89	89	89	89	89	89	89	89	89
	7	7	7	7	7	82	78	82	78	78	82
	6	6	6	6	78	7	2	7	7	7	7
	23	23	23	78	6	6	6	6	6	6	6
	78	78	78	23	23	23	23	23	23	23	23
	2	2	2	2	2	2	2	2	2	2	2
	3	3	3	3	3	3	3	3	3	3	3

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456	456	456	456	456	456	456	456	456	456
345	345	345	345	345	345	342	345	345	345
308	308	308	308	308	308	308	308	308	308
200	200	200	200	200	200	200	200	200	200
6	9	9	9	9	9	9	9	9	196
196	196	196	196	196	196	196	196	196	9
123	123	123	123	123	123	123	123	123	123
89	89	89	89	89	89	89	89	89	68
78	78	78	78	78	82	78	78	78	78
7	7	7	7	23	23	23	23	23	23
6	6	6	23	7	7	7	7	7	7
23	23	23	6	6	6	6	6	6	6
5	2	5	2	5	2	2	5	5	5
3	3	3	3	3	3	3	3	3	3

	456	456	456	456	456	456	456	456
	345	345	345	345	345	345	345	345
	308	308	308	308	308	308	308	308
	200	200	200	200	200	200	200	200
	196	196	196	196	196	196	196	196
	9	9	9	9	9	9	9	123
Pass 6	123	123	123	123	123	123	123	9
Pas	89	68	68	89	89	89	89	68
	78	82	82	78	78	78	78	82
	23	23	23	23	23	23	23	23
	7	7	7	6	6	6	6	6
	6	6	6	7	7	7	7	7
	5	2	5	5	2	2	5	5
	3	3	3	3	3	3	3	3

	456	456	456	456	456	456	456	456
	345	345	345	345	345	345	345	345
	308	308	308	308	308	308	308	308
	200	200	200	200	200	200	200	200
	196	196	196	196	196	196	196	196
	123	123	123	123	123	123	123	123
S 7	9	9	9	9	9	9	9	89
Pass 7	89	89	89	89	89	89	89	9
	78	78	78	78	78	78	78	78
	23	23	23	23	23	23	23	23
	6	6	6	6	6	6	6	6
	7	7	7	7	7	7	7	7
	2	2	2	2	2	2	2	2
	3	3	3	3	3	3	3	3

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	456	456	456	456	456	456	456
	345	345	345	345	345	345	345
	308	308	308	308	308	308	308
	200	200	200	200	200	200	200
	196	196	196	196	196	196	196
	123	123	123	123	123	123	123
s 8	68	89	89	89	68	89	89
Pass 8	9	9	9	9	9	9	78
	82	78	78	78	78	78	9
	23	23	23	23	23	23	23
	6	6	9	6	6	6	6
	7	7	7	7	7	7	7
	5	5	5	5	5	5	5
	3	3	3	3	3	3	3

