Java Streams: Contrasting the reduce() & collect() Terminal Operations

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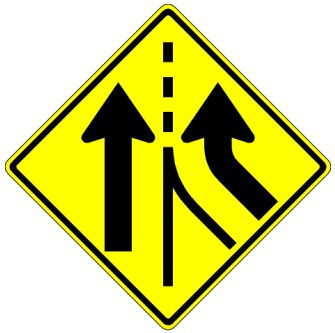
Learning Objectives in this Part of the Lesson

- Understand common terminal operations, e.g.
  - forEach()
  - collect()
  - reduce()
  - Contrasting reduce() & collect()



Contrasting reduce() & collect()

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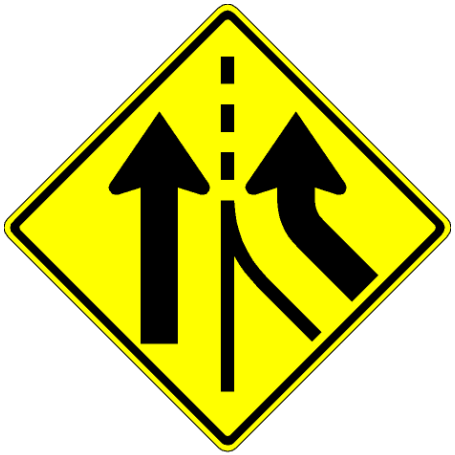
- Terminal operations produce results in different ways



These differences are important for parallel streams (covered later)

Contrasting reduce() & collect()

- Terminal operations produce results in different ways, e.g.
  - reduce() creates an immutable value

See docs.oracle.com/javase/tutorial/essential/concurrency/immutable.html

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```
long factorial(long n) {
  return LongStream
    .rangeClosed(1, n)
    .reduce(1, (a, b) -> a * b);
}
```

See github.com/douglascraigschmidt/LiveLessons/tree/master/Java8/ex16

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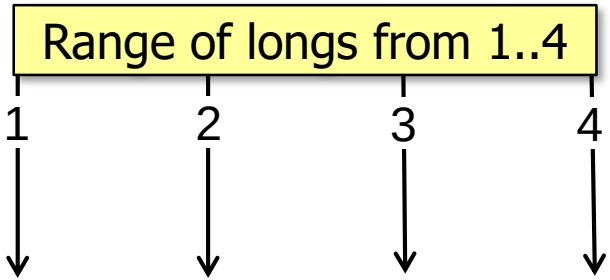

See docs.oracle.com/javase/8/docs/api/java/util/stream/LongStream.html#rangeClosed

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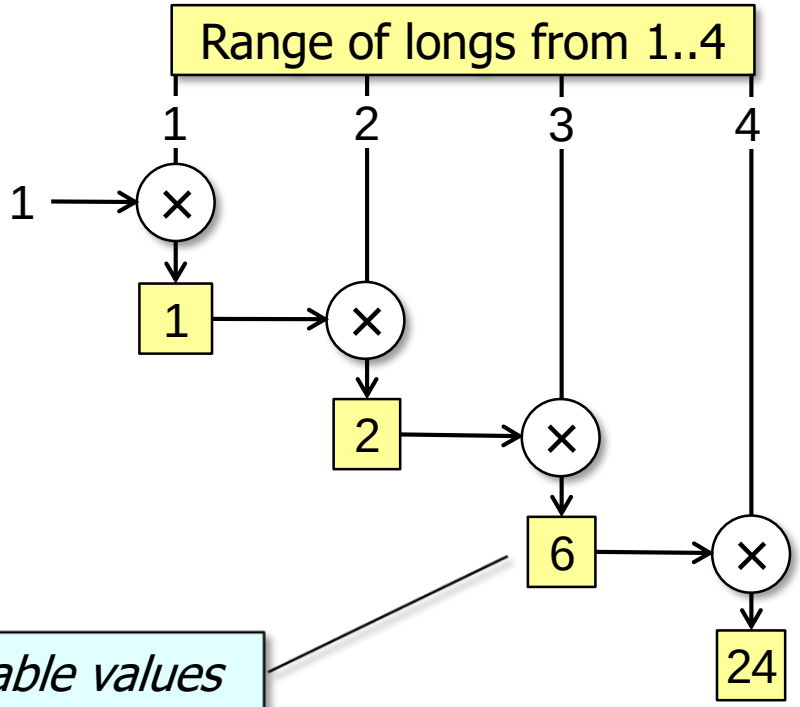

reduce() combines two immutable values (e.g., long or Long) & produces a new one

See docs.oracle.com/javase/8/docs/api/java/util/stream/LongStream.html#reduce

Contrasting reduce() & collect()

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  - collect() mutates an existing value

See greenteapress.com/thinkapjava/html/thinkjava011.html

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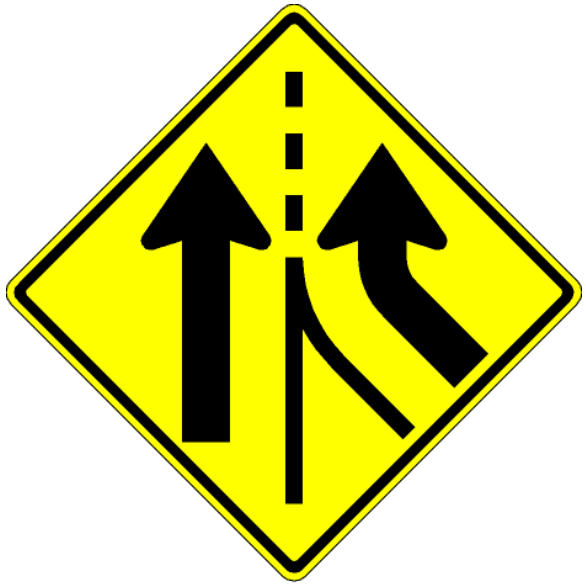

