Java Streams: Overview of the SimpleSearchStream Program

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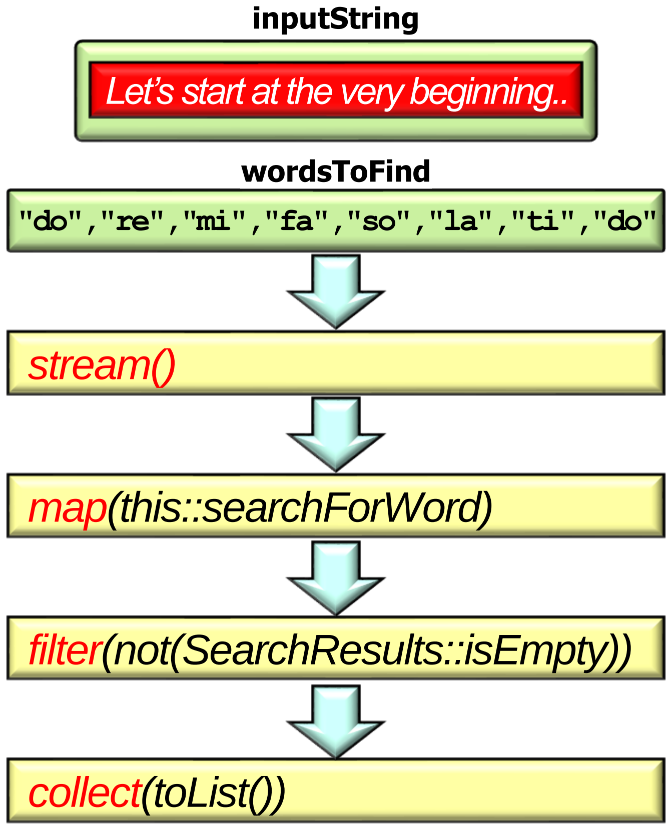
Learning Objectives in this Part of the Lesson

- Recognize the structure & functionality of the SimpleSearchStream program

We use this program to showcase key Java sequential streams capabilities.

