Java Streams: Avoiding Common Programming Mistakes

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

- Know how to apply sequential streams to the SearchStreamGang program
- Recognize how a Spliterator is used in SearchWithSequentialStreams
- Understand the pros & cons of the SearchWithSequentialStreams class
- Learn how to avoid common streams programming mistakes

See blog.jooq.org/2014/06/13/java-8-friday-10-subtle-mistakes-when-using-the-streams-api

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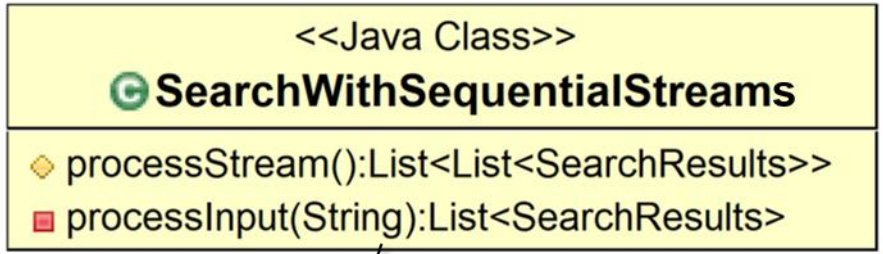


We discuss several examples in this lesson, including SearchWithSequentialStreams.

See streamgangs/SearchWithSequentialStreams.java

Avoiding Common Streams Programming Mistakes

Avoiding Common Streams Programming Mistakes

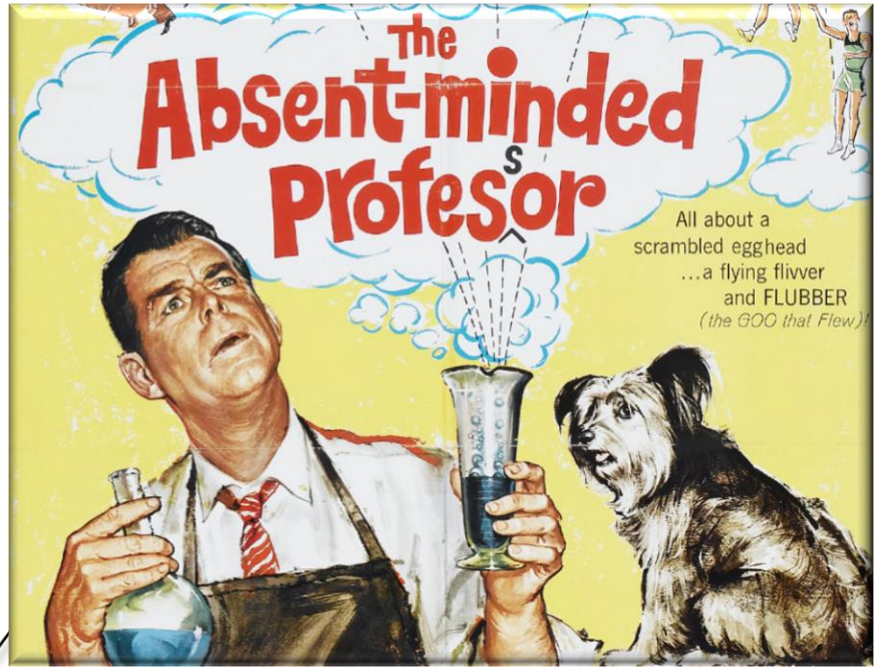
- Don't forget the terminal operation!

```
List<CharSequence> input =
   getInput();

Stream<List<SearchResults>> input
   .stream()

   .map(this::processInput);
```

