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[Home](#) › [Interview](#) › [Core Java Interview Q&A](#) › [Java 8](#) › 07: ♦ Java 8 API examples using lambda expressions and functional programming

## 07: ♦ Java 8 API examples using lambda expressions and functional programming

Posted on November 25, 2014 by Arulkumaran Kumaraswamipillai — No

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Java 8 API examples using lambda expressions and functional programming.

**Example 1:** The *java.lang Runnable* interface has been made a functional interface.

```
1 package com.java8.examples;
2
3 public class Example1 {
4
5     public static void main(String[] args) {
```

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```

6      System.out.println("main thread: " + Thread.currentThread().getName());
7
8      //run method takes no arguments so: () -> (boolean)
9      //closure worker thread1
10     Runnable r = () -> (System.out.println("worker thread1");
11     new Thread(r).start(); //pass the Runnable closure to the thread
12
13     //closure worker thread2
14     new Thread( () -> (System.out.println("worker thread2");
15     })
16     .start();
17
18

```

**Output:**

main thread: main

worker thread: Thread-0

worker thread: Thread-1

**Example 2:** The **java.util.function** package has a number of functional interfaces.

```

1  package com.java8.examples;
2
3  import java.util.function.Consumer;
4
5  public class Example2 {
6
7      public static void main(String[] args) {
8          //closure of Consumer 1. the accept(T t) method
9          Consumer<Integer> c1 = (x) -> {System.out.println("Consumer 1: " + x);};
10         //closure of Consumer 2. x is an Integer
11         Consumer<Integer> c2 = (x) -> {System.out.println("Consumer 2: " + x);};
12
13
14         c1.accept(5);
15         c2.accept(5);
16
17         //andThen is a default method implementation
18         Consumer<Integer> c3 = c1.andThen(c2);
19         c3.accept(6);
20     }
21 }
22
23

```

**Output:**

consumed: 5

consumed: 25

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consumed: 6  
consumed: 36

**Example 3:** The *Function***<T, R>** is similar to *Consumer***<T>**, but the *Function* interface has a return value in its *apply(T t)* method, whereas the *Consumer* has a void method *accept(T t)*.

```

1 package com.java8.examples;
2
3 import java.util.function.Function;
4
5 public class Example3 {
6
7     public static void main(String[] args) {
8         //closure of Function. apply(T t) method takes
9         Function<Double, Double> c1 = (arg) -> (arg * 2);
10        Function<Double, Double> c2 = (arg) -> (arg * 5);
11
12        Double result1 = c1.apply(5.0);
13        Double result2 = c2.apply(5.0);
14
15        System.out.println("result1= " + result1);
16        System.out.println("result2= " + result2);
17
18        //andThen is a default method implementation
19        Function<Double, Double> c3 = c1.andThen(c2);
20        Double result3 = c3.apply(6.0);
21
22        System.out.println("result3= " + result3);
23    }
24 }
25 }
26

```

#### Output:

result1= 10.0  
result2= 25.0  
result3= 144.0

**Example 4:** The *Predicate***<T>** interface from *java.util.function* package has *test(T t)* method that returns a boolean value indicating test condition has passed or failed. The predicates are often used to filter a collection of objects.

```

1 package com.java8.examples;
2
3 import java.util.Arrays;
4 import java.util.List;

```

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```

5 import java.util.function.Predicate;
6
7 public class Example4 {
8
9     private static final int SHORT_NAME_LENGTH = 3;
10
11     public static void main(String[] args) {
12
13         List<String> languages = Arrays.asList("Java",
14
15         //The Predicate interface has test(T t) that r
16         Predicate<String> shortNamePredicate = (s) ->
17
18         Predicate<String> startsWithCPredicate = (s) -
19
20
21         languages.stream()
22             .filter(shortNamePredicate)
23             .forEach(e -> System.out.println("sho
24
25         languages.stream()
26             .filter(startsWithCPredicate)
27             .forEach(e -> System.out.println("sta
28
29     }
30 }
31

```

**Output:**

short names: C++  
short names: PHP  
short names: C#  
starts with J: Java  
starts with J: JRuby  
starts with J: Jython

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