

# Java Streams: Visualizing WordSearcher.printSlice()

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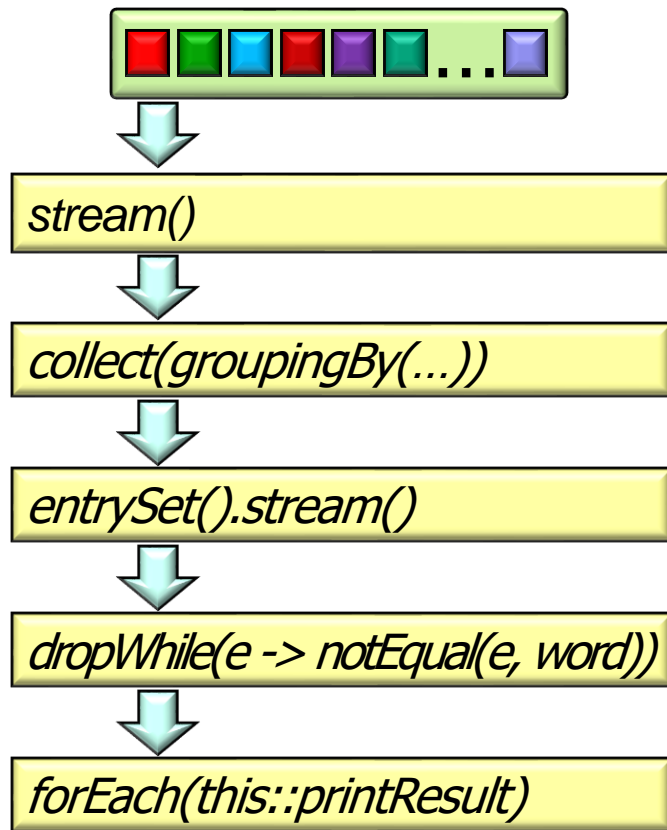
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Integrated Systems**

**Vanderbilt University  
Nashville, Tennessee, USA**



# Learning Objectives in this Part of the Lesson

- Visualize aggregate operations in SimpleSearchStream's WordSearcher.printResults() method
- Visualize aggregate operations in SimpleSearchStream's WordSearcher.printSlice() method



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# Visualizing the Word Searcher.printSlice() Method


# Visualizing the WordSearcher.printSlice() Method

- Prints a slice of the listOfSearchResults starting at a particular word

```
wordSearcher.printSlice("La", results);
```

Word "La" appeared at indices [234|417|658|886|991|1207|1247|1269|1291|1339|1361|1742|1847|1863|1909|1949|2161|2254|2276|2283] with max index of 2283

Word "Ti" appeared at indices [237|994|1272|1294|1364|1850|1860|1912|1915|1952|1955|2299] with max index of 2299

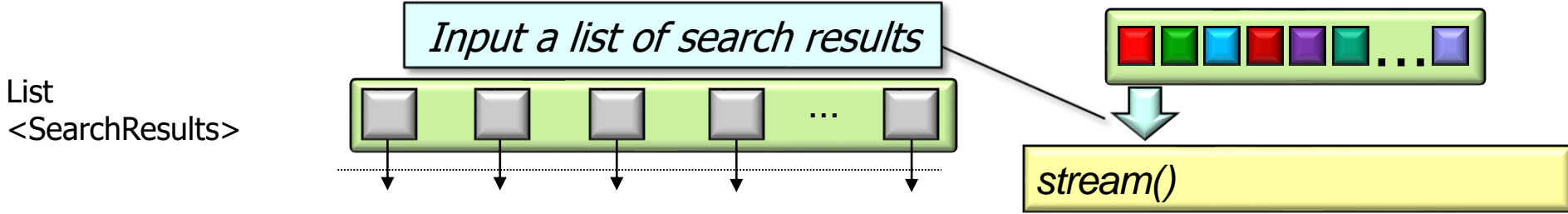


*Prints a slice of the stream from "La" to "Ti",  
while ignoring all entries from "Do" to "So".*

This method shows the collect(groupingBy()) & dropWhile() aggregate operations

# Visualizing the WordSearcher.printSlice() Method

- Prints a slice of the listOfSearchResults starting at a particular word

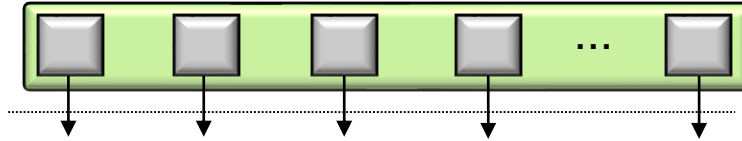


The search results correspond to words to find: "do", "re", "mi", "fa", "so", "la", "ti".

