Understanding Java Streams Short-Circuit Aggregate Operations

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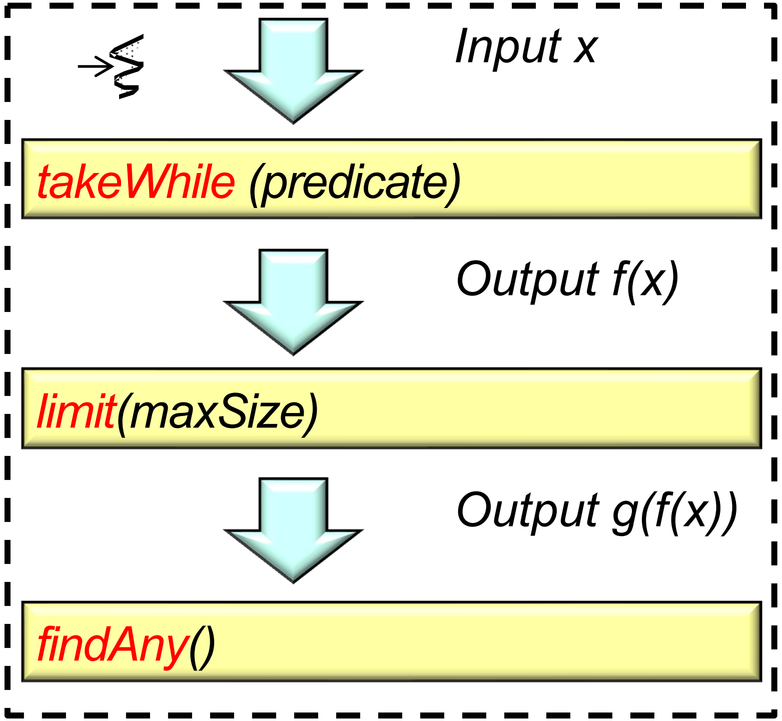
Learning Objectives in this Part of the Lesson

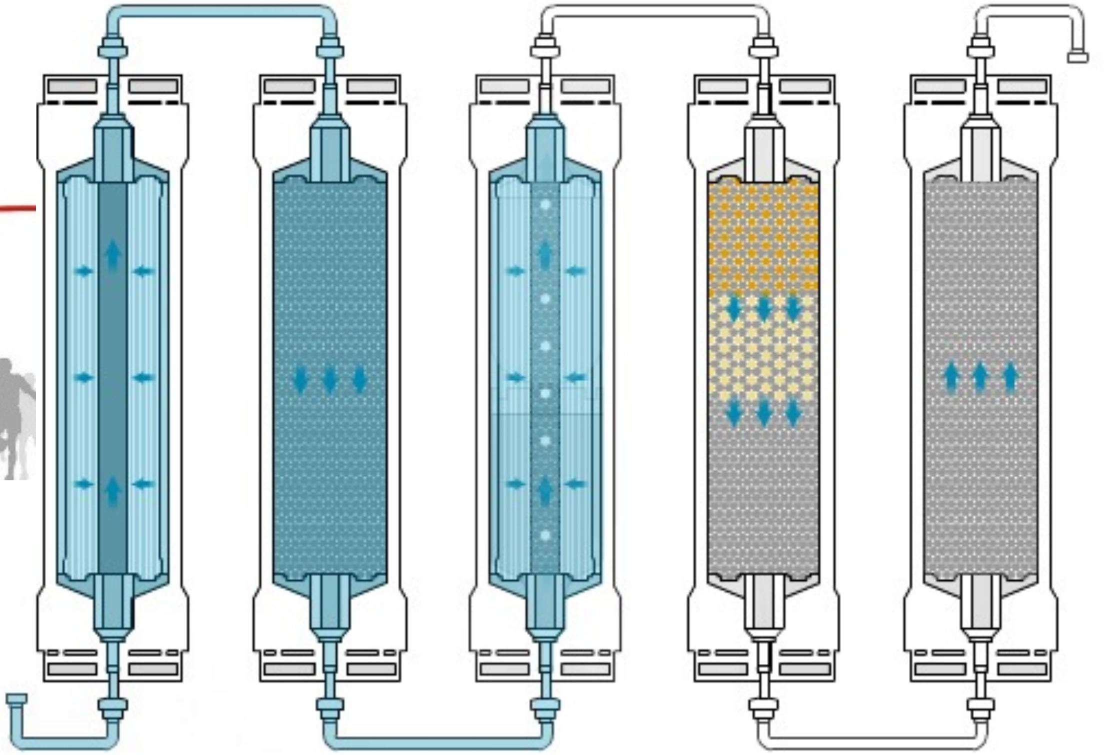
- Understand the structure & functionality of stream aggregate operations
- Understand the Java stream "short-circuit" aggregate operations



