

Java HashMap

1. Overview

Java HashMap is a hash table based implementation of Java's Map interface. A Map is a collection of key-value pairs. It maps keys to values.

2. How to declare HashMap

The syntax for declaring an HashMap is as follows.

```
HashMap <Key, Value> variable_name = new HashMap < Key, Value > ();
```

HashMap should be declared with generic <Key, Value>, which forces to have only specified type of objects in HashMap. Key and Value should be class name. For example, "Integer" instead of "int".

An example is as follows.

```
HashMap<String, Integer> data = new HashMap<String, Integer> ();
```

3. The Main Methods of HashMap

Table 1 shows the main methods of HashMap.

Table 1. The Main Methods of HashMap

Modifier/Type	Method and Description
boolean	containsKey(Object key) Returns true if this map contains a mapping for the specified key.
Value	get(Object key) Returns the value to which the specified key is mapped, or null if this map contains no mapping for the key.
Set<K>	keySet() Returns a Set view of the keys contained in this map.
Value	put(K key, V value) Associates the specified value with the specified key in this map.
Value	remove(Object key) Removes the mapping for the specified key from this map if present.
Value	replace(K key, V value) Replaces the entry for the specified key only if it is currently mapped to some value.
int	size() Returns the number of key-value mappings in this map.

4. An example of HashMap

Figure 1 shows an example program of HashMap, and Figure 2 shows the output of the example program.

The value of keySet method is "Set" class. Iterator class can be used to get all the keys since Set class has iterator() method to get iterator.

```
import java.util.HashMap;
import java.util.Iterator;
import java.util.Set;

public class TestHashMap {
    HashMap<String, Integer> hashmap = new HashMap<String, Integer>();

    public static void main(String[] args) {
        TestHashMap thm = new TestHashMap();
        thm.example();
    }

    public void example() {
        String key;
        int value;

        hashmap.put("one", 1);
        hashmap.put("two", 2);
        hashmap.put("three", 3);
        hashmap.replace("two", 4);
        Set<String> set = hashmap.keySet();
        Iterator<String> iterator = set.iterator();
        while(iterator.hasNext()) {
            key = iterator.next();
            value = hashmap.get(key);
            System.out.println("key is " + key + " and value is " + value);
        }
    }
}
```

Figure 1. An Example Program of TestHashMap.

```
key is one and value is 1
key is two and value is 4
key is three and value is 3
```

Figure 2. The Output of The Example Program of TestHashMap.