```
Set<CharSequence> uniqueWords =
  getInput(sSHAKESPEARE),
           "\\s+")
  .stream()

  .map(charSeq ->
       charSeq.toString()
              .toLowerCase())

  .collect(toCollection(HashSet::new));
```

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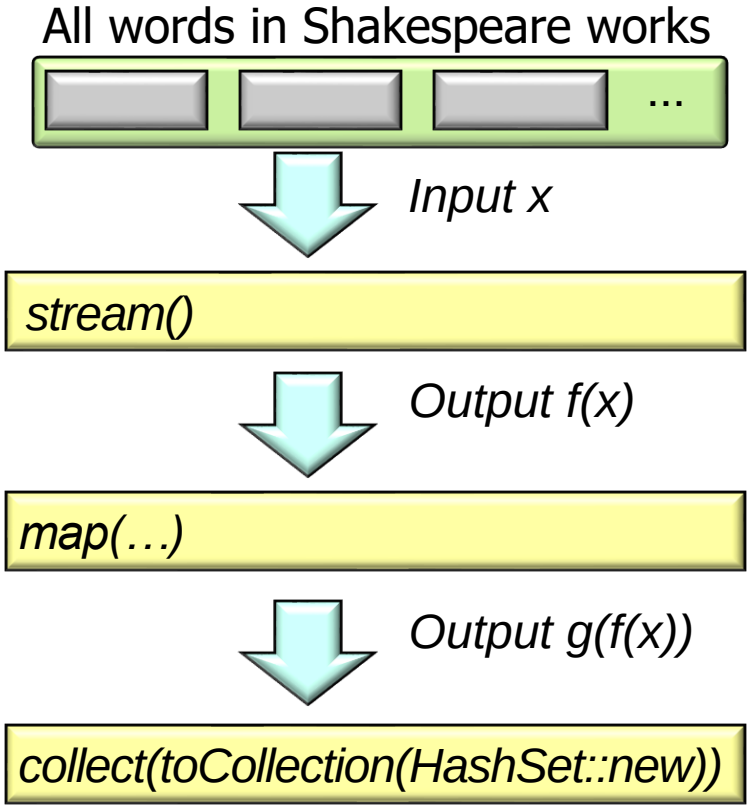
Create a set of all the unique words in Shakespeare's works



