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

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

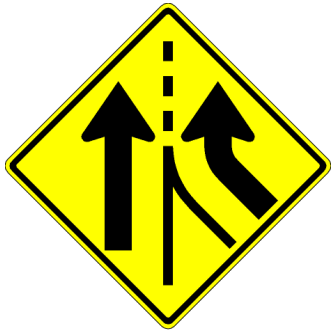
Professor of Computer Science

Institute for Software Integrated Systems

Vanderbilt University
Nashville, Tennessee, USA

Learning Objectives in this Part of the Lesson

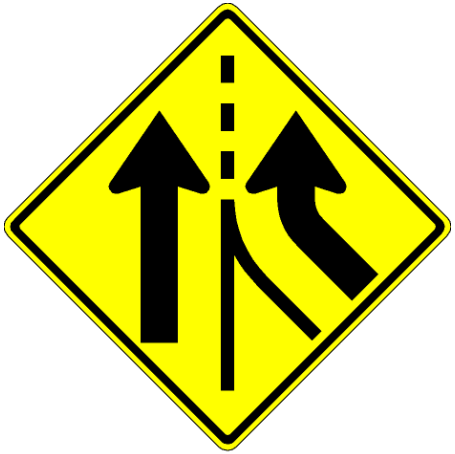
- Understand common terminal operations, e.g.
  - forEach()
  - collect()
  - reduce()
  - Contrasting reduce() & collect()



Contrasting the reduce() & collect() Terminal Operations

Contrasting the reduce() & collect() Terminal Operations

- Terminal operations produce results in different ways



These differences are important for parallel streams (covered later)

Contrasting the reduce() & collect() Terminal Operations

- 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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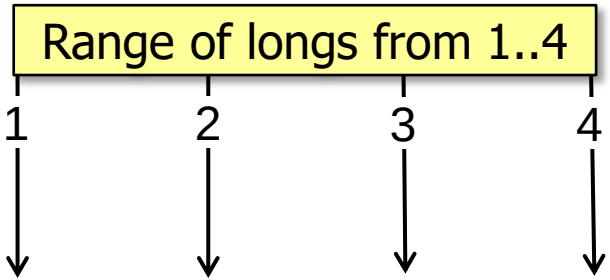
```

Generate a range of primitive long values from 1 to n (inclusive)



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

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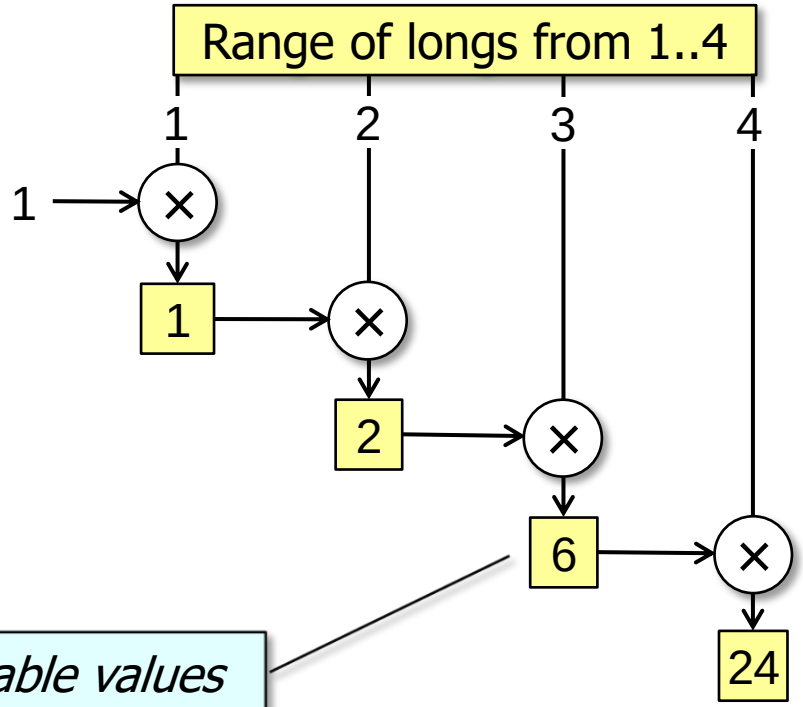

reduce() combines two immutable values (e.g., long, int, etc.) & produces a new one

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

Contrasting the reduce() & collect() Terminal Operations

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  - collect() mutates an existing value

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

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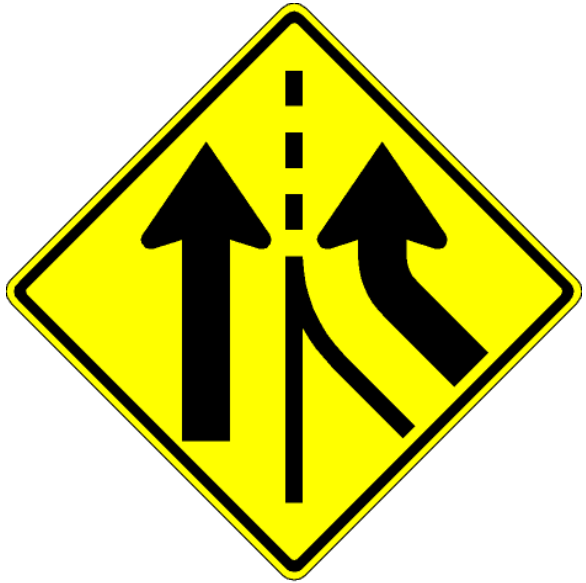

