

### Specialized Streams

|              |                     |
|--------------|---------------------|
| IntStream    | for int elements    |
| DoubleStream | for double elements |
| LongStream   | for long elements   |

It has better performance to use these specialized streams when using numeric data types, because there is no boxing/unboxing

### Suppress elements

|        |  |
|--------|--|
| limit  | <code>.limit(5)</code><br>will limit the result to the first 5 elements  |
| skip   | <code>.skip(5)</code><br>will skip the first 5 elements  |
| filter | <code>.filter(e -&gt; e.getSalary() &gt; 200000)</code><br>will keep the elements that satisfy the given predicate. In this case, all elements that have salary above 200000 |

### Comparing elements

|          |   |
|----------|---|
| distinct | <code>.distinct()</code><br>will compare the elements in the stream using <code>equals()</code> and eliminate duplicates                                    |
| sorted   | <code>.sorted((e1, e2) -&gt; e1.getName().compareTo(e2.getName()))</code><br>will sort the elements with the given comparator. Elements must be Comparable. |
| min      | Similar to sorted, but it will find the min element according to the given comparator   |
| max      | Similar to sorted, but it will find the max element according to the given comparator   |

### Apply a function to each element

|             |   |
|-------------|---|
| map         | <code>.map(employeeRepository::findById)</code><br>will apply the given function and substitute the elements in the stream for new elements. In this case, it received a stream of employee IDs and returned a stream of Employee objects |
| mapToDouble | similar to <i>map</i> , but the function converts the element to the specified primitive type, resulting in a specialized stream IntStream, DoubleStream or LongStream  |
| mapToInt    |   |
| mapToLong   |   |

### Apply a function to each element (cont)

|         |   |
|---------|---|
| flatMap | similar to map, but the number of elements resulting may be different. It's normally used to convert a List of List into a single list with all the elements      |
| peek    | <code>.peek(e -&gt; e.salaryIncrement(10.0))</code><br>will apply the given function to all elements in the list, but doesn't substitute the elements in the list |

### Reduce elements to single value

|           |   |
|-----------|---|
| reduce    | <code>.reduce(0.0, Double::sum)</code><br>will return a single value. It starts with the identity value (0.0) and applies the given function to each element in the array. In this case it's summing all elements, one by one |
| allMatch  | <code>.allMatch(i -&gt; i % 2 == 0);</code><br>will check if all elements match the given condition. If so, returns true, else returns false  |
| anyMatch  | <code>.anyMatch(i -&gt; i % 2 == 0);</code><br>will check if one of the elements match the given condition. If so, returns true, else returns false   |
| noneMatch | <code>.noneMatch(i -&gt; i % 2 == 0);</code><br>will check if no elements match the given condition. If so, returns true, else returns false  |
| findFirst | <code>.findFirst()</code><br>will return an Optional with the first element in the stream   |
| forEach   | <code>forEach(e -&gt; e.salaryIncrement(10.0))</code><br>will apply the given function to each element in the stream, but it's a terminal operation and returns void  |
| count     | <code>.count()</code><br>outputs the number of elements in the stream   |



### Collect elements

**toList** `collect(Collectors.toList())`  
gather all elements in the stream into a List

**toSet** `collect(Collectors.toSet())`  
gather all elements in the stream into a Set

**toCollection** `collect(Collectors.toCollection(Validator::new))`  
gather all elements in the list in an arbitrary Collection

**joining** `collect(Collectors.joining(", ")).toString()`  
will join String elements with the given separator and return the aggregated String

### summarizingDouble

### summaryStatistics

**partitioningBy** `.collect(Collectors.partitioningBy(s -> s.getGrade() >= PASS_THRESHOLD, SHOULD))`  
will partition the data into 2 categories based on the given condition. The result will be a Map<Boolean, List<Student>>

**groupingBy** `.collect(Collectors.groupingBy(Employee::getDepartment))`  
will group the elements into categories based on the function. The result will be a Map<Department, List<Employee>>

**mapping** `mapping(Person::getLastName, toSet())`  
it receives a function to be applied to all elements and way of collecting downstream the elements. In this case, it will get the last name of all persons and add them to a set

### reducing



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