Java Streams Short-Circuit Operations

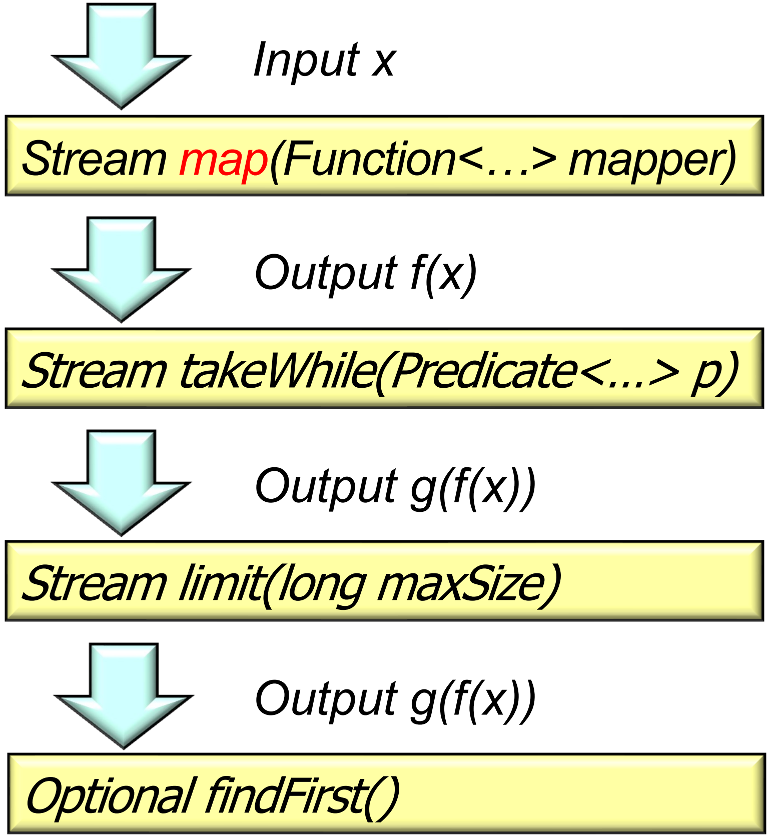
Java Streams Short-Circuit Operations

- An aggregate operation *may* process all elements in a stream



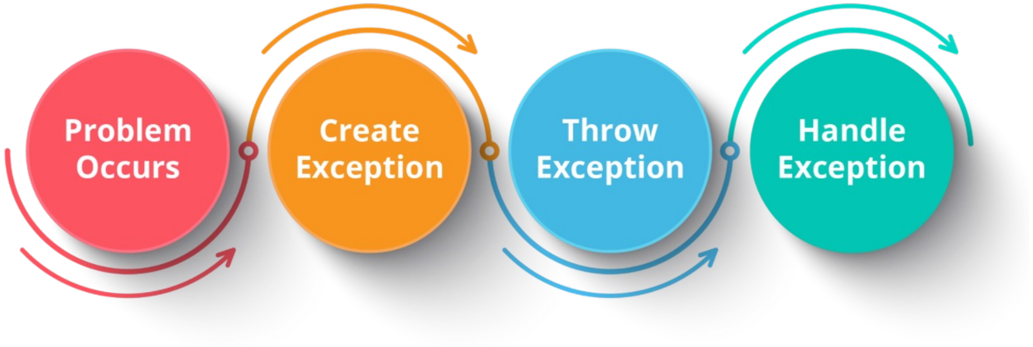
Java Streams Short-Circuit Operations

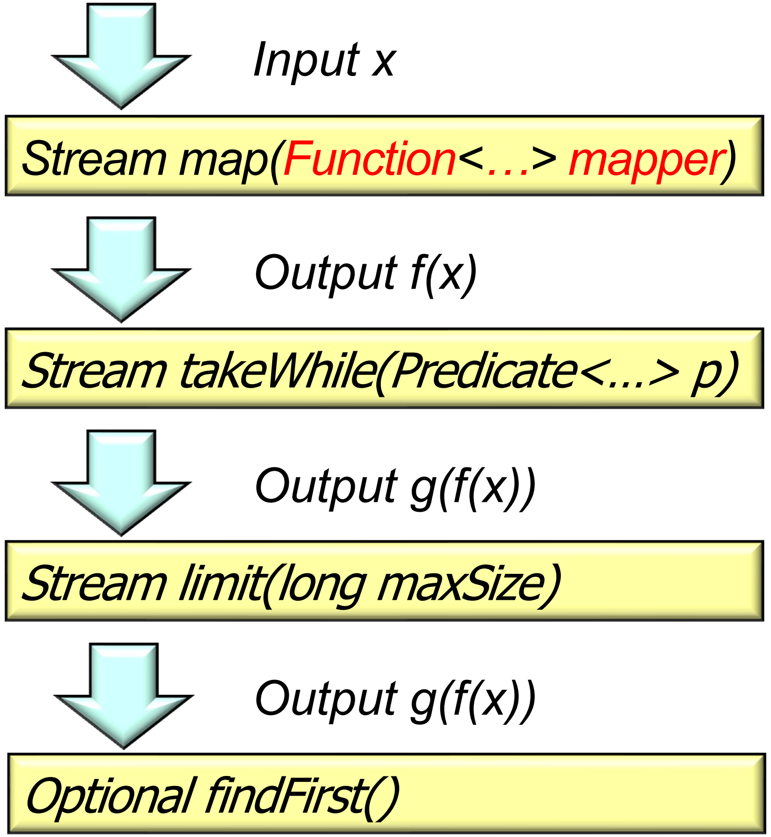
- An aggregate operation *may* process all elements in a stream, e.g.
  - map() processes all of the elements in its input stream


Input x
Stream map(Function<…> mapper)
Output f(x)
