

SATURDAY, JANUARY 28, 2017

Difference between IdentityHashMap and HashMap in Java

IdentityHashMap in Java was added in Java 1.4 but still it's one of those lesser known class in Java. The main difference between IdentityHashMap and HashMap in Java is that IdentityHashMap is a special implementation of Map interface which doesn't use `equals()` and `hashCode()` method for comparing object unlike other implementation of Map e.g. HashMap. Instead, IdentityHashMap uses equality operator `"=="` to compare keys and values in Java which makes it faster compare to HashMap and suitable where you need reference equality check and instead of logical equality. By the way, IdentityHashMap is a special implementation of Map interface much like `EnumMap` but it also violates general contract of Map interface which mandates using equals method for comparing Object. Also, IdentityHashMap vs HashMap is a [good Java question](#) and have been asked a couple of times.

Even though this question is not as popular as [How HashMap works in Java](#) or [Difference between Hashtable and HashMap](#), it's still a good question to ask. In this Java tutorial, we will see an example of IdentityHashMap and explores some key differences between IdentityHashMap and HashMap in Java.

Difference between IdentityHashMap and HashMap



Though both HashMap and IdentityHashMap implements Map interface, have fail-fast Iterator and non-synchronized collections, following are some key *differences between HashMap and IdentityHashMap in Java*.

Interview Questions

- [core java interview question](#) (168)
- [Coding Interview Question](#) (72)
- [data structure and algorithm](#) (68)
- [interview questions](#) (46)
- [SQL Interview Questions](#) (30)
- [design patterns](#) (30)
- [object oriented programming](#) (30)
- [thread interview questions](#) (30)
- [collections interview questions](#) (25)
- [spring interview questions](#) (17)
- [database interview questions](#) (16)
- [servlet interview questions](#) (15)
- [Programming interview question](#) (6)
- [hibernate interview questions](#) (6)

Best of Javarevisited

- [How Spring MVC works internally?](#)
- [How to design a vending machine in Java?](#)
- [How HashMap works in Java?](#)
- [Why String is Immutable in Java?](#)
- [10 Articles Every Programmer Must Read](#)
- [How to convert lambda expression to method reference in Java 8?](#)
- [10 Tips to improve Programming Skill](#)

- 1) The main difference between *HashMap* vs *IdentityHashMap* is that *IdentityHashMap* uses equality operator "==" for comparing keys and values inside Map while *HashMap* uses [equals method](#) for comparing keys and values.
- 2) Unlike *HashMap*, who uses hashCode to find bucket location, *IdentityHashMap* also doesn't use `hashCode()` instead it uses `System.identityHashCode(object)`.
- 3) Another key difference between *IdentityHashMap* and *HashMap* in Java is Speed. Since *IdentityHashMap* doesn't use `equals()` its comparatively faster than *HashMap* for object with expensive [equals\(\) and hashCode\(\)](#).
- 4) One more difference between *HashMap* and *IdentityHashMap* is Immutability of the key. One of the basic requirement to safely store [Objects](#) in *HashMap* is keys needs to be immutable, *IdentityHashMap* doesn't require keys to be immutable as it is not relied on equals and hashCode.

There is also a class called *IdentityHashtable* which is analogous to [Hashtable in Java](#) but it's not part of standard JDK and available in `com.sun...` package.

Example of IdentityHashMap in Java

Here is an example of *IdentityHashMap* in Java which shows the key difference between *HashMap* and *IdentityHashMap* in comparing Objects. *IdentityHashMap* uses equality operator for comparison instead of equals method in Java :

```
import java.util.IdentityHashMap;

/**
 * Java program to show difference between HashMap and IdentityHashMap in Java
 * @author Javin Paul
 */
public abstract class Testing {

    public static void main(String args[]) {
```

- ➔ [10 OOP design principles programmer should know](#)
- ➔ [How Synchronization works in Java?](#)
- ➔ [10 tips to work fast in Linux](#)
- ➔ [5 Books to improve Coding Skills](#)