# Visualizing the WordSearcher.printSlice() Method

- Prints a slice of the listOfSearchResults starting at a particular word

List  
<SearchResults>

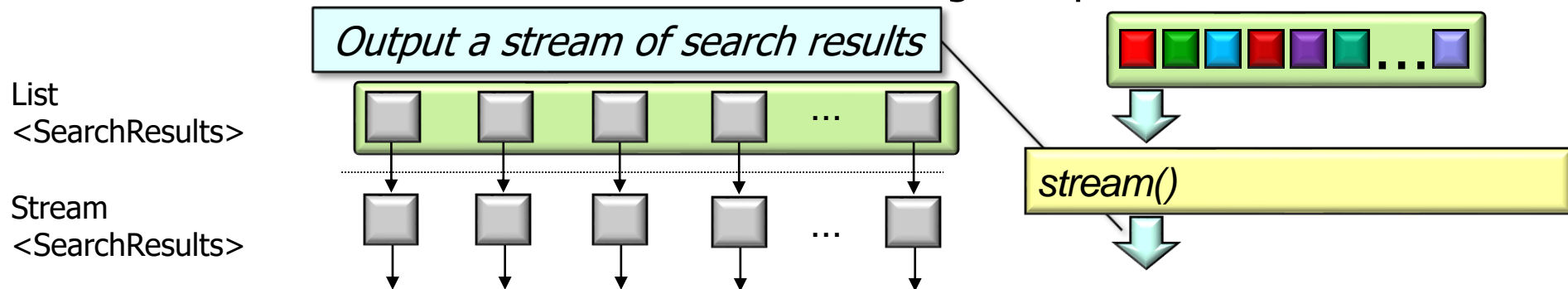


*stream()*

Convert list to a (sequential) stream of search results

# Visualizing the WordSearcher.printSlice() Method

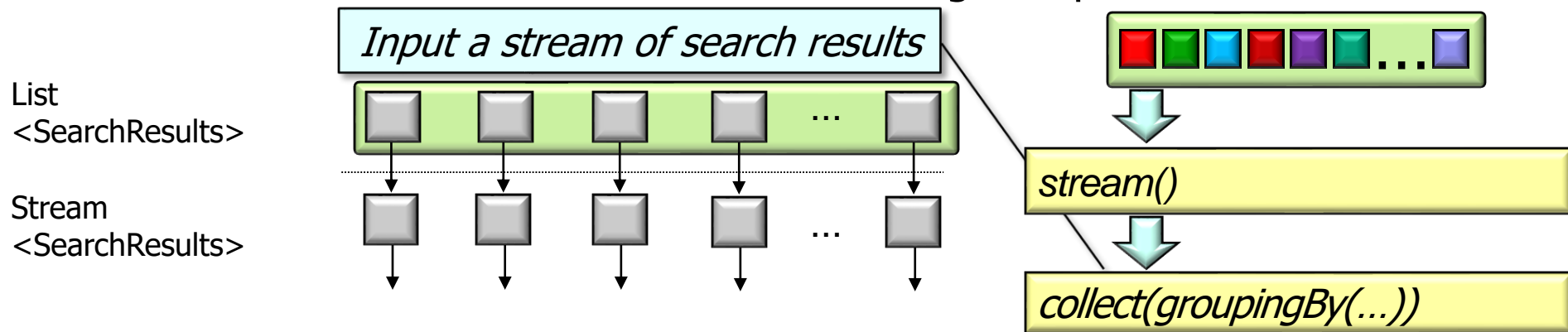
- Prints a slice of the listOfSearchResults starting at a particular word



Print out results of each map entry (key = word & value = list of search results)

# Visualizing the WordSearcher.printSlice() Method

- Prints a slice of the listOfSearchResults starting at a particular word



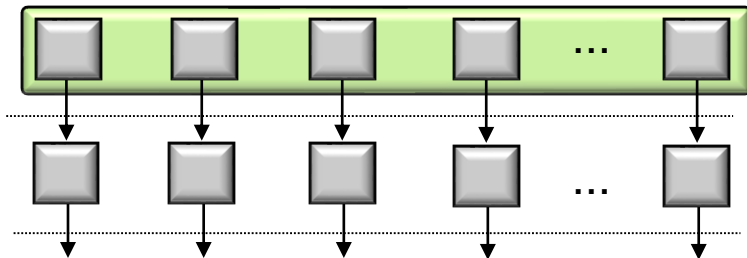


# Visualizing the WordSearcher.printSlice() Method

- Prints a slice of the listOfSearchResults starting at a particular word

List  
<SearchResults>

Stream  
<SearchResults>



*stream()*



*collect(groupingBy(...))*

Trigger "intermediate operation" processing

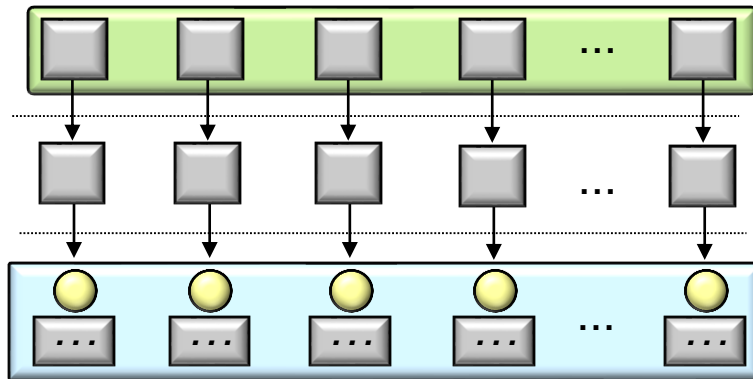
# Visualizing the WordSearcher.printSlice() Method