See github.com/douglascraigschmidt/LiveLessons/tree/master/Java8/ex14

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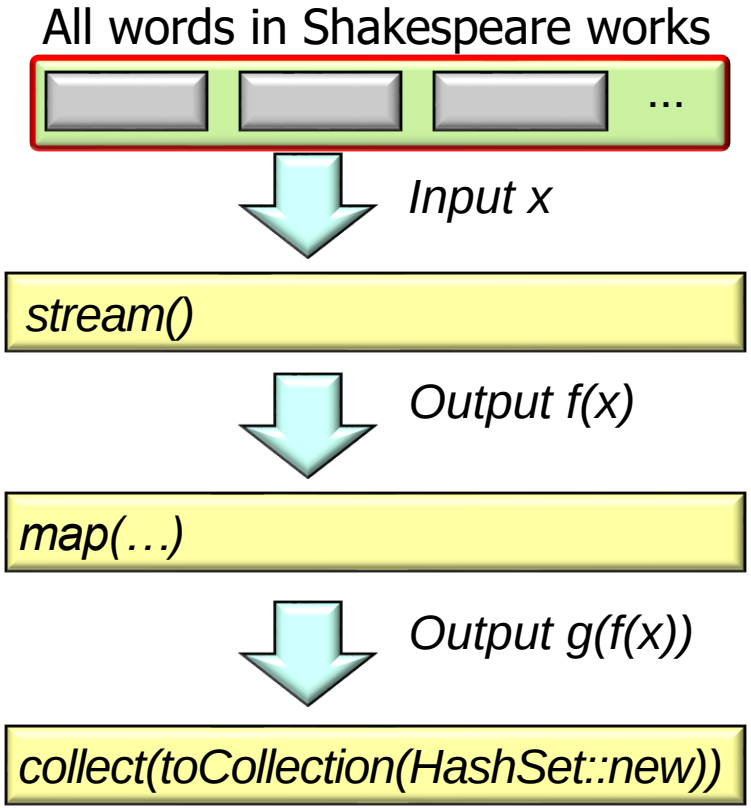
Get list of all words in Shakespeare



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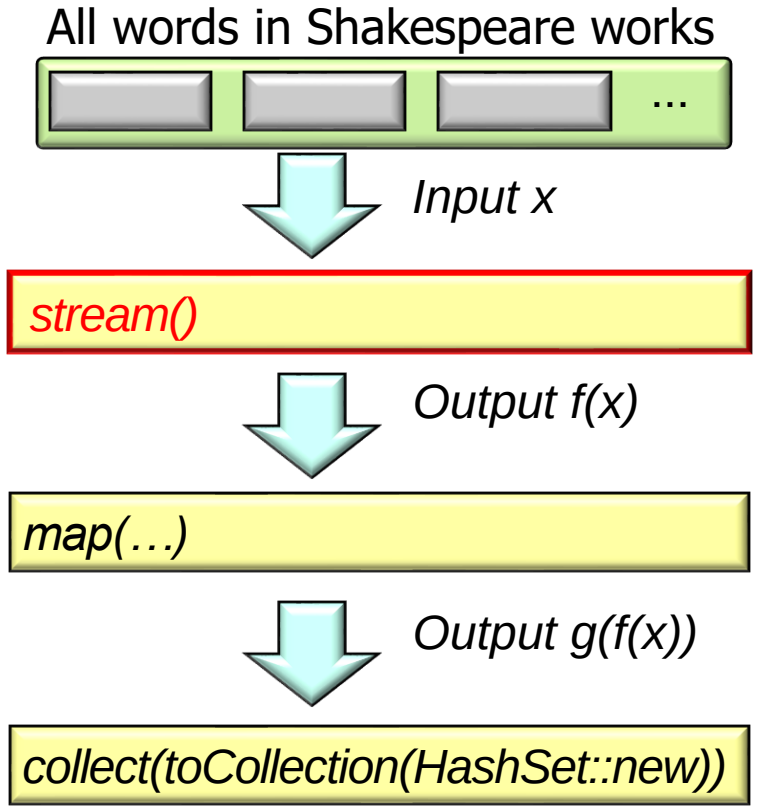
Convert list into stream