Java Tutorials

- ➔ [date and time tutorial](#) (21)
- ➔ [FIX protocol tutorial](#) (15)
- ➔ [Java Certification OCPJP SCJP](#) (21)
- ➔ [java collection tutorial](#) (73)
- ➔ [java IO tutorial](#) (28)
- ➔ [Java JSON tutorial](#) (12)
- ➔ [Java multithreading Tutorials](#) (55)
- ➔ [Java Programming Tutorials](#) (18)
- ➔ [Java xml tutorial](#) (16)
- ➔ [JDBC](#) (29)
- ➔ [jsp-servlet](#) (37)
- ➔ [online resources](#) (87)

Categories

- ➔ [SQL](#) (53)
- ➔ [linux](#) (36)
- ➔ [courses](#) (33)
- ➔ [database](#) (30)
- ➔ [Eclipse](#) (28)
- ➔ [JVM Internals](#) (22)
- ➔ [Java Certification OCPJP SCJP](#) (21)
- ➔ [jQuery](#) (16)
- ➔ [REST](#) (16)
- ➔ [Testing](#) (11)
- ➔ [Maven](#) (10)
- ➔ [general](#) (10)

```
IdentityHashMap<String, String> identityMap = new IdentityHashMap<String, String>();

identityMap.put("sony", "bravia");
identityMap.put(new String("sony"), "mobile");

//size of identityMap should be 2 here because two strings are different objects
System.out.println("Size of IdentityHashMap: " + identityMap.size());
System.out.println("IdentityHashMap: " + identityMap);

identityMap.put("sony", "videogame");

//size of identityMap still should be 2 because "sony" and "sony" is same object
System.out.println("Size of IdentityHashMap: " + identityMap.size());
System.out.println("IdentityHashMap: " + identityMap);

}
}
```

Output

```
Size of IdentityHashMap: 2
IdentityHashMap: {sony=bravia, sony=mobile}
Size of IdentityHashMap: 2
IdentityHashMap: {sony=videogame, sony=mobile}
```

That's all on the difference between IdentityHashMap and HashMap in Java. As I said IdentityHashMap violates Map interface general contract and should only be used when reference equality makes sense. As per Javadoc, IdentityHashMap is suitable to keep object reference during Serialization and deep copy and can also be used to maintain as a proxy object.

Blog Archive

- ▶ 2018 (102)
- ▼ 2017 (850)
 - ▶ December (100)
 - ▶ November (36)
 - ▶ October (51)
 - ▶ September (47)
 - ▶ August (62)
 - ▶ July (59)
 - ▶ June (65)
 - ▶ May (49)
 - ▶ April (80)
 - ▶ March (103)
 - ▶ February (87)
 - ▼ January (111)
 - [Where and How to download Spring Framework JAR fil...](#)
 - [What is rt.jar in Java/JDK/JRE? Why it's Important...](#)
 - [How to Reverse String in Java Using Iteration and ...](#)
 - [Top 3 Servlet and JSP Books for Java Developers - ...](#)
 - [Difference between for loop and Enhanced for loop ...](#)
 - [How to Set Classpath for Java on Windows and Linux...](#)
 - [How to Convert Binary Number to Decimal in Java - ...](#)
 - [Difference between IdentityHashMap and HashMap in ...](#)

Further Learning

- [Java In-Depth: Become a Complete Java Engineer](#)
- [Java Fundamentals: Collections](#)
- [Data Structures and Algorithms: Deep Dive Using Java](#)

Other useful **Java collection tutorials** from Javarevisited Blog


- [Difference between EnumMap and HashMap in Java](#)
- [How to sort HashMap in Java by keys and values](#)
- [Difference between Hashtable, ConcurrentHashMap and Synchronized Map in Java](#)
- [4 ways to traverse Map in Java with Example](#)
- [Difference between LinkedList and ArrayList in Java](#)


By Javin Paul at [January 28, 2017](#) 


Labels: [collections interview questions](#), [core java](#), [core java interview question](#), [java collection tutorial](#)

Location: [United States](#)

6 comments :


-  **Anonymous said...**
Hi, how about performance? I assume IdentityHashMap will perform better than HashMap because of reference comparison but how much performance gain you make when you switch from HashMap to IdentityHashMap?