```
Set<CharSequence> uniqueWords =
  getInput(sSHAKESPEARE),
           "\\s+")
  .stream()

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

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

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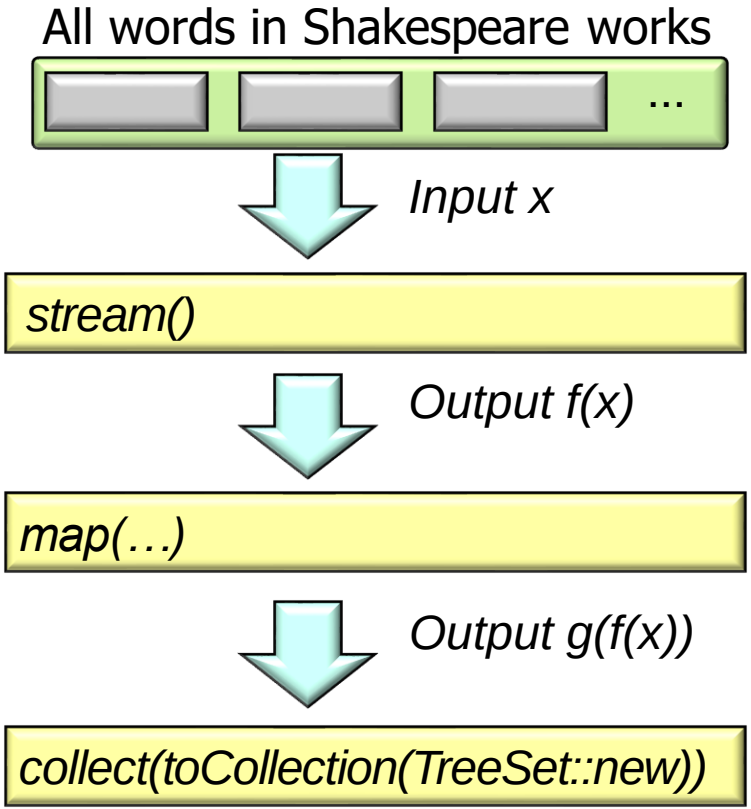
Create a set of all the unique words in Shakespeare's works