Stream takeWhile(Predicate<...> p)
Output g(f(x))
Stream limit(long maxSize)
Output g(f(x))
Optional findFirst()

Java Streams Short-Circuit Operations

- An aggregate operation *may* process all elements in a stream, e.g.
  - map() processes all of the elements in its input stream
    - Unless a behavior throws an exception..





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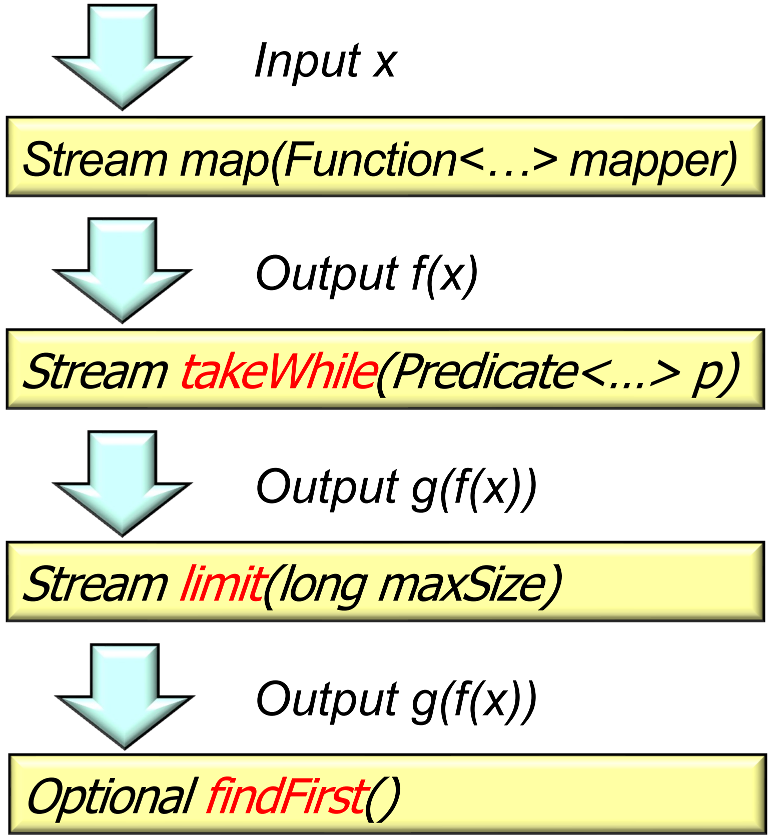
See vanilla-java.github.io/2016/06/21/Reviewing-Exception-Handling.html

