STREAMS API

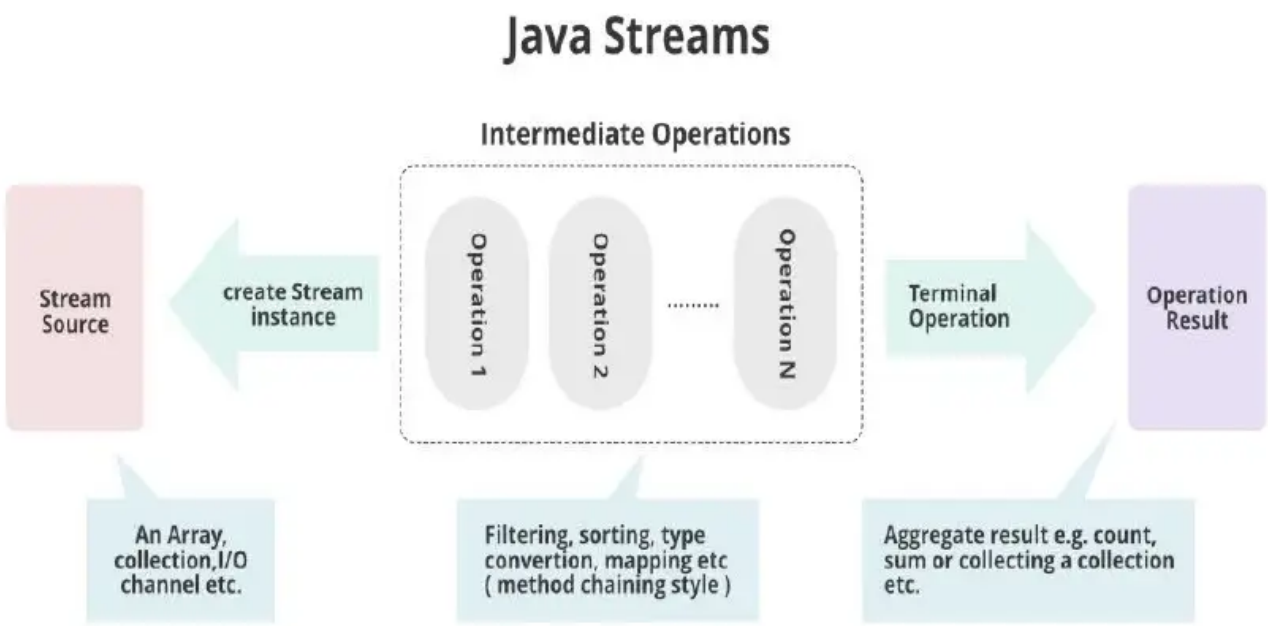
Streams: Collection of framework/Group of objects that supports various methods
- Introduced in java8
- Performs Bulk operations
- Reduces code length

Colletion vs Stream:

If we want to represent a group of objects as a single entity then it is represented as collections

But if we want to process objects from the collection then we should go for streams.

……..where concepts of collections is applicable,stream concepts can be applied there……..



Features of Java stream?

- A stream is not a data structure instead it takes input from the Collections, Arrays, or I/O channels.
- Streams don't change the original data structure, they only provide the result as per the pipelined methods.
- Each intermediate operation is lazily executed and returns a stream as a result, hence various intermediate operations can be pipelined. Terminal operations mark the end of the stream and return the result.

CHARACTERSTICS OF STREAM

1.Sequence of characters--------- sequence of elements.

2.Source -------- takes collection,arrays,i/o devices as input

3.Aggregate operations -----supports filter,map,reduce,limit,find,match

4.Automatic iterations

5.Pipelining--------most of the stream operations return stream itself

HOW THE STREAM IS CREATED

stream() [method]is an interface

It was defined in java.util.stream package

Syntax:

Stream s=collection.Stream();

On the collection we are calling a stream method at the same time we are storing it as stream method

EXAMPLE:

```
public class OwnDemo {
      public static void main(String[] args) {
  //create a stream from sources
   Collection<String>collection=Arrays.asList("java","programming");
   Stream<String> stream1=collection.stream();  //syntax of stream
    stream1.forEach(System.out::println);
}
}
```

Here we used (System.out::println); and forEach in streams

Creating a stream of an array

```
public class OwnDemo {
   public static void main(String[] args) {
     Stream<String>stream=Stream.of("a","b","c");
      stream.forEach(System.out::println);
  }
}
```

Output:

a

b

c

By using list and set , you can create streams

it will save the memory a,d reduce the size of the code

WITHOUT STREAM

```
public static void main(String[] args)
{
Set hashset= new HashSet();
hashset.add("aman");
hashset.add("akshatha");
hashset.add("arman");
hashset.add("arman");
hashset.add("aayush");
System.out.println(hashset);
Iterator i=hashset.iterator();
while(i.hasNext())
{
System.out.println(i.next());
}
}
```

WITH STREAM

```
List<String>list=Arrays.asList("welcome","to","my","organization");
Stream<String> stream2=list.stream();          // prints like a list
stream2.forEach(System.out::println);          //in sequential order
```

```
List<String>list=Arrays.asList("welcome","to","my","organization");
Set<String>set=new HashSet<>(list);           //prints like a hashset
Stream<String> stream3=set.stream();            elements are in random order
stream3.forEach(System.out::println);
```

ForEach()

Method iterates through every element in the stream

Without stream:

```
List<Integer> list = new ArrayList<Integer>();
list.add(1);
list.add(2);
list.add(3);
for (Integer element : list) {
    System.out.print(element + " ");}
```

With stream:

```
List list1 = Arrays.asList(1,3,5,7);
//list1.stream().forEach((k) -> {System.out.print(k + " ");});
list1.stream().forEach(System.out::println);
```

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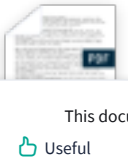

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