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

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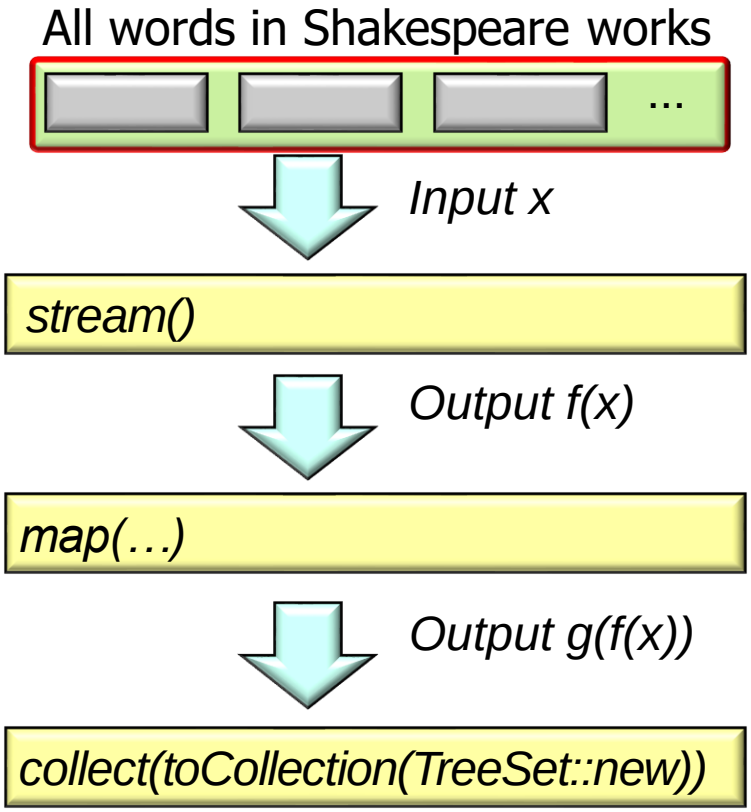
Get list of all words in Shakespeare



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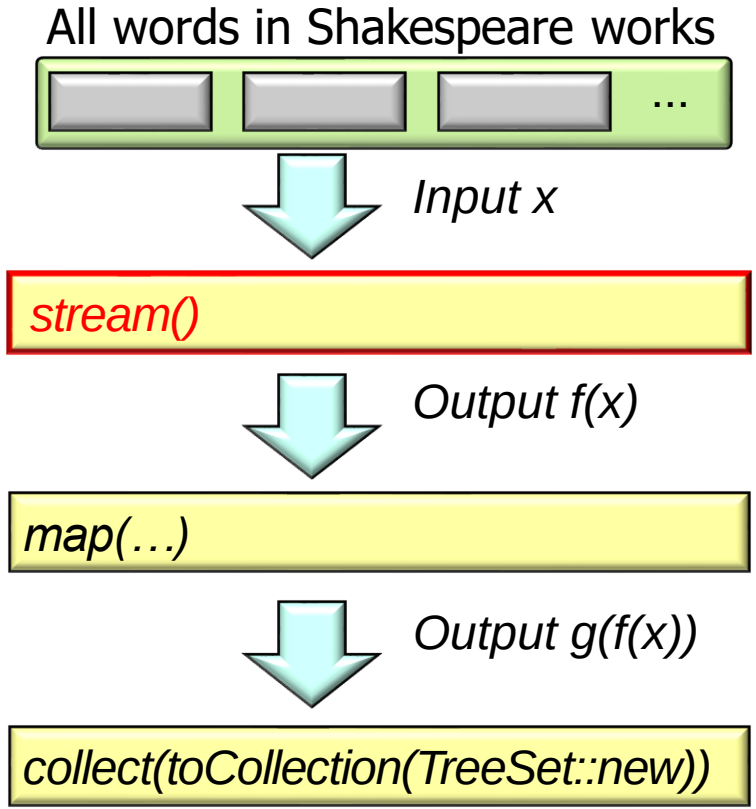
Convert list into stream