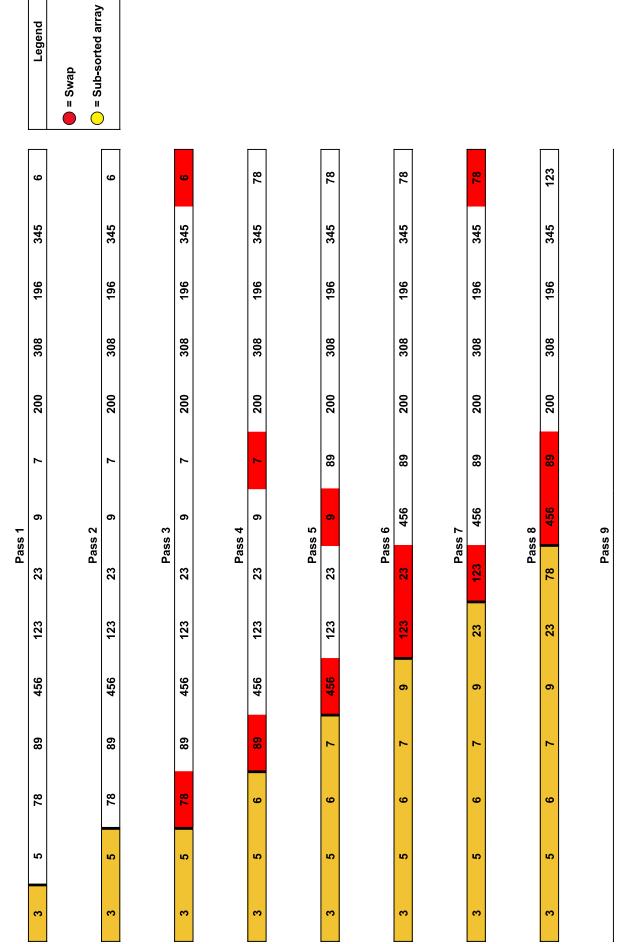
	456	456	456	456	456	456
	345	345	345	345	345	345
	308	308	308	308	308	308
	200	200	200	200	200	200
	196	196	196	196	196	196
	123	123	123	123	123	123
s 9	89	89	89	68	68	89
Pass 9	78	78	78	78	78	78
	9	9	9	9	9	23
	23	23	23	23	23	9
	6	6	6	6	6	6
	7	7	7	7	7	7
	2	- 2	2	2	5	5
	3	3	3	3	3	3

	456	456	456	456	456
	345	345	345	345	345
	308	308	308	308	308
	200	200	200	200	200
	196	196	196	196	196
	123	123	123	123	123
3 10	88	89	89	68	68
Pass 10	78	78	78	78	78
	23	23	23	23	23
	9	9	9	9	6
	6	6	6	6	9
	7	7	7	7	7
	5	2	5	2	5
	3	3	3	3	3

	456	456	456	456
	345	345	345	345
	308	308	308	308
	200	200	200	200
	196	196	196	196
	123	123	123	123
11	68	68	68	89
Pass	78	78	78	78
	23	23	23	23
	6	6	6	6
	9	9	9	7
	7	7	7	9
	2	2	2	5
	3	3	3	3

	13	456
	12	345
	11	308
	10	200
ng order:	6	196
n ascendir	8	123
esult is sorted ii	7	68
Final R the array	9	78
ie passes,	2	23
After all th	4	6
	3	7
	2	9
	1	2
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	Final Result After all the passes, the array is sorted in ascending order:	10 11 12

## **Selection Sort**



123	
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DSA Assignment 2

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	456		456
	345		345
	196		200
	308		308
	200		196
	123		123
2	78 89	\$ 11	89
1 435		Pass 11	78
23		23	
	6		6
	7		7
	9		9
	2		5
	3		3

	456		456
	345		315
	308		308
	200		200
	196		196
Pass 12	123		123
	89	s 13	80
	82	Pass 13	78
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		13	456	
		12	345	
		11	308	
		10	200	
	ng order:	6	196	
	n ascendir	8	123	
Result	After all the passes, the array is sorted in ascending order:	7	68	
Final Resul		Final , the array	9	78
		5	23	
	After all t	4	6	
		3	7	
		2	9	
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		0	3	

O = Sub array

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	Legend	Swap	= Sub-sorted elements
		13	9
		12	345
		11	196
	Consider 6 as the pivot element	10	308
		6	200
		8	2
Quick Sort		2	6
		9	23
		2	123
		4	456
		3	88
		2	82
		1	5
		0	3

	13	9	
	12	345	
	11	196	
	10	308	
	6	200	
	8	2	
Pass 1 i=0, j=1 pivot=6	7	6	
Pas i=0, pive	9	23	
	2	123	
	4	456	
	3	68	
	2	82	
	1	5	. <b>-</b> ,
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	13	9	
	12	345	
	1	196	
	10	308	
	6	200	
	8	7	
Pass 2 i=0, j=2 pivot=6	7	6	
Pas i=0,	9	23	
	2	123	
	4	456	
	ဗ	89	
	2	78	j
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	13	9	
	12	345	
	11	196	
	10	308	
	6	200	
Since j (78) > pivot (6), swap the elements	8	7	
3), swap th	7	6	
() > pivot (6	9	23	
Since j (78	2	123	
	4	456	
	8	68	
	2	78	j
	1	2	
	0	3	-
	0 1 2 3	8 87 8	

