The Java Streams collect() Terminal Operation (Part 3)

Douglas C. Schmidt
d.schmidt@vanderbilt.edu
www.dre.vanderbilt.edu/~schmidt

Professor of Computer Science
Institute for Software Integrated Systems
Vanderbilt University
Nashville, Tennessee, USA
Learning Objectives in this Part of the Lesson

• Understand common terminal operations, e.g.
  • forEach()
  • collect()
    • Know what a collector does
    • Recognize common Java pre-defined collectors & know how to use them in conjunction with collect()
• Be aware of how to use the Teeing Collector

```java
void runCollect*() {
    Stream
        .of(getStartPage(pageUri))
        .collect(teeing
            (mapping
                (this::getCountOfImagesInPage,
                 summingLong(Long::longValue)),
                 mapping(page ->
                    crawlLinksInPage(page,
                        depth),
                        summingLong(Long::longValue)),
                        Long::sum));
...}
```

See [docs.oracle.com/en/java/javase/12/docs/api/java.base/java/util/stream/Collectors.html#teeing](https://docs.oracle.com/en/java/javase/12/docs/api/java.base/java/util/stream/Collectors.html#teeing)
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  • Added in Java 12

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See [dzone.com/articles/java-12-the-teeing-collector](dzone.com/articles/java-12-the-teeing-collector)
Overview of the Teeing Collector
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• The Teeing Collector returns a Collector that is a composite of two downstream collectors

See docs.oracle.com/en/java/javase/12/docs/api/java.base/java/util/stream(Collectors.html#teeing
Overview of the Teeing Collector

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- Every element passed to the resulting collector is processed by both downstream collectors
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- The Teeing Collector returns a Collector that is a composite of two downstream collectors
  - Every element passed to the resulting collector is processed by both downstream collectors
  - Their results are then merged using the specified merge function into the final result
Applying the Teeing Collector
Overview of the Teeing Collector

• We’ll showcase the Teeing Collector via a program that crawls pages containing images in a recursively defined folder structure.

This program also showcases the Java sequential streams framework.
Applying the Teeing Collector

import ...

/**
 * This class counts the number of images in a recursively-defined
 * folder structure using the Java sequential stream framework and
 * the {code teeing} {link Collector}. The root folder can either
 * reside locally (filesystem-based) or remotely (web-based).
 */

class ImageCounter {

    /**
     * Debugging tag.
     */

    private final String TAG = this.getClass().getName();

    /**
     * A cache of unique URIs that have already been processed.
     */

    private final KeySetView<Object, Boolean> mUniqueUris =
        ConcurrentHashMap.newKeySet();

    /**
     * Constructor counts all the images reachable from the root URI.
     */

    ImageCounter() {
        // Get the URI to the root of the page/folder being traversed.
    }

1 usage = Douglas C. Schmidt
End of the Java Streams collect() Terminal Operation (Part 3)