- Prints a slice of the listOfSearchResults starting at a particular word

List  
<SearchResults>

Stream  
<SearchResults>

Map<String, List  
<Result>>



*stream()*

*collect(groupingBy(...))*

Create a map that groups words with the indices where each word was found.

# Visualizing the WordSearcher.printSlice() Method

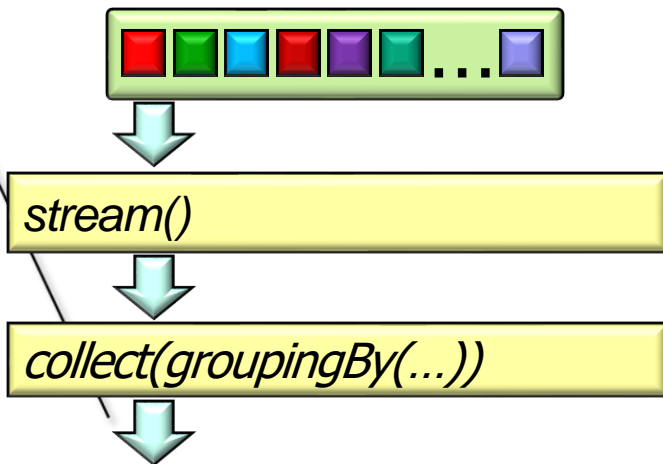
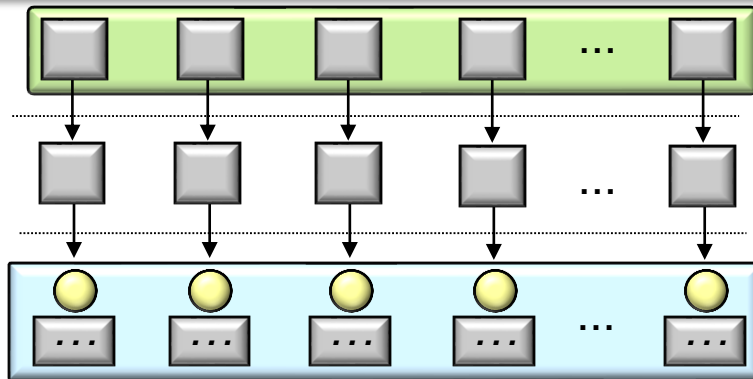
- Prints a slice of the listOfSearchResults starting at a particular word

*Output a map of strings & lists of search results*

List  
<SearchResults>

Stream  
<SearchResults>

Map<String, List  
<Result>>



# Visualizing the WordSearcher.printSlice() Method

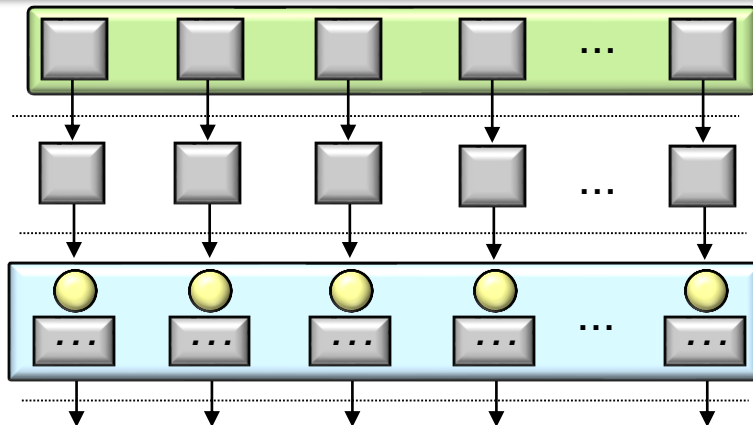
- Prints a slice of the listOfSearchResults starting at a particular word

