HowToDoInJava

Finding Max and Min from List using Streams

Last Updated: March 4, 2022 By: Lokesh Gupta Java 8 Find Max Min, Java Stream Basics

Learn to **find min and max values from a *List*** using Stream API e.g. a date, number, Char, String or an object. We will use the `Comparator.comparing()` for custom comparison logic.

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1. Overview

We will be using the following functions to find the max and min values from the stream:

- **Stream.max(comparator)** : It is a terminal operation that returns the *maximum* element of the stream according to the provided `Comparator`.
- **Stream.min(comparator)** : It is a terminal operation that returns the *minimum* element of the stream according to the provided `Comparator`.

2. Finding Min or Max Date

To get **max or min date from a stream of dates**, you can use **Comparator.comparing(LocalDate::toEpochDay)** *Comparator*. The `toEpochDay()` function returns the count of days since epoch i.e. *1970-01-01*.

```
LocalDate start = LocalDate.now();
LocalDate end = LocalDate.now().plusMonths(1).with(TemporalAdjusters.lastDayOfMonth());

//Create stream of dates
List<LocalDate> dates = Stream.iterate(start, date -> date.plusDays(1))
                .limit(ChronoUnit.DAYS.between(start, end))
                .collect(Collectors.toList());

// Get Min or Max Date
```

```
LocalDate maxDate = dates.stream()
              .max( Comparator.comparing( LocalDate::toEpochDay ) )
              .get();

LocalDate minDate = dates.stream()
              .min( Comparator.comparing( LocalDate::toEpochDay ) )
              .get();
```

Use the above program to find the earliest date or latest date from a list of dates.

3. Find Min or Max Number

To find min and max numbers from the stream of numbers, use **Comparator.comparing(Integer::valueOf)** like comparators. The below example is for a stream of Integers.

```
// Get Min or Max Number
Integer maxNumber = Stream.of(1, 2, 3, 4, 5, 6, 7, 8, 9)
          .max(Comparator.comparing(Integer::valueOf))
          .get();

Integer minNumber = Stream.of(1, 2, 3, 4, 5, 6, 7, 8, 9)
          .min(Comparator.comparing(Integer::valueOf))
          .get();
```

4. Find Min or Max Char or String

To find min and max string or char from a stream of chars, use **Comparator.comparing(String::valueOf)** like comparators.

```
// Get Min or Max String/Char
String maxChar = Stream.of("H", "T", "D", "I", "J")
            .max(Comparator.comparing(String::valueOf))
            .get();

String minChar = Stream.of("H", "T", "D", "I", "J")
            .min(Comparator.comparing(String::valueOf))
            .get();
```

5. Find Min or Max Object by Field Value

The Object comparison involves creating our own custom comparator, first. For example, if I want to get the youngest employee from a stream of `Employee` objects, then my comparator will look like `Comparator.comparing(Employee::getAge)`. Now use this comparator to get max or min employee object.

Java program to find max or min employee object by their age.

```
Find max or min object by object property
List<Employee> employees = new ArrayList<Employee>();

//add few employees

Comparator<Employee> comparator = Comparator.comparing( Employee::getAge );

// Get Min or Max Object
Employee minObject = employees.stream().min(comparator).get();
Employee maxObject = employees.stream().max(comparator).get();
```

6. Conclusion

In this tutorial, we learned to *find max value or min value from a list using the Java stream API* and lambda expression. We also learned to find max or min objects such as max Date or String.

We also learned to find the max object by object property from the stream of objects.

Happy Learning !!

Sourcecode on Github

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Let us know if you liked the post. That's the only way we can improve.

Yes

No

Recommended Reading:

1. Python max() and min() – finding max and min in list or array
2. Finding Max and Min in Arrays
3. Java Regex to check Min/Max Length of Input Text
4. Hibernate count, min, max, sum, avg Functions
5. Java Stream – Get Object with Max Date From a List
6. Java Stream min()
7. Java Stream max()
8. Boxed Streams in Java
9. Creating Infinite Streams in Java

0. Applying Multiple Conditions on Java Streams

7 thoughts on “Finding Max and Min from List using Streams”

Mahipal

April 9, 2019 at 5:08 pm

kindly write a program for second highest number using java 8 given list of numbers

Reply

Lokesh Gupta

April 9, 2019 at 5:24 pm

See if it helps.

```
List&lt;Integer&gt; list = Arrays.asList(1,3,4,5,2,8,9,3,6,10,23,2,5);

Optional&lt;Integer&gt; value = list.stream()
              .sorted(Collections.reverseOrder())
              .limit(2)
              .skip(1)
              .findFirst();

System.out.println(value);
```

Reply

Nitin Vashisth

June 11, 2018 at 9:01 am

Is there any way if we want our comparator object to be capable of using more than 1 property of the Employee object so that we can sort the elements based on multiple properties rather than only 1 property.

Reply

Lokesh Gupta

June 11, 2018 at 8:30 pm

Implement `compare()` method and implement your logic the way you want. There is no restriction.

Reply

Jagabandhu Malick

March 22, 2020 at 10:29 pm

we can use `Comarator multComparator = Comparato.comparing(property1).thenComparing(property2);`

Reply

mingyuC

June 6, 2018 at 2:25 pm

no,it will throw an exception,but you can use filter to filter it

Reply

chinijo

December 12, 2017 at 2:42 pm

Hello Lokesh,
What about with a list that include null elements? Its possible filter this null elements?
Thanks!

Reply

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