

## → In-built functions

1) Arrays.sort(arr)

// sort in ↑ ing order by default

2) Arrays.sort(arr, Collections.reverseOrder());

// sort in ↓ ing order by default.

TC →  $O(n \log n)$  ← merge  
quick

Primitive data types.

object classes

int → Integer

boolean → Boolean

float → Float

char → Character

double → Double

→ Custom Sort (alters the properties of in-built fun)

arr =

0	1	2	3	4
-5	3	-2	8	0
(25)	(9)	(7)	(64)	(0)

0	-2	3	-5	8
---	----	---	----	---

# TC will not get affected.

## Syntax

Arrays.sort(arr, new myComparator());

## Implementation

```
public static class myComparator implements Comparator< Integer > {  
    @override  
    public int compare(Integer a, Integer b){  
        return a - b;  
    }  
}
```

interface

return a-b; // arrange elements in ↑ing order  
asc. order.

return b-a; // in ↓ing order. Desc. order

a = myself

b = other

5 2

$$a - b = 5 - 2 \Rightarrow 3$$
$$b - a = 2 - 5 \Rightarrow -3$$

```
Scanner s = new Scanner(System.in);
int n = s.nextInt();
Integer arr[] = new Integer[n];
for(int i = 0; i < n; i++){
    arr[i] = s.nextInt();
}

Arrays.sort(arr, new myComparator());

// print
for(int i = 0; i < n; i++){
    System.out.print(arr[i] + " ");
}
}
public static class myComparator implements Comparator<Integer>{
    @Override
    public int compare(Integer a, Integer b){
        return a*a - b*b;
    }
}
```

→ Lambda function (Imp).

(alters the properties of in-built func.)

Arrays.sort(arr, (a,b) → {  
    return a-b;  
});

```
Scanner s = new Scanner(System.in);  
int n = s.nextInt();  
Integer arr[] = new Integer[n];  
for(int i = 0; i < n; i++){  
    arr[i] = s.nextInt();  
}
```

```
Arrays.sort(arr, (a,b) -> {  
    return a*a - b*b;  
});
```

```
// print  
for(int i = 0; i < n; i++){  
    System.out.print(arr[i] + " ");  
}  
}
```

Imp.

↳ return  $a - b$  : ascending order

→ return  $b - a$  : descending order

→ return  $+1$  : a value will be place later

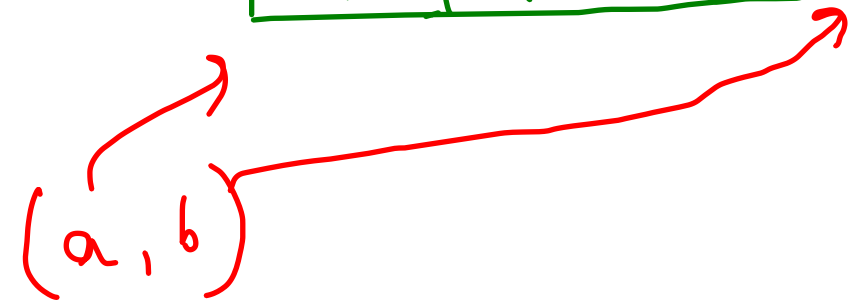
→ return  $-1$  : a value will be place first



Ex.

arr =

0	1	2	3	4	5
5	2	1	-2	5	-7



a = myself

b = other

$$\rightarrow \begin{matrix} b - a \\ -7 \quad 5 \end{matrix} = [5, -7]$$

$$\rightarrow \begin{matrix} a - b \\ 5 \quad -7 \end{matrix} = [-7, 5]$$

$$\rightarrow -1 = [5, -7]$$

$$\rightarrow +1 = [-7, 5]$$