*Input a map of strings & lists of search results*

List  
<SearchResults>

Stream  
<SearchResults>

Map<String, List  
<Result>>



*stream()*

*collect(groupingBy(...))*

*entrySet().stream()*

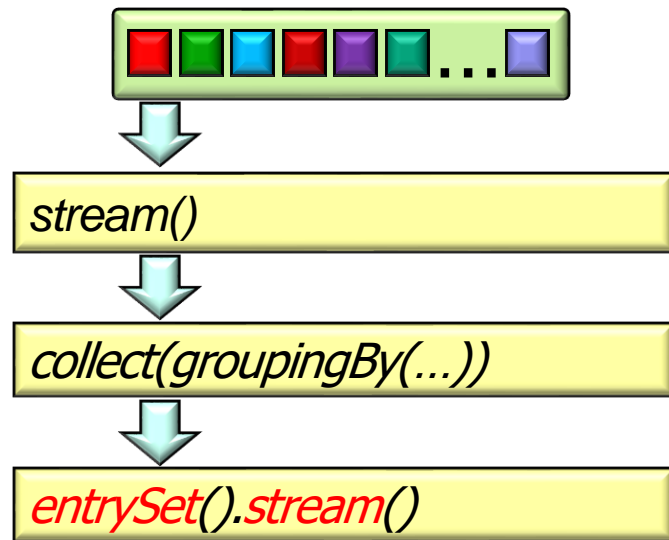
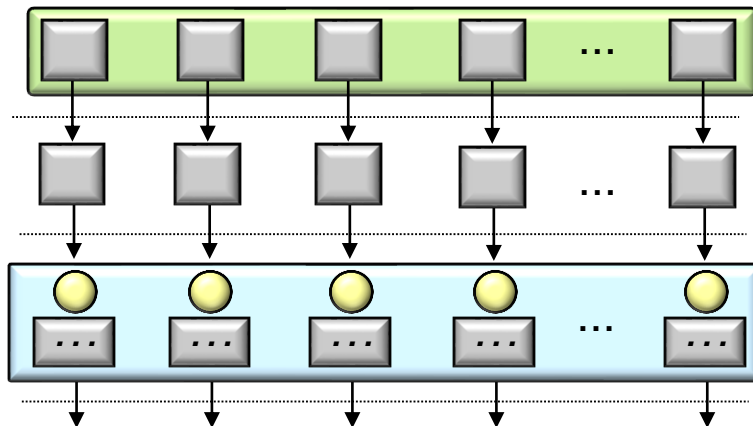
# Visualizing the WordSearcher.printSlice() Method