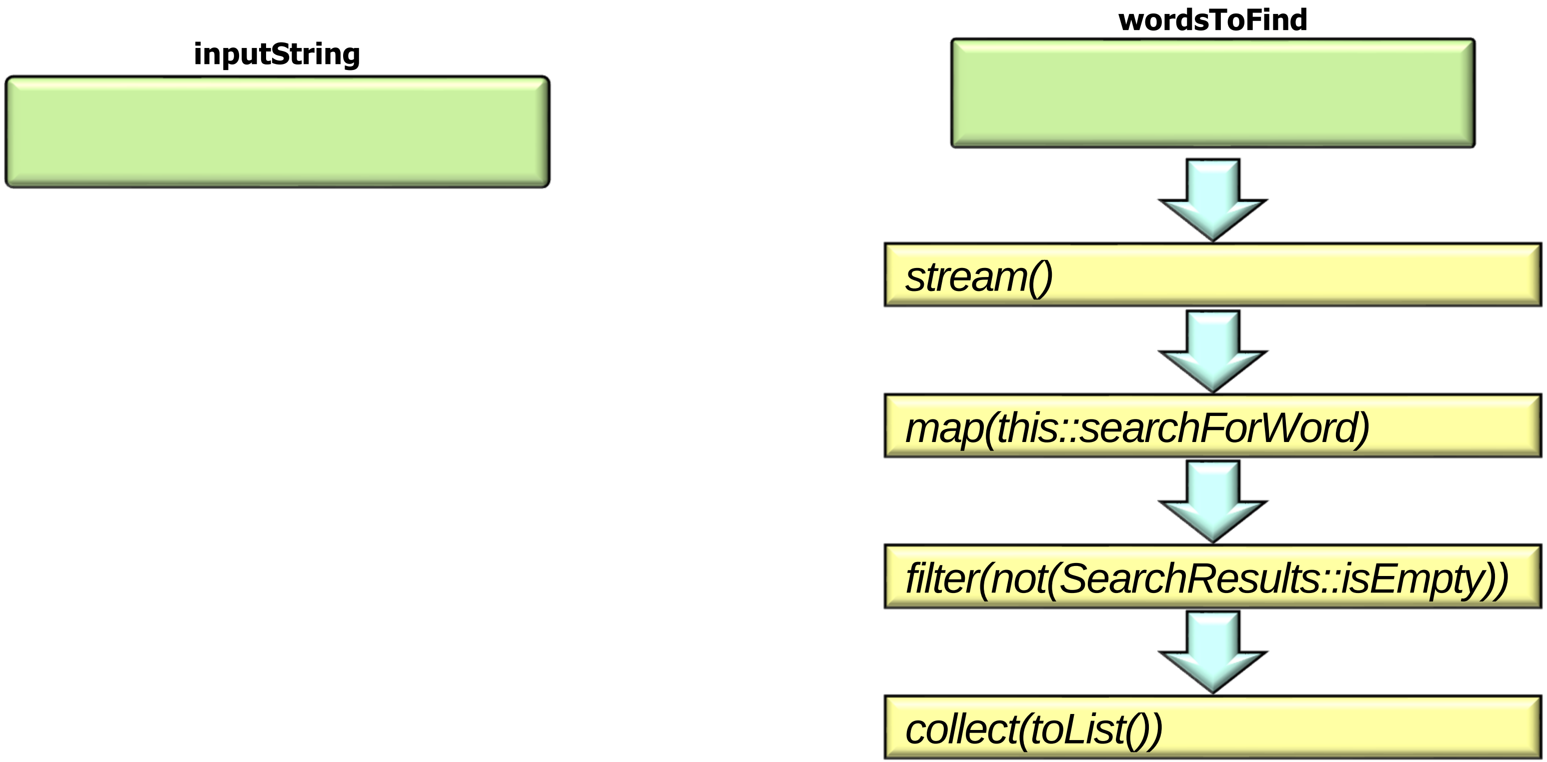

inputString
Let's start at the very beginning..
wordsToFind
"do","re","mi","fa","so","la","ti","do"
stream()
map(this::searchForWord)
filter(not(SearchResults::isEmpty))
collect(toList())

See github.com/douglascraigschmidt/LiveLessons/tree/master/SimpleSearchStream

Visualizing the Simple SearchStream program

Visualizing the SimpleSearchStream Program

- This program finds words in an input string



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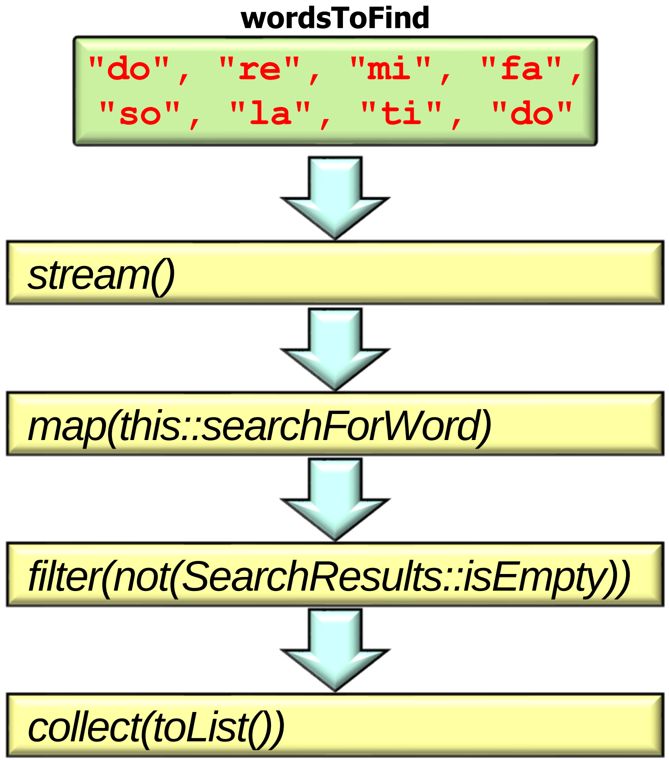

wordsToFind

"do", "re", "mi", "fa", "so", "la", "ti", "do"

stream()

map(this::searchForWord)

filter(not(SearchResults::isEmpty))

collect(toList())