		13	82	
		12	345	
		11	196	
		10	308	
		6	200	
		8	2	
	Pass 3 i=1, j=3 pivot=6	7	6	
	Pass 3 i=1, j=3 pivot=6	9	23	
		2	123	
		4	456	
		3	89	j
		2	9	
		1	5	-
		0	3	
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	13	78			13	78			13	78			13	78			13	78
	12	345			12	345			12	345			12	345			12	345
	11	196			11	196			11	196			1	196			11	196
	10	308			10	308			10	308			10	308			10	308
	6	200			6	200			6	200			6	200			6	200
	8	7			80	2			8	2			œ	7			<b>∞</b>	7
Pass 4 i=1, j=4 pivot=6	7	6		Pass 5 i=1, j=5 pivot=6	7	6		Pass 6 i=1, j=6 pivot=6	7	6		Pass 7 i=1, j=7 pivot=6	7	6	<u> </u>	Pass 8 i=1, j=8 pivot=6	7	0
Pa ∏≕i	9	23		Pa T≕ viq	9	23		Pa i=1	9	23	<b>.</b>	Pa ∏≕i Viq	9	23		Pa i=1 viq	9	23
	2	123			2	123	<u>.</u>		2	123			2	123			S.	123
	4	456	<b>-</b>		4	456			4	456			4	456			4	456
	3	88			က	89			က	68			က	68			က	68
	2	9			2	9			2	9			2	9			2	9
	-	2	<b></b>		-	5	. <b>-</b>		-	2	<b></b>		-	5	- <b>-</b>		-	5
	0	3			0	3			0	3			0	3			0	3

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		13	78			13	78			13	78			13	78			13
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		12	345			12	345			12	345			12	345			12
		11	196			7	196			11	196	j		11	196			11
		10	308			10	308	į		10	308			10	308			10
		6	200	-		6	200			6	200			6	200			6
ļ. <b>-</b> ,		80	7			8	7			8	7			8	7			8
	s 9 j=9 t=6	7	6		Pass 10 i=1, j=10 pivot=6	7	6		s 11 j=11 t=6	7	6		Pass 12 i=1, j=12 pivot=6	7	6		s 13  =13 t=6	7
	Pass 9 i=1, j=9 pivot=6	9	23		Pass 10 i=1, j=10 pivot=6	9	23		Pass 11 i=1, j=11 pivot=6	9	23		Pass 12 i=1, j=12 pivot=6	9	23		Pass 13 i=1, j=13 pivot=6	9
		2	123			2	123			2	123			2	123			2
		4	456			4	456			4	456			4	456			4
		3	89			3	89			3	89			3	89			3
•		2	9			2	9			2	9			2	9			2
-		-	2	-		-	5	. <b>-</b>		1	5	<u>.</u>		_	5	· <b>-</b>		1
1		0	3			0	3			0	3			0	3			0

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7	
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23	
123	
456	
68	
6	
5	
3	
	456         123         23         9         7         200         308         196

Now that we have reached the end of the array, we partition the array into two sub-arrays: [3, 5] and [89, 456, 123, 23, 9, 7, 200, 308, 196, 345, 78].

Pass 14  Consider sub array [3,5]  0 1 2 3 4 5 6 7 8 9 10 11 12 13  3 5 6 7 8 9 7 200 308 196 345 78				
Pass 14  Consider sub array [3,5]  3 4 5 6 7 8 9 10 11  89 456 123 23 9 7 200 308 196		13	78	
Pass 14  Consider sub array [3,5]  3 4 5 6 7 8 9 10  89 456 123 23 9 7 200 308		12	345	
Pass 14  Consider sub array [3,5]  3 4 5 6 7 8 9  89 456 123 23 9 7 200		11	196	
Pass 14  Consider sub array [3,5]  3 4 5 6 7 8  89 456 123 23 9 7		10	308	
3 4 5 89 456 123		6	200	
3 4 5 89 456 123	2]	8	7	
3 4 5 89 456 123	s 14 lb array [3,	7	6	
3 4 5 89 456 123	Pasi onsider su	9	23	
89	O	9	123	
		4	456	
3 5 6		3	89	
0 8 4		2	9	
0 8		1	2	
		0	3	

Since the sub-array has only two elements, it is already sorted.