- Prints a slice of the listOfSearchResults starting at a particular word

List  
<SearchResults>

Stream  
<SearchResults>

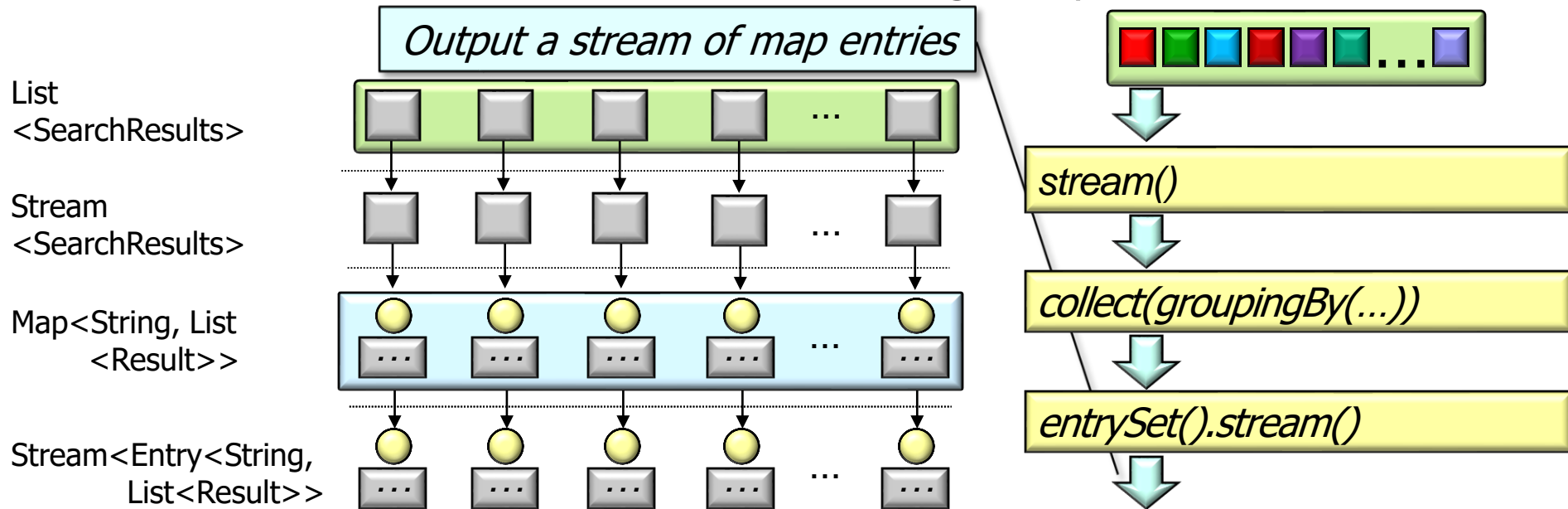
Map<String, List  
<Result>>



Obtain the entry set from the map & convert it into a stream

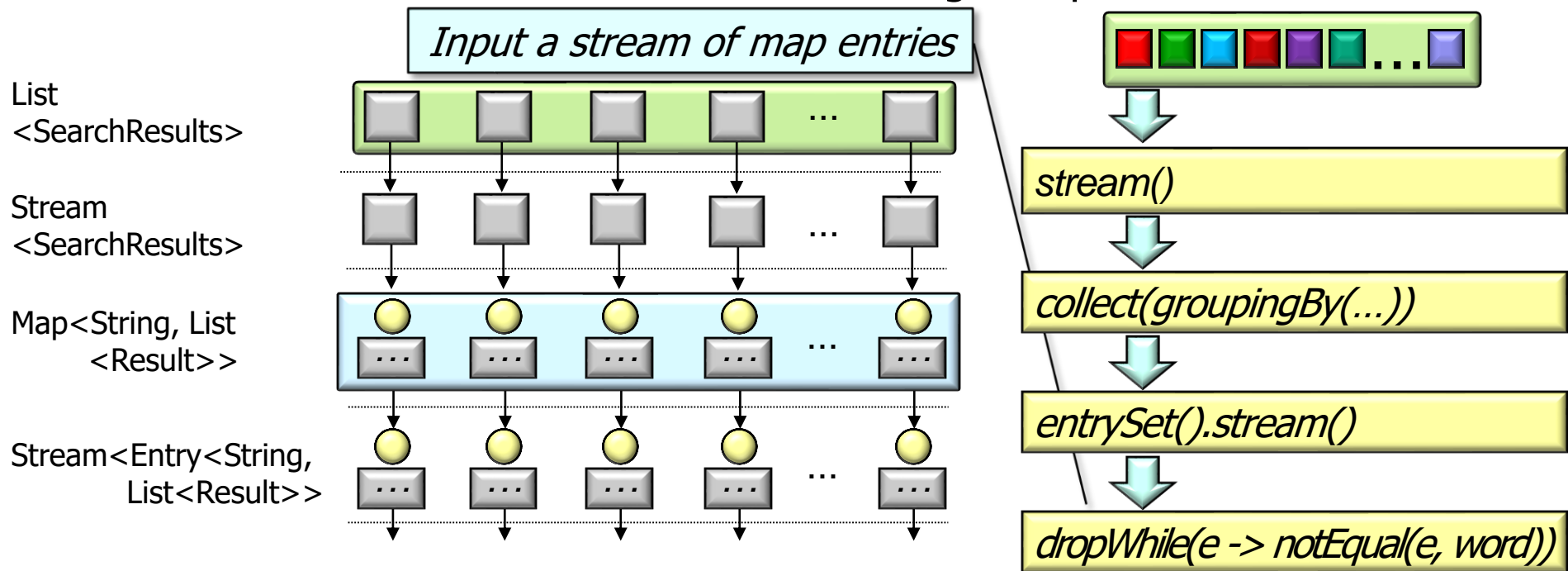
# Visualizing the WordSearcher.printSlice() Method

- Prints a slice of the listOfSearchResults starting at a particular word



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# Visualizing the WordSearcher.printSlice() Method

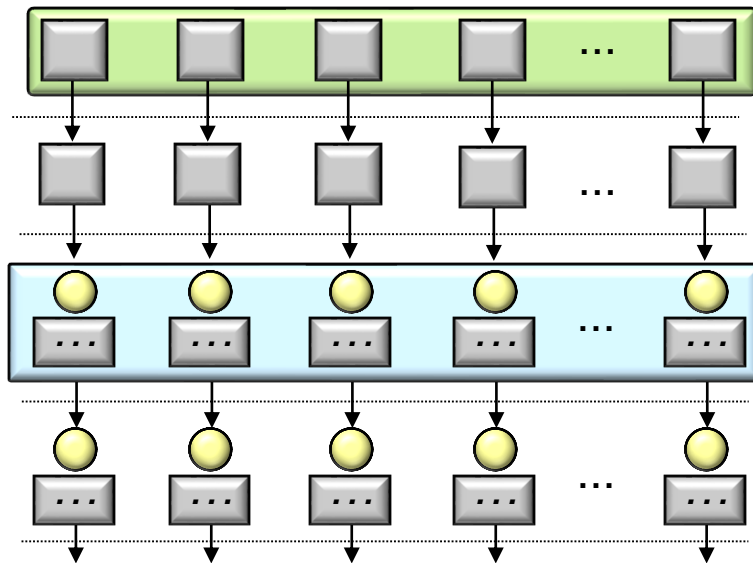
- Prints a slice of the listOfSearchResults starting at a particular word

List  
<SearchResults>

Stream  
<SearchResults>

Map<String, List  
<Result>>

Stream<Entry<String,  
List<Result>>



`stream()`

`collect(groupingBy(...))`

`entrySet().stream()`

`dropWhile(e -> notEqual(e, word))`

*Slice the stream to contain remaining elements after dropping subset of elements that don't match 'word'.*

See [docs.oracle.com/javase/9/docs/api/java/util/stream/Stream.html#dropWhile](https://docs.oracle.com/javase/9/docs/api/java/util/stream/Stream.html#dropWhile)