MISSING

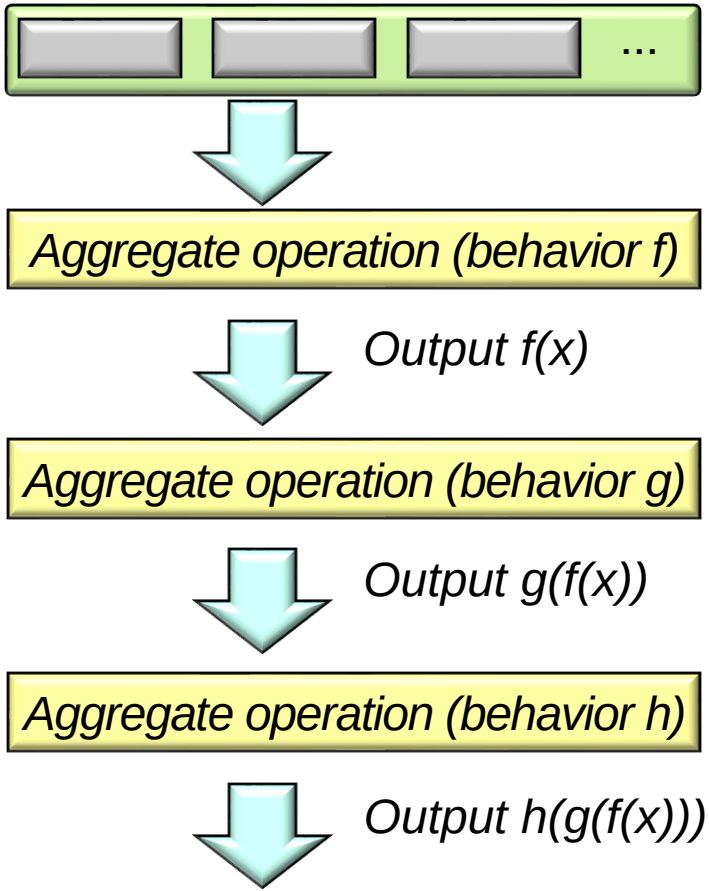


This is an all-to-common beginner mistake..

See streamgangs/SearchWithSequentialStreams.java

Avoiding Common Streams Programming Mistakes

- Only traverse a stream once



Avoiding Common Streams Programming Mistakes

- Only traverse a stream once

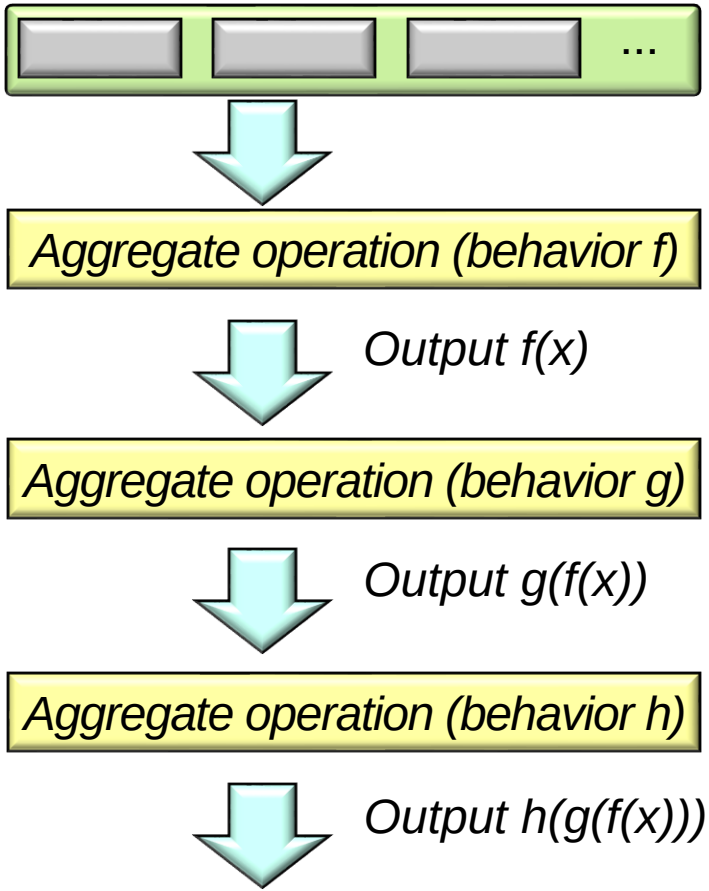
```
List<CharSequence> input =
   getInput();

Stream<List<SearchResults>> s = input
   .stream()

   .map(this::processInput);

s.forEach(System.out::println);
s.forEach(System.out::println);
```

Duplicate calls are invalid!