Java Streams Short-Circuit Operations

- An aggregate operation *may* process all elements in a stream, e.g.
  - map() processes all of the elements in its input stream
  - "Short-circuit" operations halt further processing after reaching their condition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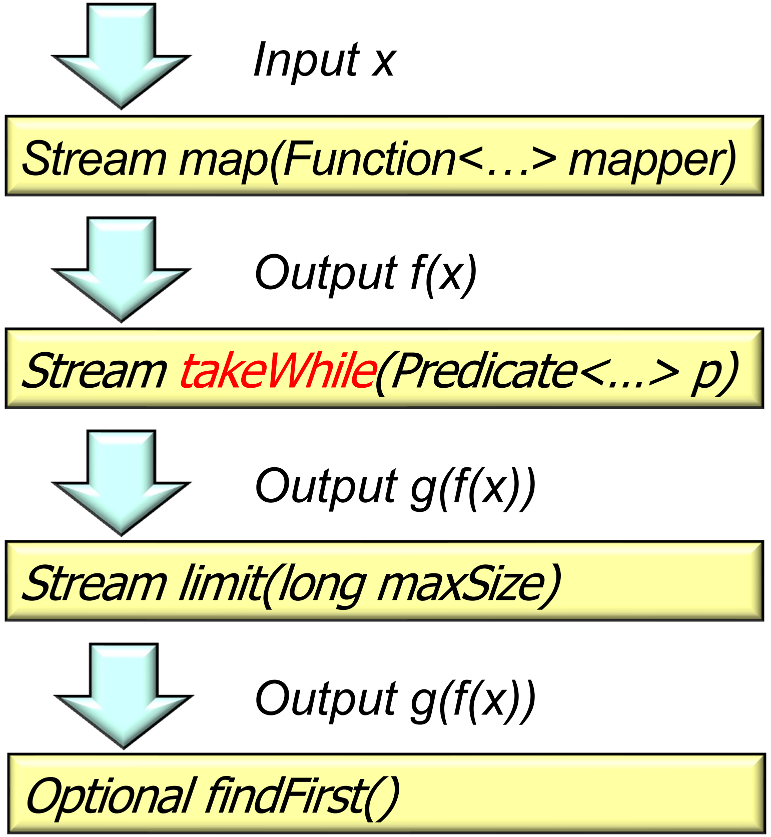
See www.logicbig.com/tutorials/core-java-tutorial/java-util-stream/short-circuiting

Java Streams Short-Circuit Operations

- An aggregate operation *may* process all elements in a stream, e.g.
  - map() processes all of the elements in its input stream
  - "Short-circuit" operations halt further processing after reaching their condition
    - takeWhile()
      - A short-circuit intermediate operation that returns a stream consisting of a subset of elements taken from this stream that match the given predicate



