

## Java 8 method reference example

📅 Last Updated: December 26, 2020    👤 By: Lokesh Gupta    📁 Java 8    💎 Java 8, Lambda Expression

In [Java 8](#), we can refer a method from class or object using **class::methodName** type syntax. Let's learn about different types of available **method references in java 8**.

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## 1. Types of method references

Java 8 allows four types of method references.

Method Reference	Reference to <b>static method</b>
Description	Used to refer static methods from a class
Method reference example	<b>Math::max</b> equivalent to <b>Math.max(x, y)</b>
Method Reference	Reference to <b>instance method from instance</b>
Description	Refer to an instance method using a reference to the supplied object
Method reference example	<b>System.out::println</b> equivalent to <b>System.out.println(x)</b>
Method Reference	Reference to <b>instance method from class type</b>
Description	Invoke the instance method on a reference to an object supplied by the context
Method reference example	<b>String::length</b> equivalent to <b>str.length()</b>
Method Reference	Reference to <b>constructor</b>
Description	Reference to a constructor
Method reference example	<b>ArrayList::new</b> equivalent to <b>new ArrayList()</b>

## 2. Method reference to static method – Class::staticMethodName

An example to use `Math.max()` which is static method.

```
List<Integer> integers = Arrays.asList(1,12,433,5);

Optional<Integer> max = integers.stream().reduce( Math::max );

max.ifPresent(value -> System.out.println(value));
```

Output:

433

### 3. Method reference to instance method from instance – `ClassInstance::instanceMethodName`

In above example, we use `System.out.println(value)` to print the max value found. We can use `System.out::println` to print the value.

```
List<Integer> integers = Arrays.asList(1,12,433,5);

Optional<Integer> max = integers.stream().reduce( Math::max );

max.ifPresent( System.out::println );
```

Output:

433

### 4. Method reference to instance method from class type – `Class::instanceMethodName`

In this example, `s1.compareTo(s2)` is referred as `String::compareTo`.

```
List<String> strings = Arrays
    .asList("how", "to", "do", "in", "java", "dot", "com");

List<String> sorted = strings
    .stream()
    .sorted((s1, s2) -> s1.compareTo(s2))
    .collect(Collectors.toList());

System.out.println(sorted);

List<String> sortedAlt = strings
    .stream()
    .sorted(String::compareTo)
    .collect(Collectors.toList());

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

Output:

```
[com, do, dot, how, in, java, to]
[com, do, dot, how, in, java, to]
```

## 5. Reference to constructor – Class::**new**

The first method can be updated to create a list of integers from 1 to 100. Using [lambda expression](#) is rather easy. To create a new instance of `ArrayList`, we have use `ArrayList::new`.

```
List<Integer> integers = IntStream
    .range(1, 100)
    .boxed()
    .collect(Collectors.toCollection( ArrayList::new ));

Optional<Integer> max = integers.stream().reduce(Math::max);

max.ifPresent(System.out::println);
```

Output:

```
99
```

That's 4 type of **method references in java 8** lambda enhancements.

Happy Learning !!

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Yes

No

## Recommended Reading:

1. [Java 8 Optionals : Complete Reference](#)
2. [Java Pass-by-Value vs. Pass-by-Reference](#)
3. [Java Regex as Predicate using Pattern.compile\(\) Method](#)
4. [Java Strict Date Validation – Java SimpleDateFormat setLenient\(\) Method](#)
5. [Java String equals\(\) method – Java compare strings](#)

6. [Java Static – Variable, Method, Block, Class and Import Statement](#)

7. [Java String charAt\(\) method example](#)

8. [Java String concat\(\) method example](#)

9. [Java String replace\(\) method example](#)

0. [Java String toLowerCase\(\) method example](#)



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6 thoughts on “Java 8 method reference example”

**Debraj**[March 7, 2019 at 10:51 am](#)

ArrayList::new equivalent to new ArrayList() this is not correct this applicable only if "The target type of this expression must be a functional interface"

[Reply](#)**Debraj**[March 7, 2019 at 10:57 am](#)

I meant not always correct there is a condition.

[Reply](#)**Chetan Patel**[April 12, 2018 at 10:10 am](#)

```
Consumer con = System.out::println;  
con.accept("Hello");
```

[Reply](#)**thangamma**[February 14, 2018 at 11:48 am](#)

How do you come to know about the parameters that are taken by these static methods.

For Example:

If I want to write System.out.println("Hello");

How do i write it using method reference ?

[Reply](#)

**Chetan Patel**

April 12, 2018 at 10:11 am

Consumer con = System.out::println;  
con.accept("Hello");

[Reply](#)

**satak**

November 27, 2019 at 5:59 pm

System.out::println

[Reply](#)

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