

Copilot

You can perform various stream operations on a Map in Java by converting it into a stream of entries, keys, or values. Here are some common operations:

1. Filtering Entries

Filter entries based on a condition:

```
Map<String, Integer> map = Map.of("A", 1, "B", 2, "C", 3);
Map<String, Integer> filteredMap = map.entrySet().stream()
    .filter(entry -> entry.getValue() > 1)
    .collect(Collectors.toMap(Map.Entry::getKey, Map.Entry::getValue));

System.out.println(filteredMap); // Output: {B=2, C=3}
```

2. Transforming Values

Transform the values of a map:

```
Map<String, Integer> map = Map.of("A", 1, "B", 2, "C", 3);
Map<String, Integer> transformedMap = map.entrySet().stream()
    .collect(Collectors.toMap(
        Map.Entry::getKey,
        entry -> entry.getValue() * 2
    ));

System.out.println(transformedMap); // Output: {A=2, B=4, C=6}
```

3. Grouping by Key

Group entries by a derived key:

```
Map<String, String> map = Map.of("A", "apple", "B", "banana", "C", "cherry");
Map<Character, List<String>> groupedMap = map.entrySet().stream()
    .collect(Collectors.groupingBy(
        entry -> entry.getValue().charAt(0),
        Collectors.mapping(Map.Entry::getValue, Collectors.toList())
    ));

System.out.println(groupedMap); // Output: {a=[apple], b=[banana], c=[cherry]}
```

4. Summing Values

Sum the values of a map:

```
Map<String, Integer> map = Map.of("A", 1, "B", 2, "C", 3);
int sum = map.values().stream()
    .mapToInt(Integer::intValue)
    .sum();

System.out.println(sum); // Output: 6
```

5. Finding Maximum and Minimum Values

Find the maximum and minimum values in a map:

```
Map<String, Integer> map = Map.of("A", 1, "B", 2, "C", 3);
Optional<Map.Entry<String, Integer>> maxEntry = map.entrySet().stream()
```

```
.max(Map.Entry.comparingByValue());

Optional<Map.Entry<String, Integer>> minEntry = map.entrySet().stream()
    .min(Map.Entry.comparingByValue());

System.out.println("Max: " + maxEntry.get()); // Output: Max: C=3
System.out.println("Min: " + minEntry.get()); // Output: Min: A=1
```

6. Converting Map to List

Convert a map to a list of keys or values:

```
Map<String, Integer> map = Map.of("A", 1, "B", 2, "C", 3);
List<String> keys = map.keySet().stream()
    .collect(Collectors.toList());

List<Integer> values = map.values().stream()
    .collect(Collectors.toList());

System.out.println(keys); // Output: [A, B, C]
System.out.println(values); // Output: [1, 2, 3]
```

These examples demonstrate the versatility of the Stream API when working with maps. If you have any specific operations in mind or need further assistance, feel free to ask!