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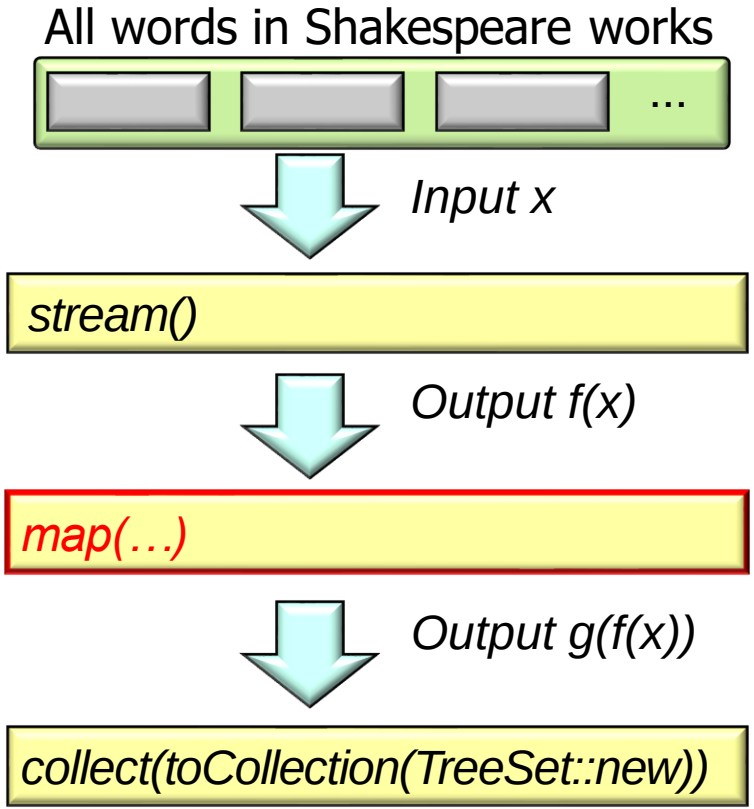
Lower case all words



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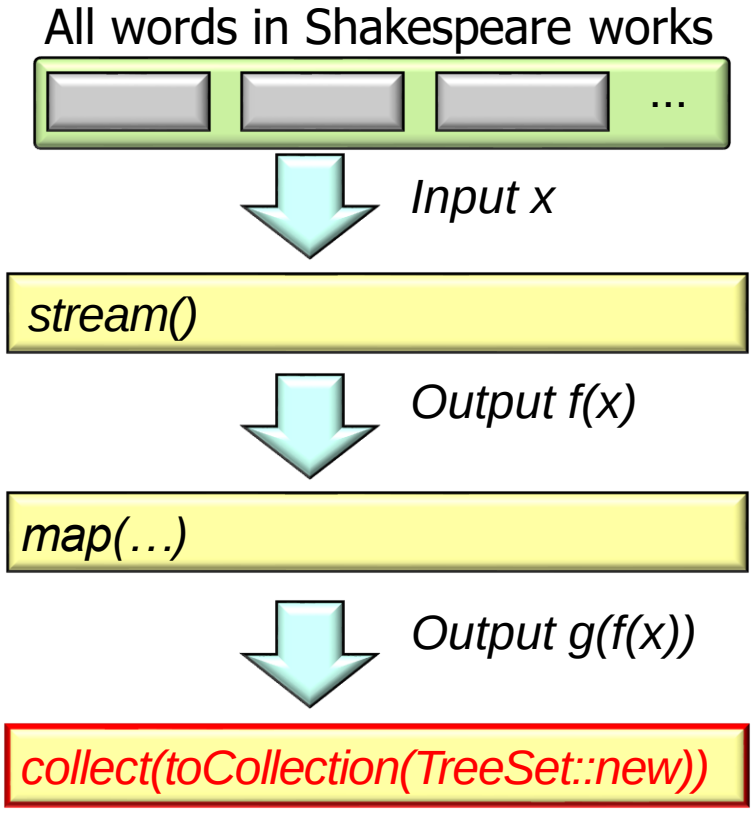
Collect into a TreeSet



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

End of Contrasting the Java Streams reduce() & collect() Terminal Operations