# Visualizing the WordSearcher.printSlice() Method

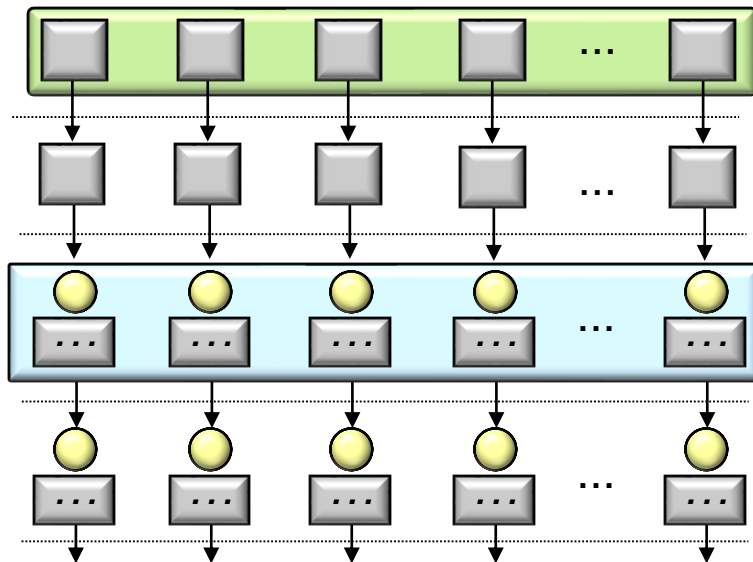
- Prints a slice of the listOfSearchResults starting at a particular word

List  
<SearchResults>

Stream  
<SearchResults>

Map<String, List  
<Result>>

Stream<Entry<String,  
List<Result>>



*stream()*

*collect(groupingBy(...))*

*entrySet().stream()*

*dropWhile(e -> **notEqual**(e, word))*

The `notEqual()` method is simple: `return !entry.getKey().equals(word)`

# Visualizing the WordSearcher.printSlice() Method

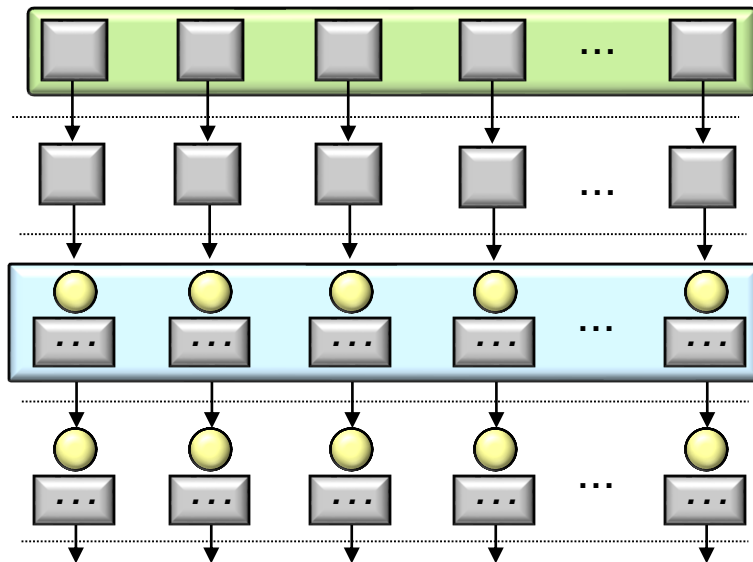
- Prints a slice of the listOfSearchResults starting at a particular word

List  
<SearchResults>

Stream  
<SearchResults>

Map<String, List  
<Result>>

Stream<Entry<String,  
List<Result>>



*dropWhile() differs from filter() since it needn't examine the entire input stream.*



