Why are the keys of a Map in a jumbled order

by Peter Lawrey MVB · Jul. 31, 11 · Java Zone · Not set

When you first try to printout a HashMap, the order doesn't make any sense and when you add entries, they appear to jump around. What is going on?

The order of Maps

The order keys should appear is not defined in many implementations.

Hash map uses a hash of the key to place the key/value in a pseudo random place in the underlying store (an array) How it does this is different in different implementations. For HashMap the size of the Map is always a power of 2. For Hashtable the size grows 11, 23, 47, 95.

For LinkedHashMap, the order will be the order the keys were added and for TreeMap & ConcurrentSkipList, the order is based of the Comparable.compareTo() result (asciibetical order for String)

For Hashtable and HashMap changing the initial size changes how the keys are hashed and thus their order

```
public static void main(String... args) {
    populate(new Hashtable());
    populate(new Hashtable(47), " (47)");
    populate(new Hashtable(95), " (95)");
    populate(new HashMap());
    populate(new HashMap(32), " (32)");
    populate(new HashMap(64), " (64)");
    populate(new LinkedHashMap());
    populate(new IdentityHashMap());
    populate(new WeakHashMap());
    populate(new ConcurrentHashMap());
    populate(new TreeMap());
    populate(new ConcurrentSkipListMap());
}

private static void populate(Map map) {
    populate(map, "");
}

private static void populate(Map map, String suffix) {
    for (String s : "one,two,three,four,five,six,seven,eight,nine,ten".split(","))
        map.put(s, s);
    System.out.println(map.getClass().getSimpleName() + suffix + " " + map.keySet());
}
```

prints

```
Hashtable [three, six, ten, seven, nine, one, five, four, two, eight]
Hashtable (47) [ten, five, seven, two, three, one, nine, six, eight, four]
Hashtable (95) [nine, five, six, one, seven, eight, ten, two, four, three]
HashMap [ten, two, seven, five, nine, one, three, four, eight, six]
HashMap (32) [ten, five, nine, one, eight, six, two, seven, three, four]
HashMap (64) [ten, nine, one, eight, six, three, four, five, two, seven]
LinkedHashMap [one, two, three, four, five, six, seven, eight, nine, ten]
IdentityHashMap [four, two, five, nine, three, six, eight, one, seven, ten]
WeakHashMap [six, eight, four, three, nine, one, seven, five, ten, two]
ConcurrentHashMap [seven, two, one, nine, four, six, eight, three, ten, five]
TreeMap [eight, five, four, nine, one, seven, six, ten, three, two]
ConcurrentSkipListMap [eight, five, four, nine, one, seven, six, ten, three, two]
```

From http://vanillajava.blogspot.com/2011/07/why-are-keys-of-map-in-jumbled-order.html

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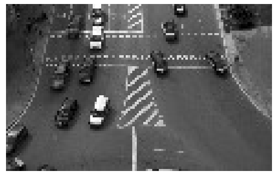

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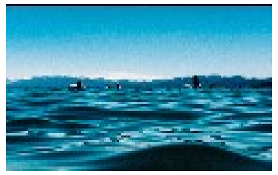

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