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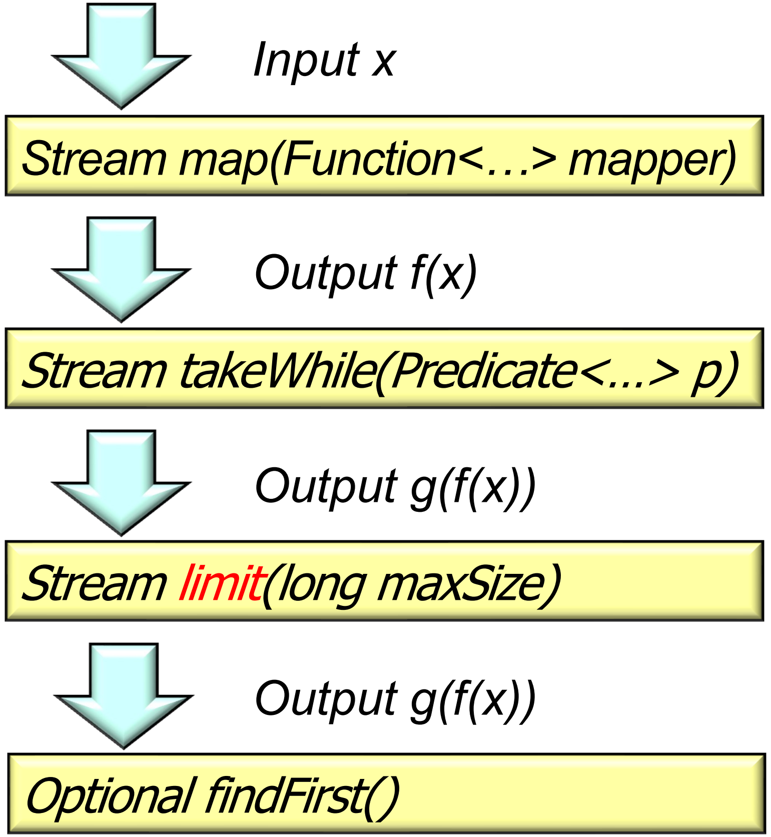
See docs.oracle.com/javase/9/docs/api/java/util/stream/Stream.html#takeWhile

Java Streams Short-Circuit Operations

- An aggregate operation *may* process all elements in a stream, e.g.
  - map() processes all of the elements in its input stream
  - "Short-circuit" operations halt further processing after reaching their condition
    - takeWhile()
    - limit()
      - A short-circuit intermediate operation that causes a stream to operate on a reduced size



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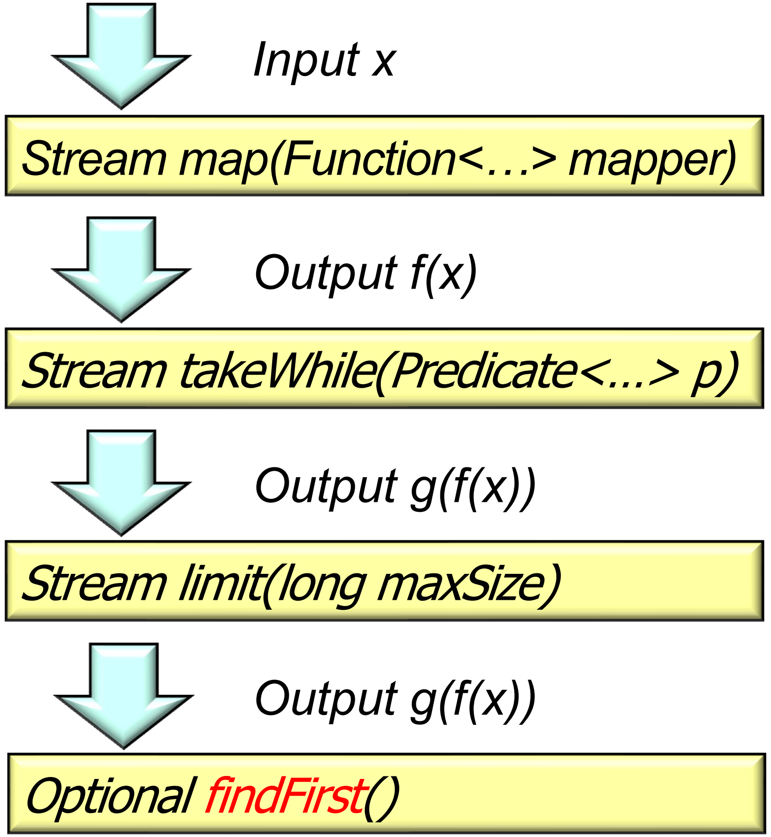
See docs.oracle.com/javase/8/docs/api/java/util/stream/Stream.html#limit

Java Streams Short-Circuit Operations

- An aggregate operation *may* process all elements in a stream, e.g.
  - map() processes all of the elements in its input stream
  - "Short-circuit" operations halt further processing after reaching their condition
    - takeWhile()
    - limit()
    - findFirst(), findAny(), anyMatch(), allMatch(), & noneMatch()
      - Short-circuit terminal operations can finish before traversing all elements in the underlying stream



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See dzone.com/articles/collectors-part-1-%E2%80%93-reductions

End of Understanding Java Streams Short-Circuit Aggregate Operations