[January 30, 2013 at 11:09 PM](#)
-  **Anonymous said...**
You will never have hash collison with IdentityHashMap :)

[February 4, 2013 at 9:28 PM](#)
-  **Anonymous said...**
What is meany by hash collision


[May 1, 2013 at 2:35 AM](#)

- [How to use Future and FutureTask in Java Concurr...](#)
- [Spring - java.lang.ClassNotFoundException: org.spr...](#)
- [What is difference between Maven, ANT, Jenkins and...](#)
- [How to get and set default Character encoding or C...](#)
- [How to define Error page in Java Web Application -...](#)
- [How to fix java.sql.SQLException: Invalid column i...](#)
- [How to create LocalDateTime in Java 8 - Example](#)
- [Difference between Thread vs Runnable interface in...](#)
- [Difference between FIX 4.2 vs FIX 4.4 in FIX conne...](#)
- [Java Comparator Example for Custom Sorting Employe...](#)
- [JAXB XML Binding tutorial - Marshalling UnMarshall...](#)
- [How to Split String based on delimiter in Java? Ex...](#)
- [10 Example of find command in Unix and Linux Solaris Command to Show Long argument list of a Ru...](#)
- [How to find if JVM is 32 or 64 bit from Java progr...](#)
- [Top 10 Excuses Programmers Gives to Avoid Unit Tes...](#)
- [How many characters is allowed on VARCHAR\(n\) colum...](#)
- [10 Tips to Improve Programming Skill and become be...](#)
- [Difference between Functional and Non-Functional R...](#)

- 


Anonymous said...

What is hash collision?

May 7, 2014 at 3:29 AM
- 

Json said...

What is the real life example where you want to use IdentityHashMap? I know that all meaningful object override equals() and hashCode but I think for things like database Connections, or file handles we can use this map as cache. agree?

December 17, 2014 at 1:38 AM
- 

Sandeep Kumar said...

Article is great to read !
I guess, few corrections required in terms of language used.


"...Instead, IdentityHashMap uses equality operator "==" to compare keys and values in Java which..."

Map do not compare Values, it only compares Keys. You should correct it where ever it is used.

January 30, 2018 at 12:43 AM

Post a Comment

Enter your comment...



Comment as:

Amitabh Mandal

Sign out

Publish

Preview

☐ Notify me

- [Top 20 Tibco Rendezvous and EMS Interview question...](#)
- [Display Tag Export Example in JSP - Issue Fix Java...](#)
- [What is Constructor Overloading in Java? - Intervi...](#)
- [Java Clone Tutorial Part 2 - Example to Override W...](#)
- [Difference between Serializable and Externalizable...](#)
- [Can You Make an Array or ArrayList Volatile in Jav...](#)
- [Difference between URL-rewriting URL-encoding in S...](#)
- [3 ways to loop over Set or HashSet in Java? ExampL...](#)
- [Print Fibonacci Series in Java Using Recursion and...](#)
- [How to fix Failed to load Main-Class manifest attr...](#)
- [String replaceAll\(\) example - How to replace all C...](#)
- [How to get max memory, free memory and total memor...](#)
- [Top 5 Hibernate Books for Java Developers - Best, ...](#)
- [Eclipse Not Able To Connect Internet, Market Place...](#)
- [10 examples of grep command in UNIX and Linux](#)
- [Top 10 UNIX and Linux System Programming Books- Be...](#)
- [5 books to learn Spring framework and Spring MVC f...](#)
- [How to check if a Number is Positive or Negative i...](#)
- [Top 20 String Algorithm Questions from Coding Inte...](#)

Subscribe to: [Post Comments \(Atom\)](#).

