**Top 52 Java Interview Questions for Investment Banking Domain**

1. What do you understand by thread-safety ? Why is it required ? And finally, how to achieve thread-safety in Java Applications ?  
**Hint**: discuss the need for the concurrent programming, using volatile, synchronization, Immutability & Atomic packages to address the concurrency problems. Discuss the Java Memory Model. Impact of final keyword in Java. Differences between wait and notify method in Object class.  
<http://crackingjavainterviews.blogspot.in/2013/04/what-do-you-understand-by-java-memory.html>  
  
2. What are the drawbacks of not synchronizing the getters of an shared mutable object ?  
<http://crackingjavainterviews.blogspot.in/2013/04/what-if-we-dont-synchronize.html>  
  
3. Discuss the Singleton Design Pattern ? How to make it thread-safe ? Discuss the Double Check Locking (DCL) ?  
<http://crackingjavainterviews.blogspot.in/2013/05/what-is-double-checked-locking-problem.html>  
  
4. Can Keys in HashMap be made Mutable ? What would be the impact in that case ?  
<http://crackingjavainterviews.blogspot.in/2013/04/can-keys-in-hashing-data-structure-be.html>  
  
5. How would you implement your own ThreadPool in Java ? Discuss the designing part.  
  
6. How would you implement a Stack or a Queue in Java ? It must be synchronized.  
  
7. Discuss Big O notation for calculating relative performance of Algorithms. How do various collection methods perform in terms of Big O Notation ?  
<http://crackingjavainterviews.blogspot.in/2013/05/what-do-you-understand-by-big-o.html>  
  
8. Implement Queue using an ArrayList.  
  
9. What are the types of Inner classes with example of each ?  
  
10. What is a tree map ? Discuss its underlying implementation i.e. red-black binary tree.  
  
11. There are 1 million trades, you need to check if a given trade exists in those trades or not. Which Collection would you chose to store those 1 million trades and why ?  
**Hint**: think from time complexity point of view and why HashSet could be a better data structure for storing these trades assuming we have sufficient memory to hold those items.  
  
12. What is difference between StringBuilder and String ? Which one should be preferred.  
  
13. In a program, multiple threads are creating thousands of large temporary StringBuilder objects. Life span of all those objects is 1 GC cycle. But somehow we are getting JVM pauses in our application. How would you troubleshoot the problem ?  
**Hint**: Think from GC tuning perspective  
  
14. What are memory generations in Hot Spot VM ? How generational GC's work ?  
  
15. What is difference between Primary Key and Unique Key ?  
  
16. What is clustered and non-clustered index in Sybase database ?  
  
17. What is Outer and Inner Join ?  
  
18. What is ADT ? We do not need to know how a data type is implemented in order to be able to use it.  
  
19. Are you familiar with a messaging system i.e. MQ ? What is a QueueManager ? Why do you think the Queue is so important in banking world ?  
  
20. How would you make an application asynchronous ? Can Message Queues help achieving this ?  
  
21. How to achieve loose coupling in your application ?  
  
22. What is TDD and how it helps Agile methodology of software development ?  
  
23. How to make a class Immutable ? What purpose Immutablity solve ?  
<http://crackingjavainterviews.blogspot.in/2013/05/what-is-immutable-class-why-would-you.html>  
  
24. What is difference between Callable and Runnable ?  
<http://crackingjavainterviews.blogspot.in/2013/05/what-is-difference-between-callable-and.html>  
  
25. What are Inheritance strategies in JPA ?  
<http://crackingjavainterviews.blogspot.in/2013/05/what-are-inheritance-stretegies-in-jpa.html>  
  
26. Discuss Internals of HashMap and ConcurrentHashMap ?  
<http://crackingjavainterviews.blogspot.in/2013/04/discuss-internals-of-concurrent-hashmap.html>  
  
27. What is best way to store Currency Values in Java application ?  
<http://crackingjavainterviews.blogspot.in/2013/04/best-way-for-storing-currency-values-in.html>  
  
28. What is AtomicInteger and how it is useful  in concurrent environment ?  
<http://crackingjavainterviews.blogspot.in/2013/04/what-is-atomicinteger-class-and-how-its.html>  
  
  
29. What are key principles while designing Scalable Software Applications ?  
<http://crackingjavainterviews.blogspot.in/2013/04/what-are-key-principles-when-designing.html>  
  
30. What does Collections.unmodifiableCollection() do ? is it useful in multi-threading environment ?  
<http://crackingjavainterviews.blogspot.in/2013/05/what-does-collectionsunmodifiablecollec.html>

31. How would you add an element to a Collection while iterating over it in a loop ?  
<http://crackingjavainterviews.blogspot.in/2013/06/removing-elements-while-iterating-over.html>

32. There are 3 Classes A, B and C. C extends B and B extends A, each class has a method named add() with same signature (overriding). Is it possible to call A's add() method from Class C ? Reason ?  
  
33. How would you write a simple Interceptor in Struts 2 which can log the request and response to an Action ?  
  
34. What are database transaction isolation levels ? What is the default value for transaction isolation level.  
  
35. How does Session Handling works in Servlet Environment?  
  
36. What is difference between Http's redirect and forward request ?  
  
37. Iterator Interface provides a remove() method but no add() method, Why ?  
  
38. Can you give a try writing a rough Implementation for BlockingQueue in Java ?  
  
39. What are Common Threading Issues in Java ?  
  
40. Given a Collection of 1 million integers ranging between 1 and 9, Can you sort them all in Big O(n) time ?  
<http://crackingjavainterviews.blogspot.in/2013/06/given-collection-of-1-million-integers.html>  
  
41. How would you resolve Task Inter dependency pragmatically as is done in Ant ?  
  
42. How would you sort 900 MB of data using 100 MB of RAM ?  
  
43. What do you understand by GC tuning, What are GC pauses (stop the world)? How would you tune a given Java Program ?  
  
44. What is a PriorityQueue ? How is it implemented in Java ? What are its usages ?  
  
45. Your are give a file with millions of numbers in it. Find the 20 biggest numbers ?  
  
46. What is difference between synchronized HashMap and a hashtable ?  
  
47. What do you understand by Token Bucket Algorithm. What are its applications ?  
  
48. What are the key principles when designing a software for performance efficiency ?  
  
49. How would you describe Producer Consumer problem in Java ?  
  
50. Design Phone Book for a mobile using TRIE (or a prefix tree)  
  
51. How would you count word occurrence in a very large file ? How to keep track of top 10 occurring words?  
[Solution](http://crackingjavainterviews.blogspot.in/2015/02/how-would-you-count-word-occurrence-in.html)

52. What happens when you type a url in browser's address bar ?

[Solution](http://crackingjavainterviews.blogspot.in/2015/02/what-happens-when-you-type-wwwgooglecom.html)

**For many other questions refer to my e-Book**

<http://crackingjavainterviews.blogspot.in/2013/04/cracking-core-java-interviews.html>