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04: Convert Lists to Maps and Maps to Lists with Java 8 power

Posted on [November 6, 2015](#) by [Arulkumaran Kumaraswamipillai](#)

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Why convert from a list to a map? Maps allow you to store and access data by a “**KEY**”. Lists only allow you to access data by either index or by looping through the whole list to find a value that you are interested in.

Also, a map can be used to group a list of items by a key, and then to quickly access items by key as well as depicted below.

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List of <Event>

EventId	EventKey	EventValue1	EventValue2	InActiveFlag
2001	EVENT_X	SEMINAR_A	1-Oct-15	N
2002	EVENT_X	SEMINAR_A	11-Jan-15	N
2003	EVENT_Y	SHOW_B	25-Feb-15	N
2004	EVENT_Z	SHOW_C	3-Mar-15	N

MAP

KEY	VALUE	
EVENT_X	List<Event> of	2001 & 2002
EVENT_Y	List<Event> of	2003
EVENT_Z	List<Event> of	2004

List of Events to a Map with KEY/VALUE pairs.

Pre Java 8 code to convert a list to a map as per the above diagram

You can pull out all the vents (i.e. a list of Event) by the event key.

```

1
2 //.....
3 public class Event implements Serializable {
4
5     private static final long serialVersionUID =
6
7     private long eventId;
8     private String eventKey;
9     private String eventValue1;
10    private String eventValue2;
11    private boolean inActiveFlag;
12
13    public Event(long eventId, String eventKey,
14                super();
15                this.eventId = eventId;
16                this.eventKey = eventKey;
17                this.eventValue1 = eventValue1;
18                this.eventValue2 = eventValue2;
19                this.inActiveFlag = inActiveFlag;
20    }
21
22    public String getEventKey() {
23        return eventKey;
24    }
25
26    public void setEventKey(String eventKey) {
27        this.eventKey = eventKey;
28    }
29
30    //other getters and setters
31
32    @Override
33    public String toString() {
34        return "Event [eventId=" + eventId + ",

```

Java 8 (24)

01: ♦ 19 Java 8 I

02: ♦ Java 8 Stre

03: ♦ Functional

04: ♥♦ Top 6 tips

04: Convert Lists

04: Understandir

05: ♥ 7 Java FP

05: ♦ Finding the

06: ♥ Java 8 way

07: ♦ Java 8 API

08: ♦ Write code

10: ♦ ExecutorSe

Fibonacci numb

Java 8 String str

Java 8 using the

Java 8: 7 useful

Java 8: Different

Java 8: Does "O

Java 8: What is

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```

35         + eventValue2 + ", inactiveFlag="
36     }
37 }

```

```

1
2 package com.mytutorial;
3
4 import java.util.ArrayList;
5 import java.util.Arrays;
6 import java.util.HashMap;
7 import java.util.List;
8 import java.util.Map;
9
10 public class Convert {
11
12     public static void main(String[] args) {
13
14         //Arrays.asList(Event....a) takes vararg
15         List<Event> events = Arrays.asList(
16             new Event(2001, "EVENT_X", "SEMINAR_1", "10/10/2016", "10/10/2016"),
17             new Event(2002, "EVENT_X", "SEMINAR_2", "10/10/2016", "10/10/2016"),
18             new Event(2003, "EVENT_Y", "SHOW_B", "10/10/2016", "10/10/2016"),
19             new Event(2004, "EVENT_Z", "SHOW_C", "10/10/2016", "10/10/2016"),
20         );
21
22         Map<String, List<Event>> mapEventsByKey = new HashMap<>();
23
24         //store it in a map by EventKey.
25         for (Event event : events) {
26             String mapKey = event.getEventKey();
27             if (mapEventsByKey.containsKey(mapKey)) {
28                 List<Event> list = mapEventsByKey.get(mapKey);
29                 list.add(event);
30             } else {
31                 List<Event> eventsWithSameKey = new ArrayList<>();
32                 eventsWithSameKey.add(event);
33                 mapEventsByKey.put(mapKey, eventsWithSameKey);
34             }
35         }
36
37         System.out.println(mapEventsByKey); //m
38     }
39 }
40
41

```

The above example is a **“Single key and multiple values”** scenarios.

Java 8 onwards using FP (Functional Programming)

```

1 package com.mytutorial;
2
3 import java.util.Arrays;
4 import java.util.List;
5 import java.util.Map;
6 import java.util.stream.Collectors;
7

```

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```

8  public class Convert {
9
10     public static void main(String[] args) {
11
12         //Arrays.asList(Event....a) takes vararg
13         List<Event> events = Arrays.asList(
14             new Event(2001, "EVENT_X", "SEMINAR_
15             new Event(2002, "EVENT_X", "SEMINAR_
16             new Event(2003, "EVENT_Y", "SHOW_B",
17             new Event(2004, "EVENT_Z", "SHOW_C",
18         );
19
20         Map<String, List<Event>> mapEventsByKey
21         System.out.println(mapEventsByKey ); //m
22     }
23 }

```

Wow, so concise.

Java 8 onwards: flattening the map back to a list

```

1  package com.mytutorial;
2
3  import java.util.Arrays;
4  import java.util.List;
5  import java.util.Map;
6  import java.util.stream.Collectors;
7
8  public class Convert {
9
10     public static void main(String[] args) {
11
12         //Arrays.asList(Event....a) takes vararg
13         List<Event> events = Arrays.asList(
14             new Event(2001, "EVENT_X", "SEMINAR_
15             new Event(2002, "EVENT_X", "SEMINAR_
16             new Event(2003, "EVENT_Y", "SHOW_B",
17             new Event(2004, "EVENT_Z", "SHOW_C",
18         );
19
20         Map<String, List<Event>> mapEventsByKey
21
22         System.out.println(mapEventsByKey);
23
24         // mapEventsByKey.values() gives a list
25         List<Event> flattenedList = mapEventsByK
26
27
28
29
30         System.out.println(flattenedList);
31
32     }
33 }

```

Java 8 onwards: Get the list of keys sorted

```

1  List<String> listOfKeysSorted = mapEventsByKey.ke

```

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