See en.wikipedia.org/wiki/Do-Re-Mi

Visualizing the SimpleSearchStream Program

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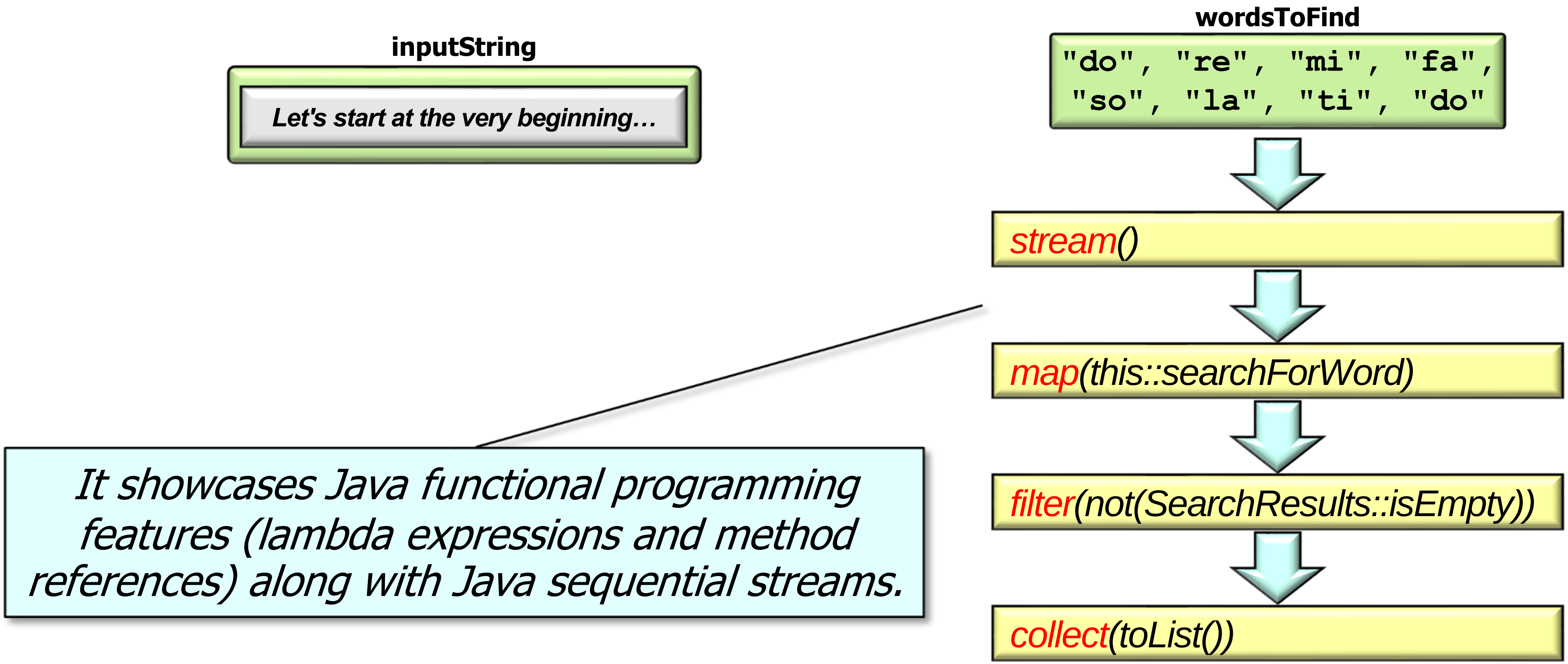

It showcases Java functional programming features (lambda expressions and method references) along with Java sequential streams.

See [SimpleSearchStream/src/main/java/search/WordSearcher.java]()