Avoiding Common Streams Programming Mistakes

- Only traverse a stream once

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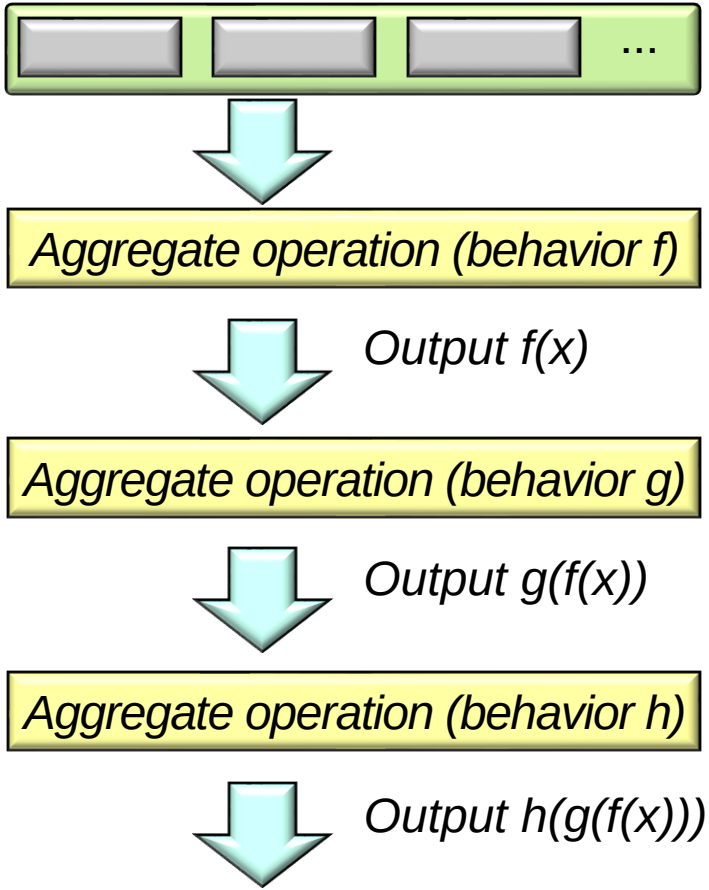
```

Throws java.lang.IllegalStateException

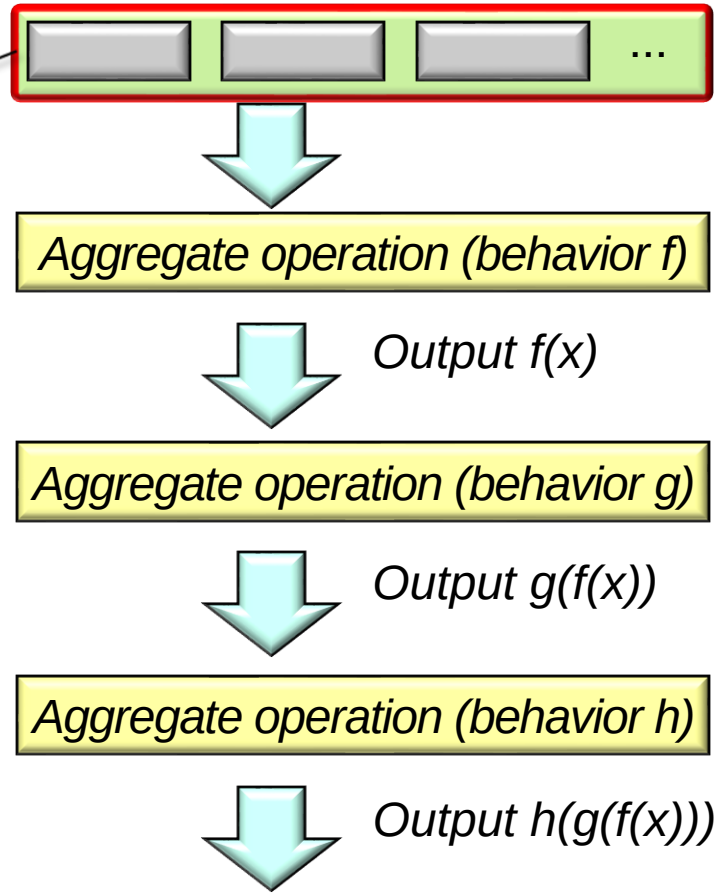


See docs.oracle.com/javase/8/docs/api/java/lang/IllegalStateException.html

Avoiding Common Streams Programming Mistakes

- Only traverse a stream once

To traverse a stream again you need to get a new stream from the data source



Avoiding Common Streams Programming Mistakes

- Don't modify the backing collection of a stream