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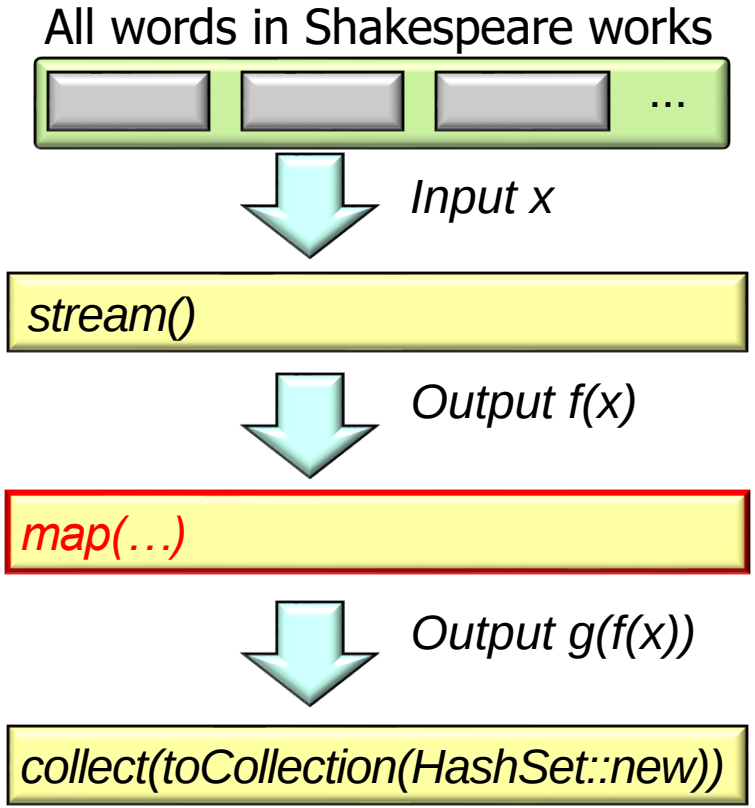
Lower case all words



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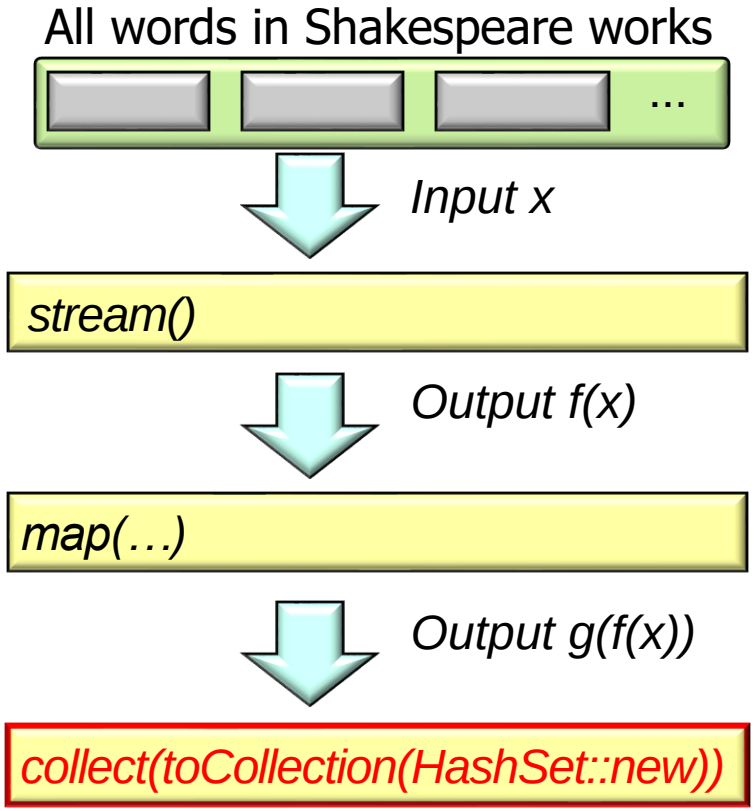
Collect into a HashSet



toCollection() creates a HashSet container & accumulates stream elements into it

End of Java Streams: Contrasting reduce() & collect()