[5 Free OCEJWCD 6 Mock Exam 1Z0-899 Practice Test](#)

[How to use Lambda Expression in Place of Anonymous...](#)

[Why Default or No Argument Constructor is Importan...](#)

[6 JDBC Performance Tips for Java Developers](#)

[How to Sort Array in Java Ascending and Descending...](#)

[Tibco tutorial : RVD \(Rendezvous daemon\) vs RVRD \(...\)](#)

[How public static final variable works in Java?](#)

[Top 5 Blogs Java EE developers should follow](#)

[ThreadLocal Memory Leak in Java web application - ...](#)

[How to convert double to int in Java?](#)

[How to create hidden file in Java- Example Tutoria...](#)

[How to check if a File is hidden in Java with Exam...](#)

[Basics of FIX protocol and FIX Engine](#)

[Difference between OCPJP 8 Upgrade Exams 1Z0-813 a...](#)

[4 Ways to find Nth highest salary in SQL - Oracle,...](#)

[How to get current Date Timestamps in Java on GMT ...](#)

[Why Override equals, hashCode and toString method ...](#)

[How to decompile class file in Java and Eclipse - ...](#)

[FIX protocol tutorial : Fix Session is not connect...](#)

[Difference between include directive and include a...](#)

[Top 20 Amazon and Google Programming Interview Que...](#)

[Why become Java Certified? Does Oracle Certified P...](#)

[12 Essential Apache Web Server Interview Questions...](#)

[10 Example of this keyword in Java](#)

[Difference between Sun \(Oracle\) JVM and IBM JVM](#)

[Bucket Sort in Java with Example - How Algorithm W...](#)

[How to fix java.net.SocketException: Software caus...](#)

[How to Sort Java ArrayList in Descending Order - E...](#)

[Tibco tutorial : Tibrv Errors and Exceptions](#)

[Reading/Writing to/from Files using FileChannel an...](#)

[Difference between Bitwise and Logical Operator in...](#)

[Top 5 Free Scala Programming Books for Java Progra...](#)

[3 Ways to Convert Java 8 Stream to an Array - Lamb...](#)

[How to write Thread-Safe Code in Java](#)

[How to Create and Initialize Anonymous Array in Ja...](#)

[How does Java HashMap or LinkedHashMap handles col...](#)

[Method and Constructor Overloading Best Practices ...](#)

[Difference between extends and implements keywords...](#)

[How to convert ArrayList to Set in Java with Examp...](#)

[What is FIX Engine in FIX Protocol](#)

- [REST Web Services Framework Interview Questions An...](#)
- [How to Change File Permissions in Java - Example T...](#)
- [How to Use Code Point Methods of Java String.get U...](#)
- [How to Remove Objects from Collection or ArrayList...](#)
- [Top 9 Java Programming Books - Best of lot, Must R...](#)
- [Top 5 Java Forums for Programmers](#)
- [10 Examples of using ArrayList in Java - Tutorial](#)
- [Running SQL Queries on Production/live Databases -...](#)
- [10 Example of Hashtable in Java - Java Hashtable T...](#)
- [3 Examples to Concatenate String in Java](#)
- [10 XML Interview questions and answers for Java Pr...](#)
- ["The system cannot find the path specified." Error...](#)
- [What is NavigableMap in Java 6 - Creating subMap f...](#)
- [Why use Memory Mapped File or MappedByteBuffer in...](#)

► 2016 (133)

References

1. [Oracle's Java Tech Network](#)

2. [jQuery Documentation](#)

3. [Microsoft SQL Server Documentation](#)

4. [Java SE 8 API Documentation](#)

5. [Spring Documentation](#)

6. [Oracle's JAVa Certification](#)

7. [Spring Security 5 Documentation](#)

Pages

➔ [Privacy Policy](#)

Copyright by Javin Paul 2010-2018. Powered by [Blogger](#).

Search This Blog

Search