		10	78	
		6	345	
5, 78]		8	196	
Pass 15 Sorting sub-array [89, 456, 123, 23, 9, 7, 200, 308, 196, 345, 78]		7	308	
9, 7, 200, 3	ne pivot	9	200	
Pass 15 123, 23,	Consider 78 as the pivot i=0, j=1	5	7	
ıy [89, 456,	Conside	4	6	
ıg sub-arra		3	23	
Sortin		2	123	
		1	456	j
		0	89	-

			l
	10	78	
	6	345	
	8	196	
	7	808	
ne pivot swap	6	200	
Consider 78 as the pivot i=0, j=1 Since 78 < 89, swap	5	2	
Conside	4	6	
	3	23	
	2	123	
•	1	456	-
	0	89	

		10	68
		6	345
		8	196
		7	308
		9	200
Pass 16	Pivot=78 i=1, j=2	2	7
		4	6
		3	23
		2	123
		_	456
		0	78

		10	89				1	10	89					10	88				10	89	
		9   1	345 8					9	345 8					9 1	345 8				9	345 8	
		3	35					0,	37					3,	37					37	
		8	196					œ	196					8	196				∞	196	
	e array	7	308				e array	7	308				e array	7	308				7	308	
	Pivot=89 i=1, j=3 Since j < pivot, bring j to the left of the array	9	200			Pivot=78 i=1, j=4	e lert of th	9	200				i=1, j=5 Since j < pivot, bring j to the left of the array	9	200				9	200	. <b>.</b>
Pass 17	Pivot=89 i=1, j=3 ring j to the	2	2		Pass 18	Pivot=78 i=1, j=4	ning j to tn	2	7		Pass 19	Pivot=78	i=1, j=5 ring j to th	2	7	į	Pass 20	Pivot=78 i=1, j=6	2	123	
	< pivot, b	4	6				s pivot, b	4	6	<u>.                                    </u>			< pivot, b	4	123				4	456	
	Since j	3	23	į		;	Since	က	123				Since j	3	456				က	7	
		2	123					2	456					2	9				2	9	<u></u>
		1	456					-	23					1	23				_	23	
		0	78					0	78					0	78				0	78	

				ı				_
		10	68				10	88
		6	345				6	345
		8	196				œ	196
		2	308	<u> </u>			7	308
		9	200				9	200
Pass 21	Pivot=78 i=2, j=7	2	7		Pass 22	Pivot=78 i=2, j=8	2	123
		4	123				4	456
		3	456				က	7
		7	6	-			7	6
		1	23				7	23
		0	78				0	78

		10	89	
		6	345	j
		8	196	
		7	308	
		9	200	
Pass 23	Pivot=78 i=3, j=9	5	123	
		4	456	
		3	7	-
		2	6	
		1	23	
		0	78	

2 3 4 9 7 456	Pass 24	Pivot=78 i=3, j=10	5 6 7 8 9 10	123         200         308         196         345         89	
23 6 53 8 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8	Pass	Pivot i=3, j	3 4 5		
			1 2	23 9	

		10	
		9	
		8	
	sition	7	
	the correct po	9	
Pass 25	ed in the	2	
	The pivot is placed in th	4	
	The pi	3	
		2	
		1	
		0	

-		
88		
345		[6
196		96, 345, 89
308		Pass 26 We now have two sub-arrays: [7, 23, 9] and [456, 123, 200, 308, 196, 345, 89]
200		[456, 123,
123		<b>Pass 26</b> 23, 9] and
456		ırrays: <b>[7,</b> 2
78		e two sub-a
6		Ve now hav
23		·
7		