Visualizing the SimpleSearchStream Program

- This program finds words in an input string

inputString

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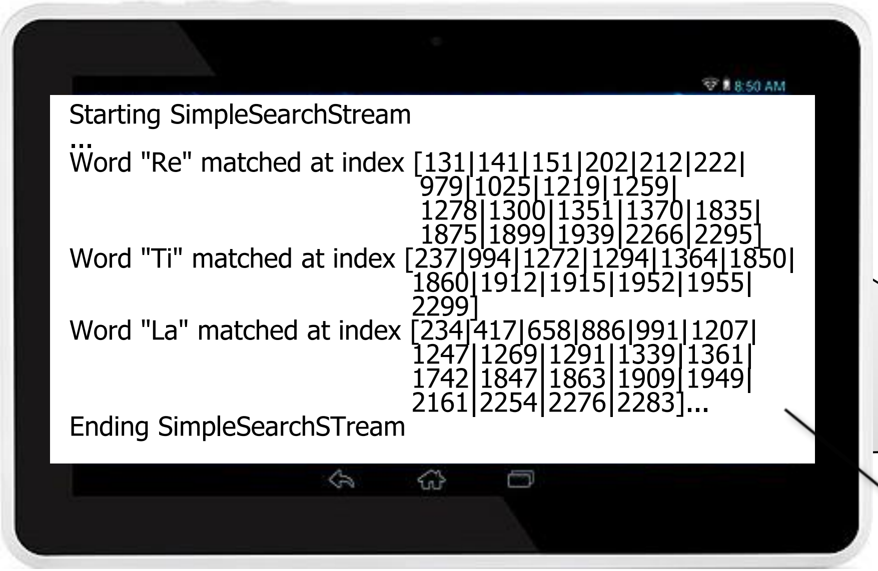
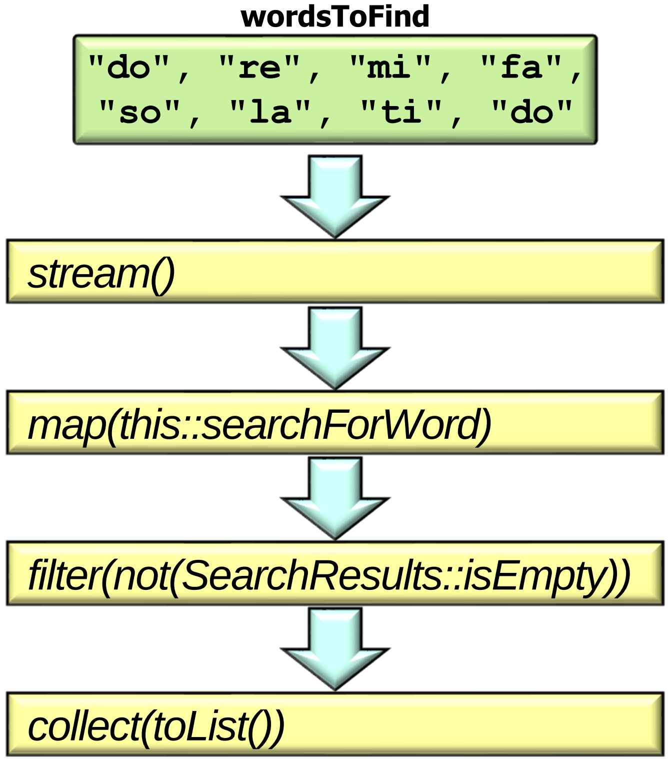


```
Starting SimpleSearchStream
...
Word "Re" matched at index [131|141|151|202|212|222|
                            979|1025|1219|1259|
                            1278|1300|1351|1370|1835|
                            1875|1899|1939|2266|2295]
Word "Ti" matched at index [237|994|1272|1294|1364|1850|
                           1860|1912|1915|1952|1955|
                           2299]
Word "La" matched at index [234|417|658|886|991|1207|
                           1247|1269|1291|1339|1361|
                           1742|1847|1863|1909|1949|
                           2161|2254|2276|2283]...
Ending SimpleSearchSTream
```



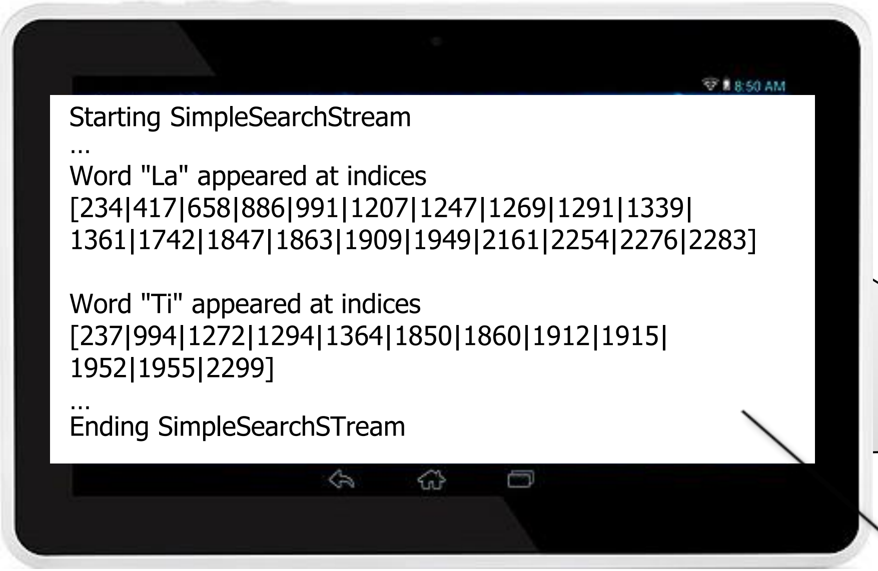
The program produces nicely formatted output.