```
List<Integer> list = IntStream
   .range(0, 10)
   .boxed()
   .collect(toList());


list
   .stream()
   .peek(list::remove)
   .forEach(System.out::println);
```

See github.com/douglascraigschmidt/LiveLessons/tree/master/Java8/ex11

Avoiding Common Streams Programming Mistakes

- Don't modify the backing collection of a stream

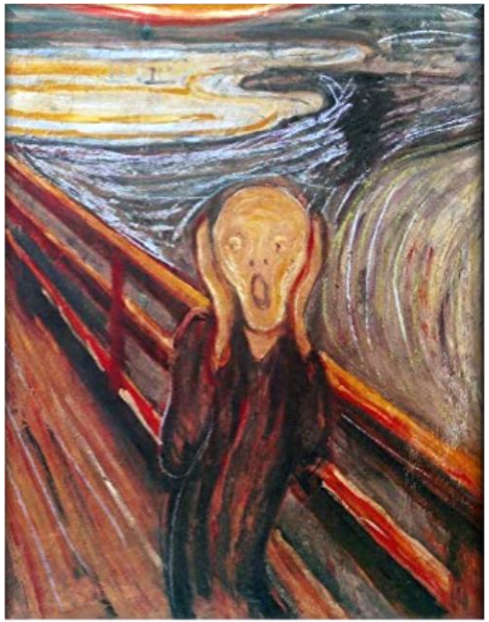
```
List<Integer> list = IntStream
   .range(0, 10)
   .boxed()
   .collect(toList());
```

Create a list of ten integers in range 0..9

```
list
   .stream()
   .peek(list::remove)
   .forEach(System.out::println);
```

Avoiding Common Streams Programming Mistakes

- Don't modify the backing collection of a stream



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   .range(0, 10)
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list
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   .peek(list::remove)
   .forEach(System.out::println);
```

If a non-concurrent collection is modified while it's being operated on the results will be chao & insanity!!