*stream()*

*collect(groupingBy(...))*

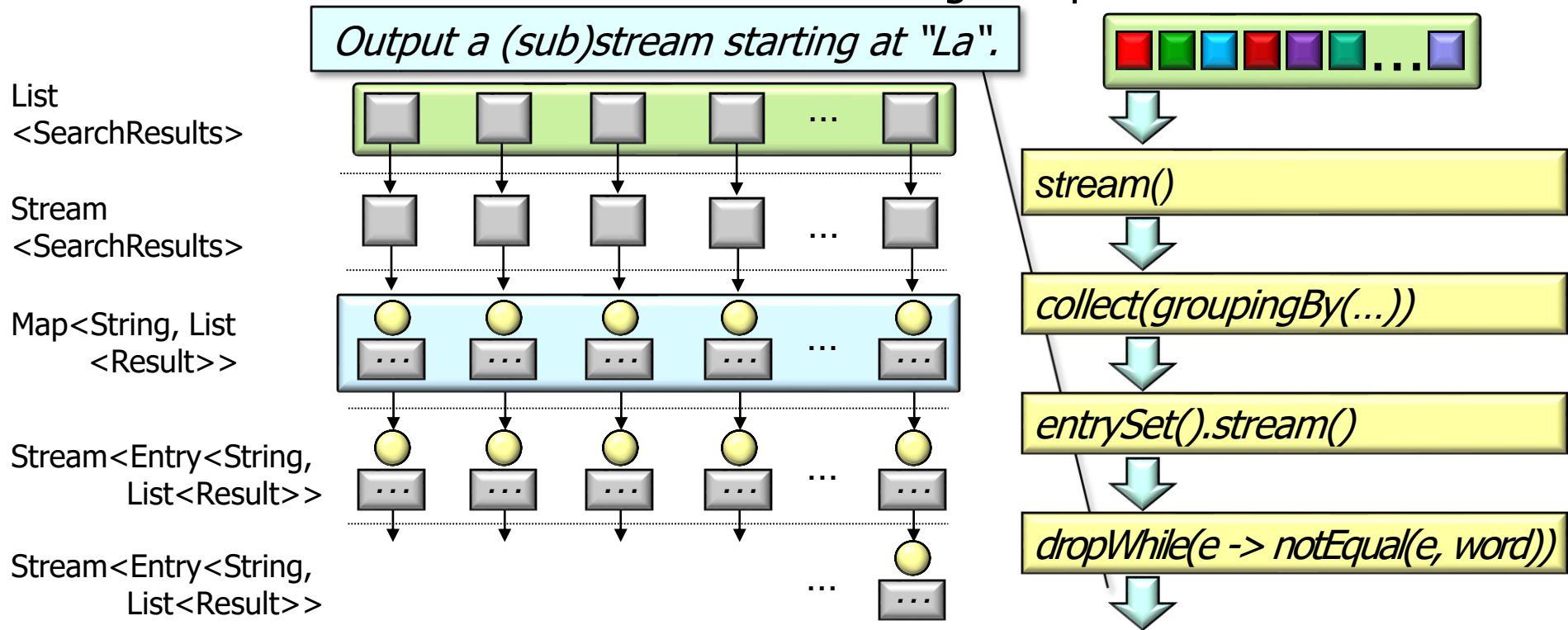
*entrySet().stream()*

*dropWhile(e -> notEqual(e, word))*

See [itnext.io/streams-api-new-features-after-java-8-f2df81bed5ac](https://itnext.io/streams-api-new-features-after-java-8-f2df81bed5ac)