Visualizing the SimpleSearchStream Program

- Also prints a slice of the search results starting at a particular word, e.g., “La”

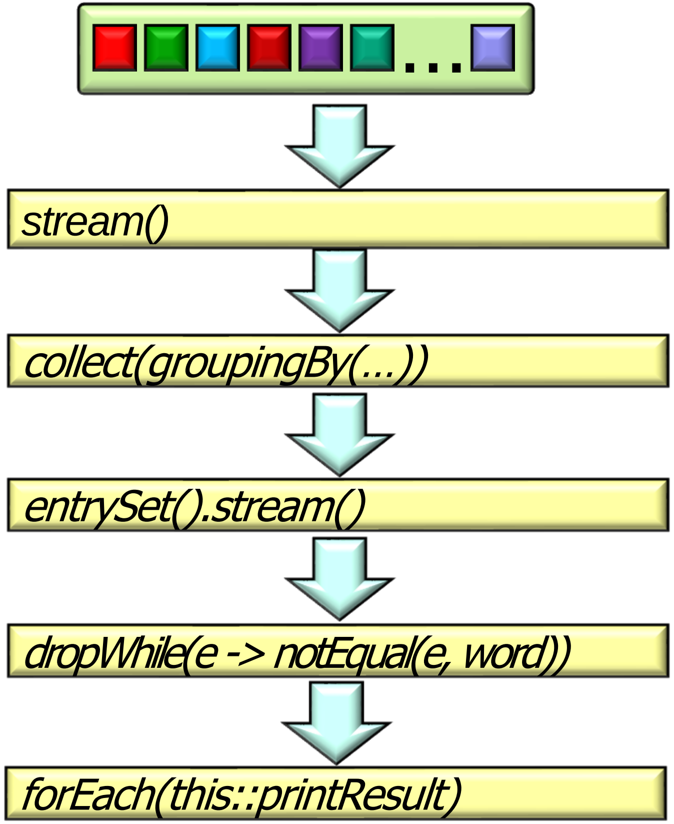
inputString

Let's start at the very beginning…



```
Starting SimpleSearchStream
…
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]

Word "Ti" appeared at indices
[237|994|1272|1294|1364|1850|1860|1912|1915|
1952|1955|2299]
…
Ending SimpleSearchSTream
```



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).

Entry Point Into the Simple SearchStream Program

Entry Point Into the SimpleSearchStream Program

- It searches sequentially for words in a string containing the contents of a file

```
static public void main(String[] args) { ...
  String input = TestDataFactory
    .getInput(sINPUT_FILE, "@").get(0);

  List<String> wordsToFind = TestDataFactory
    .getWordList(sWORD_LIST_FILE);

  WordSearcher searcher =
    new WordSearcher(input);

  List<SearchResults> results =
    searcher.findWords(wordsToFind);

  searcher.printResults(results); ...
```

See SimpleSearchStream/src/main/java/Main.java

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  List<SearchResults> results =
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```

Create an input string containing the lyrics to the do-re-mi song.

See [SimpleSearchStream/src/main/java/utils/TestDataFactory.java]()

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  WordSearcher searcher =
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  List<SearchResults> results =
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```

Get the list of words to find.

See SimpleSearchStream/src/main/java/utils/TestDataFactory.java

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```

Create an object used to search for words in the input string.

See SimpleSearchStream/src/main/java/search/WordSearcher.java

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```

Find all matching words.

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  WordSearcher searcher =
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  List<SearchResults> results =
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  searcher.printResults(results); ...
```

Print all matching words.

End of Java Streams: Overview of the Simple SearchStream Program