See docs.oracle.com/javase/8/docs/api/java/util/stream/Stream.html#peek

Avoiding Common Streams Programming Mistakes

- Don't modify the backing collection of a stream

```
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list
   .stream()
   .peek(list::remove)
   .forEach(System.out::println);
```
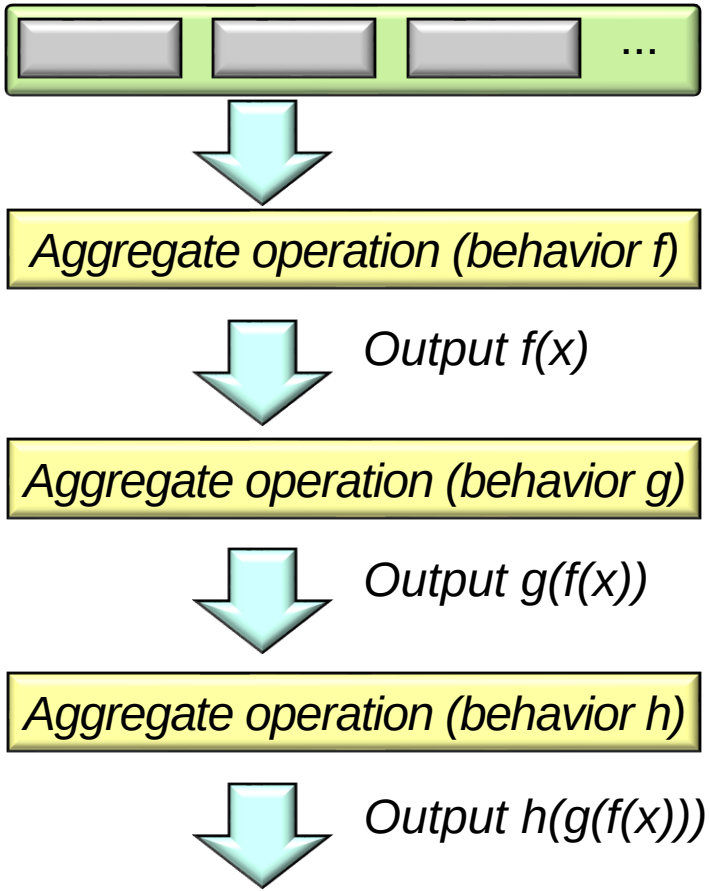

Modifying a list while it's been iterated/ spliterated through will yield weird results!

See docs.oracle.com/javase/8/docs/api/java/util/stream/package-summary.html#NonInterference

Avoiding Common Streams Programming Mistakes

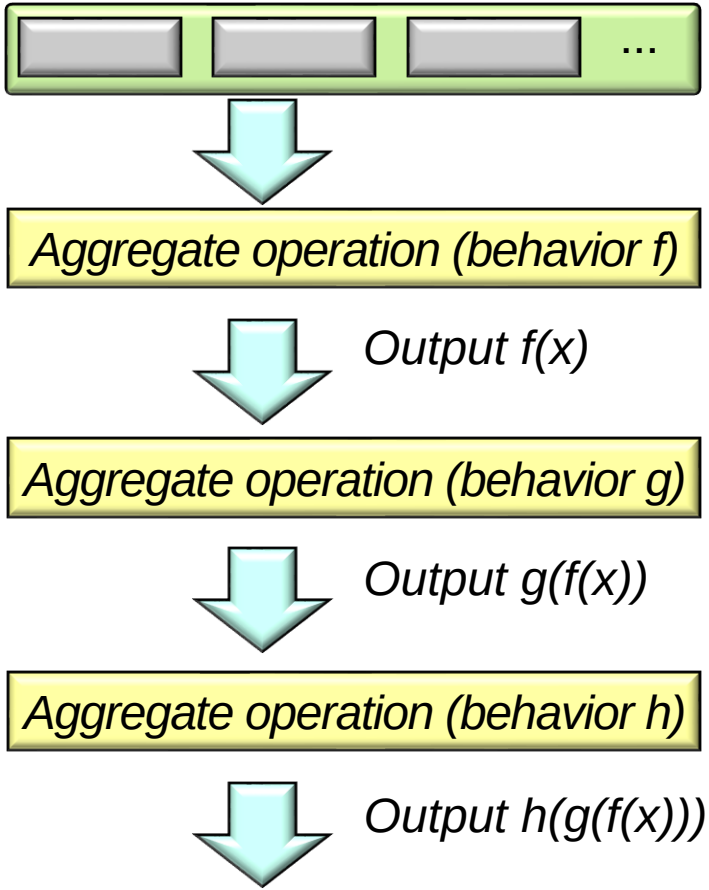
- Remember that a stream holds no non-transient storage



Avoiding Common Streams Programming Mistakes

- Remember that a stream holds no non-transient storage

Apps are responsible for persisting any data that must be preserved



See dzone.com/articles/database-crud-operations-in-java-8-streams

End of Java Streams: Avoiding Common Programming Mistakes