200

pivot	2	6	
Pass 27 Consider 9 as the pivot i=0, j=1	1	23	
Consic	0	7	

1	9	68	
6, 345, 89	9	345	
<b>308, 19</b>	4	196	
Pass 30 l56, 123, 20 i=0, j=1 Pivot=89	3	308	
Pass 30 Consider sub-array: [456, 123, 200, 308, 196, 345, 89] i=0, j=1 Pivot=89	2	200	
onsider su	1	123	<u>.                                    </u>
0	0	456	

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2

Pass 31 i=0, j=1 Pivot=89 Since i > pivot, swap	1 2 3 4 5 6	123 200 308 196 345 <b>89</b>		Pass 32 i=1, j=2 Pivot=89	1 2 3 4 5 6	123 200 308 196 345 456	Į l	Pass 33 i=1, j=3 Pivot=89	1 2 3 4 5 6	123 200 308 196 345 456		Pass 34 i=1, j=4 Pivot=89	1 2 3 4 5 6	123 200 308 196 345 456	ſ	Pass 35 i=1, j=5 Pivot=89	1 2 3 4 5 6	123         200         308         196         345         456		Pass 36 i=1, j=6 Pivot=89
	l l	123	<b>-</b>		-	123	-		-	123	-		-	123	-		-	123	-	
	0	456	-		0	89			0	89			0	89			0	89		

9	456	j
2	345	
4	196	
3	308	
2	200	
1	123	-
0	89	

Now, we consider sub-array [123, 200, 308, 196, 345, 456], as 89 is already in the correct position

			_
	ĸ	AEG	420
	4	376	040
36  =1 -456	3	106	130
Pass 36 i=0, j=1 Pivot=456	2	900	200
	_	- 00	7 207
	0	, ,	[7] i-
			_

	2	456	
	4	345	
.37 j=2 =456	3	196	
Pass 37 i=0, j=2 Pivot=456	2	308	ij
	1	200	
	0	123	-

	2	456	
	4	342	
38  =3 =456	3	196	ij
Pass 38 i=0, j=3 Pivot=456	2	308	
	1	200	
	0	123	

			_
	9	456	
	4	345	j
39 =4 :456	3	196	
Pass 39 i=0, j=4 Pivot=456	2	308	
	1	200	
	0	123	-
			,

			5
			4
40	j=5	t=456	3
Pass i=0, j= Pivot=	2		
			1
			0

456	j
345	
196	
308	
200	
123	<b></b>

e consider 345]	4	345	
on, therefor 308, 196, ne pivot	3	196	
in the correct position, there sub array [123, 200, 308, 19 Pass 41 i=0, j=1 Consider 345 as the pivot	2	308	
Since 456 is in the correct position, therefore consider a new sub array [123, 200, 308, 196, 345] Pass 41 i=0, j=1 Consider 345 as the pivot	1	200	
Since 456 a ne	0	123	

	4	345	
	3	196	
Pass 42 i=0, j=2 Pivot=345	2	308	j
	_	200	
	0	123	-

4	345	
3	196	į
2	308	
1	200	
0	123	<b></b>
	0 1 2 3 4	1         2         3           200         308         196

Since 34	Since 345 is in the correct position, partition the array and repeat the process	is in the correct position, pa array and repeat the process	sition, part process	ition the	
0	1	2	3	4	
123	200	308	196	345	
-			ŀ		

Pass 44	i=0, j=1	Pivot=196

3	196	
2	308	
1	200	
0	123	

ments	3	196	
vap the ele	2	308	
> pivot, swap the elements	1	200	
Since j	0	123	

Now, 19	96 is in the	Now, 196 is in the correct position.	sition.
0	١	2	3
123	196	308	200
	-	 	

Since 123 is a single element, we consider the second half of the array [308, 200] 200 Pass 45 0 308

Considering 200 as the pivot, it is smaller than 308, hence we swap it 0 308

Swapping	l	808	
After Sv	0	200	

Final Result After all the passes, the array is sorted in ascending order:

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13	456
12	345
11	308
10	200
6	196
8	123
7	68
9	78
2	23
4	6
3	7
2	9
1	2
0	3