# Visualizing the WordSearcher.printSlice() Method

- Prints a slice of the listOfSearchResults starting at a particular word



# Visualizing the WordSearcher.printSlice() Method

- Prints a slice of the listOfSearchResults starting at a particular word

*Input a (sub)stream starting at "La".*



*stream()*

*collect(groupingBy(...))*

*entrySet().stream()*

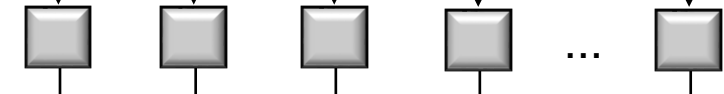
*dropWhile(e -> notEqual(e, word))*

*forEach(this::printResult)*

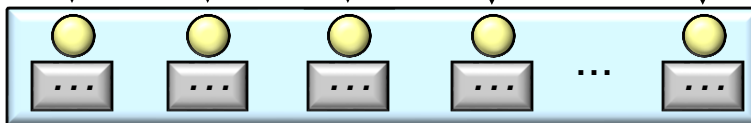
List  
<SearchResults>



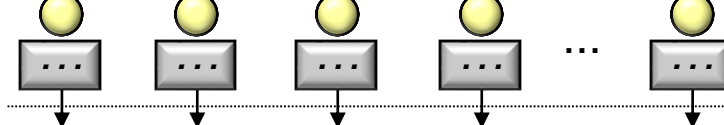
Stream  
<SearchResults>



Map<String, List  
<Result>>



Stream<Entry<String,  
List<Result>>

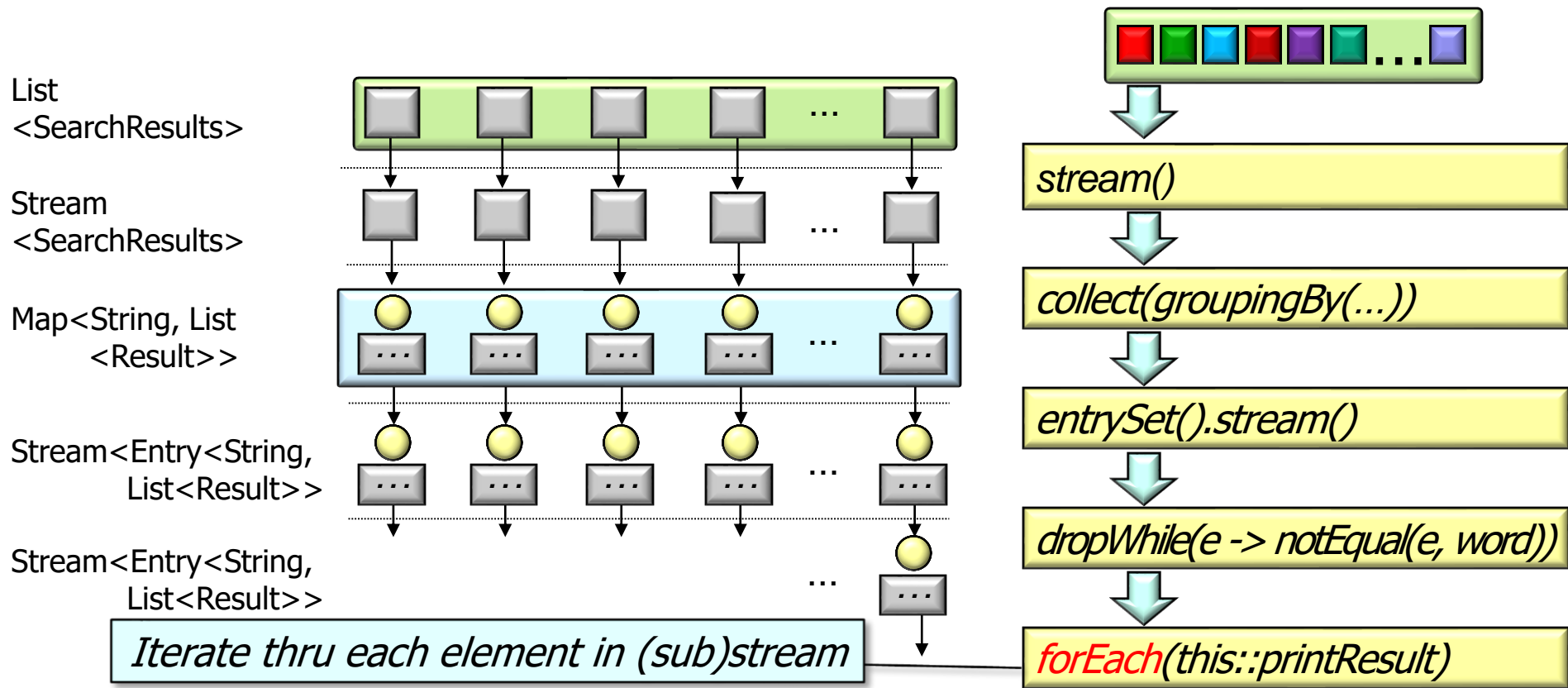


Stream<Entry<String,  
List<Result>>



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See [docs.oracle.com/javase/8/docs/api/java/util/stream/Stream.html#forEach](https://docs.oracle.com/javase/8/docs/api/java/util/stream/Stream.html#forEach)

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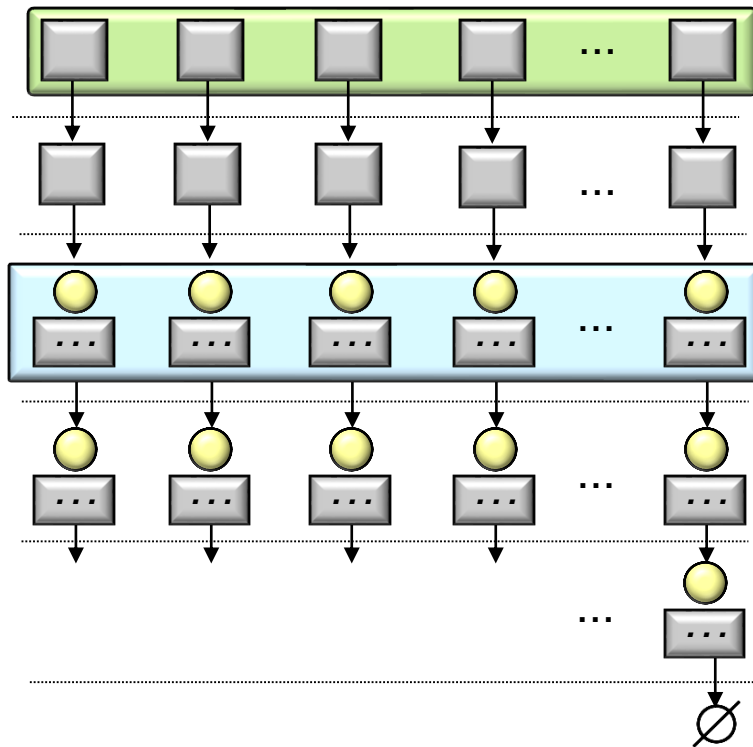
Stream  
<SearchResults>

Map<String, List  
<Result>>

Stream<Entry<String,  
List<Result>>

Stream<Entry<String,  
List<Result>>

Void



*stream()*

*collect(groupingBy(...))*

*entrySet().stream()*

*dropWhile(e -> notEqual(e, word))*

*forEach(this::printResult)*

Print out results of each map entry (key = word & value = list of search results)

---

# End of Java Streams: Visualizing Word Searcher.printSlice()